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with the American Microscopical Society
The Crustacean Society



SICB 2020

FINAL PROGRAM

January 3-7, 2020
JW Marriott Austin • Austin, TX



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The Society for Integrative and Comparative Biology

FINAL PROGRAM

JW Marriott Austin

110 East 2nd Street

Austin, TX 78701

Future Meeting Dates

3-7 January 2021
Washington, District of Columbia

3-7 January 2022
Phoenix, Arizona

3-7 January 2023
Austin, Texas

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EXAMPLES OF NOTEWORTHY KITS

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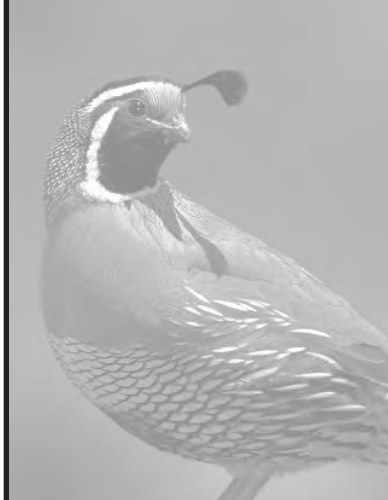
- Sensitivity: 18.6 pg/mL
- Small sample size, as little as 1 μ L plasma

Testosterone ELISA Kit (K032-H)

- Sensitivity: 9.9 pg/mL
- Samples types include urine & fecal extracts

Progesterone ELISA Kit (K025-H)

- Sensitivity: 47.9 pg/mL
- Sample types include fecal extracts, urine and tissue culture media



Welcome to Austin

Message from the President

Buckle up and hang on, we're in for another action-packed SICB meeting! Such a bounty of great science will keep us all hopping from room to room and still feeling conflicted about talks we have to miss. But that's a testament to all the superb research our SICB members bring to the Annual Meeting. Thanks to all platform and poster presenters; your work is the beating heart of this meeting.

In addition to all of the scientific highlights, the SICB leadership has been working hard behind the scenes to make our upcoming meeting as welcoming, safe, and inclusive as possible for all participants. We revised the *SICB Annual Meeting Code of Conduct* to include a better online system for reporting violations. As stated in the *Code*, SICB is committed to equal opportunity and treatment for all meeting participants, regardless of gender, gender identity or expression, race, color, national or ethnic origin, religion or religious belief, age, marital status, sexual orientation, disabilities, medical condition, genetic information, military or veteran status, or any other reason not related to scientific merit. Meeting participants are expected to uphold standards of scientific integrity and professional ethics. Harassment and other forms of misconduct undermine the integrity of SICB meetings and are strictly prohibited.

This year in Austin we have a number of programs and events in support of our LGBTQ+ attendees and expect these initiatives to continue in future years. As I noted this past fall in an email message to the whole Society, the state of Texas has laws that discriminate against LGBTQ+ people, and such laws are inconsistent with the values, aspirations and mission of SICB to advance the inclusion of all talent to maximize the excellence and integrity of our field. In contrast to the state's negative efforts, the city of Austin has taken positive steps to support the LGBTQ+ community, including a city ordinance against employment and housing discrimination based on sexual orientation and gender identity. With thanks to Outgroup, other LGBTQ+ volunteers, and the SICB Broadening Participation and Public Affairs Committees, we have the following initiatives supporting and celebrating our LGBTQ+ participants in Austin:

- Pronouns on badges: look for them in the lower left quadrant
- Outgroup-In: a sober social networking event and discussion of LGBTQ+ issues
- Outgroup Social: happy hour social event offsite for LGBTQ+ attendees and allies
- Out to Lunch: LGBTQ+ Mentor-Mentee lunches
- Outgroup badge stickers: Available for LGBTQ+ attendees and allies to show safe space and support
- Public Affairs Committee Workshop: Embracing Variation Among Humans: Perspectives on LGBTQ+ Experiences in Biology and Academia

Also, be sure to drop by the exhibits of our vendors; these exhibits provide useful information and they support our Society. I am particularly pleased to acknowledge **Sable Systems International** as a platinum sponsor. Sable Systems has been an important presence at our meetings for many years; please drop by their booth to see their wonderful products and to thank them for their support. I am also pleased to have **Wiley Publishers** as a gold sponsor. Wiley has also been an important fixture at SICB and they generously sponsor our Best Student Presentation Awards. **Xcitex**, **Arbor Assays** and **Friday Harbor Labs** return to SICB as silver sponsors and well as **BioOne Complete** as a bronze sponsor. Be sure to visit all the exhibits and support the exhibitors in any way you can; but please thank them for their support!

Finally, the SICB journals, *Integrative and Comparative Biology* and *Integrative Organismal Biology*, stand alongside our Annual Meetings as the core activities of SICB. Under the exciting leadership of Editor Ulrike Müller, *Integrative and Comparative Biology* is leading the way in implementing inclusive practices for scientific publishing, and *ICB* continues to publish synthetic and influential papers from our symposia and abstracts for the annual meeting. This year marks the first anniversary SICB's new open-access journal, *Integrative Organismal Biology*. Editor Adam Summers, the *IOB* Editorial Board, and *IOB* Outreach Associates have done a superb job launching this new outlet for integrative biology research. *IOB* makes the most of being an open access journal by publicizing every paper through a dedicated blog post by an Outreach Associate and social media promotion. This outreach publicity for every paper is a great perk of publishing your work in *IOB*. Altmetric scores how much attention papers get, and most *IOB* papers are in the top 5% of all research outputs scored by Altmetric. The missions of our journals are nicely complementary, and support SICB's mission to promote the scientific excellence encompassed by our Society.

I hope you enjoy the 2020 Annual Meeting of SICB!
Beth Brainerd



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Welcome to Austin

Message from the Program Officer

Welcome to the SICB Annual Meeting in Austin, Texas. We have 4 days of jam-packed science, with a total of over 980 contributed talks arranged into 140 oral sessions and 775 posters in 3 poster sessions. We also have 11 full-day symposia and a number of special lectures and workshops. The schedule is packed with interesting science and other SICB-sponsored activities but try to find some down time to see a bit of the city if you can. The entire schedule grid is on our website at www.burkclients.com/sicb/meetings/2020/site/program.html. Use this for a quick guide to where and when everything occurs. If you are attached to your cell phone, our mobile meeting app will keep you organized.

Major lectures: We are excited to open the annual meeting on Friday, January 3rd at 7:30 with our Plenary Lecture presented by Sheila Patek. Her lecture will focus on the importance and impact of interdisciplinary fundamental scientific discovery. Successive evenings will hold the Bartholomew Lecture by Mary Caswell Stoddard (Saturday, January 4, 7:00 PM); the Bern Lecture by George Bentley and the AMS Lecture by Sara Lindsay (both Sunday, January 5, 7:00 PM). We will conclude the meeting with the Moore Lecture by Emily Graslie (Tuesday, January 7, 3:45 PM). This is an all-star lineup so please be sure to budget some time in for these lectures!

Symposia: Eleven symposia were selected by the Program Committee and represent the diversity of the 12 divisions of SICB. These symposia represent cutting-edge research and syntheses all with an eye toward establishing the future of specific research areas. This year, we have three symposia that were selected for the special SICB-wide designation because they should appeal broadly across all our divisions. All of the symposia are the result of the hard work, creativity and enthusiasm of volunteer organizers without whom we would not have our journal, *Integrative and Comparative Biology*. This is because papers from the symposia talks are the basis of this journal. More information on our symposia can be found at: sicb.org/meetings/2020/symposia/index.php.

Workshops: Our SICB committees have been hard at work planning workshops to appeal to different segments of our membership on topics ranging from professional development to teaching strategies. It is important to note that this year, the Broadening Participation Committee and the Public Affairs Committee are both tackling the important theme of inclusion in science. Be sure to look out for their workshops. Every year we keep adding on additional workshops, on top of our regular committee workshops, thanks to the generosity of our members who want to share their expertise and time with meeting attendees. This year we have 10 (!) additional workshops in addition to our standard SICB committee workshops. Information on all of the workshops can be found here: burkclients.com/sicb/meetings/2020/site/workshops.html.

Socials: Part of our programming includes many organized social events for catching up with friends and colleagues or meeting new people. The first social is the Outgroup-In meeting and social starting at 5:30 followed by the Broadening Participation Meet and Greet at 6:30 on January 3. After the Plenary Lecture on January 3, we have the society-wide welcome reception from 8:30-10:00 PM. Division Socials are on Jan 4-6 and the meeting ends with the society-wide party in honor of students and post-docs on January 7 from 5:00-7:00 PM.

Business meetings: Business meetings are a great opportunity to hear about the activities of your division and the society. It is also a great way to see how you can become an active member of the society. The Society Executive Officers will swing by each business meeting to give an update on major society initiatives. We keep them short and sweet so that you attendees can grab dinner or attend an evening event.

Finally, the annual meeting is the result of the hard work of many folks. Please thank the division program officers, the TCS and AMS program reps, the symposium organizers, the SICB Executive Officers, committee chairs, and our great team from Burk & Associates: Brett Burk, Lori Strong, Jennifer Rosenberg, Raelene Sok, Jill Drupa, and Ruedi Birenheide. We hope that you will enjoy the meeting, find inspiration in the presentations, and establish new friendships and collaborations!

Susan Williams

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Co-Sponsoring Societies

American Microscopical Society (AMS)

The Crustacean Society (TCS)

The co-sponsoring society presentations are integrated into the program to minimize the potential conflicts of similar presentations being scheduled at the same time.

Thank you to the following SICB Sponsors

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Meeting Highlights/Social Events

Events take place in the JW Marriott Austin, unless otherwise noted

Friday 3 January

Student Worker Orientation & First Timer Orientation

Lonestar Ballroom, 5:30 PM – 6:30 PM

“How to get the most out of your SICB Meeting”

Required for students with Charlotte Mangum support

Plenary Session: Dr. Sheila Patek

Lone Star Ballroom, 7:30 PM – 8:30 PM

The Plenary Address, “Impact and discovery: extreme movement in an interdisciplinary and political world”, will be given by Dr. Sheila Patek.

Welcome to Austin Reception

Griffin Hall, 8:30 PM – 10:00 PM

The Society for Integrative and Comparative Biology welcomes you to Austin with a reception. The Welcome Reception will follow the Plenary Lecture. Light snacks and cash bar will be provided.

Saturday 4 January

Morning Run

JW Marriott Lobby, 6:00 AM

Poster Session 1

Grand Ballroom, 3:30 PM – 5:30 PM

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

DCPB Social & BART Reception

Griffin Hall, 8:00 PM – 10:00 PM

Morning Runs

Do you like to run in the morning?

Join other SICB attendees for morning runs along Lake Travis. Runs will take place on the 4th, 5th, 6th and 7th. Meet in the Lobby of the JW Marriott at 6:00 am to get you back in plenty of time for the 8 am start time for sessions. A great way to start the day and meet other SICB attendees. Michele ‘Nish’ Nishiguchi will be leading the runs.

Sunday 5 January

Morning Run

JW Marriott Lobby, 6:00 AM

Poster Session 2

Grand Ballroom, 3:30 PM – 5:30 PM

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

Monday 6 January

Morning Run

JW Marriott Lobby, 6:00 AM

Poster Session 3

Grand Ballroom, 3:30 PM – 5:30 PM

Even # poster authors present from 3:30 pm-4:30 pm

Odd # poster authors present from 4:30 pm-5:30 pm

SICB Business Meeting

Lone Star D, 5:30 PM – 6:30 PM

SICB Society Meeting & Awards Presentation

TCS/DEDB/DPCB/AMS/DIZ/DEE/DOB Social

Griffin Hall, 6:30 PM – 8:30 PM

DVM/DCB Social

South-East Lobbies, 9:00 PM – 12:00 AM

Broadening Participation Social

Room 401, 7:00 PM – 9:00 PM –

Tuesday 7 January

Morning Run

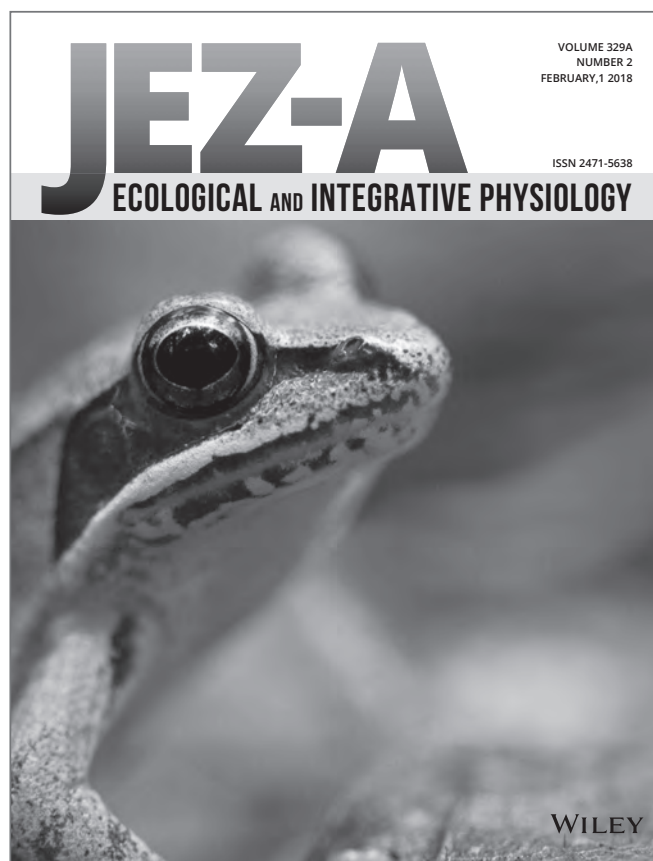
JW Marriott Lobby, 6:00 AM

Society-Wide Social in Honor of Students and Post-docs

Griffin Hall, 5:00 PM – 7:00 PM

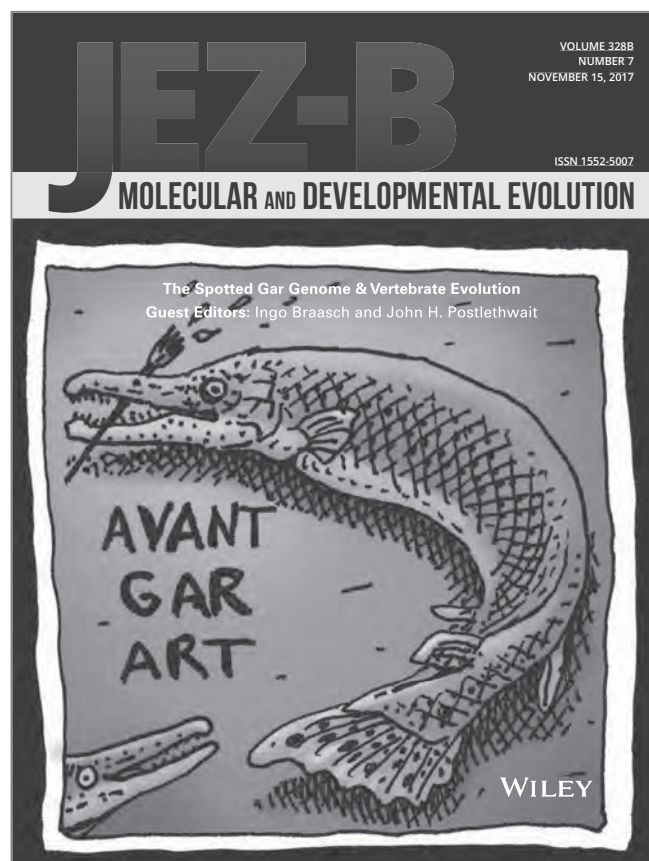
Join fellow SICB members for a Society-Wide Social. Cheese and fruit will be served, and a cash bar will be provided.

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SICB and Divisional Business Meetings

Saturday 4 January

DAB Meeting, 5:45 PM – 6:30 PM, Lone Star E
DNNSB Meeting, 5:45 PM – 6:30 PM, Lone Star F
DCPB Meeting, 5:45 PM – 6:30 PM, Lone Star G
DVM Meeting, 5:45 PM – 6:30 PM, Rooms 303-304
DEE Meeting, 5:45 PM – 6:30 PM, Room 205
DEDE Meeting, 5:45 PM – 6:30 PM, Rooms 201-202
DEDB Meeting, 5:45 PM – 6:30 PM, Lone Star H

Sunday 5 January

TCS Business Meeting, 12:00 PM – 1:30 PM, Room 309
AMS Business Meeting, 12:00 PM – 1:30 PM, Room 408
DCE Meeting, 5:45 PM – 6:30 PM, Lone Star A
DCB Meeting, 5:45 PM – 6:30 PM, Lone Star B
DIZ Meeting, 5:45 PM – 6:30 PM, Lone Star C
DPCB Meeting, 5:45 PM – 6:30 PM, Rooms 301-302
DOB Meeting, 5:45 PM – 6:30 PM, Room 205

SICB Society Business Meeting & Awards Presentation
Monday 6 January, 5:30 PM – 6:30 PM, Lone Star D

Special Lectures

Plenary Session: Dr. Sheila Patek

Friday 3 January, 7:30 PM – 8:30 PM, Lone Star Ballroom
Impact and discovery: extreme movement in an interdisciplinary and political world

Bartholomew Lecture: Dr. Mary Caswell Stoddard

Sponsored by Sable Systems

Saturday 4 January, 7:00 PM – 8:00 PM, Salons D-E
Diversity of Form and Function in the Colorful World of Birds

AMS Lecture: Dr. Sara Lindsay

Sunday 5 January, 7:00 PM – 8:00 PM, Rooms 301-302
The Art of Seeing: Using Microscopy to Power STEAM Learning in Biology

Bern Lecture: Dr. George Bentley

Sunday 5 January, 7:00 PM – 8:00 PM, Salons D-E
A Bird's Eye View of Reproductive Endocrinology

Moore Lecture: Emily Graslie

Tuesday 7 January, 3:45 PM – 4:45 PM, Salon 5
Prehistoric Road Trip: Crafting a Story 2 Billion Years in the Making

The Exhibits will open on Saturday 4 January at 9:30 AM. JW Marriott Austin, Grand Ballroom, will be the location for coffee breaks Saturday through Tuesday mornings from 9:30 AM – 10:30 AM, and 3:30 PM – 4:30 PM Saturday through Monday during the poster sessions.

Submit your research to **Evolution and Development!**

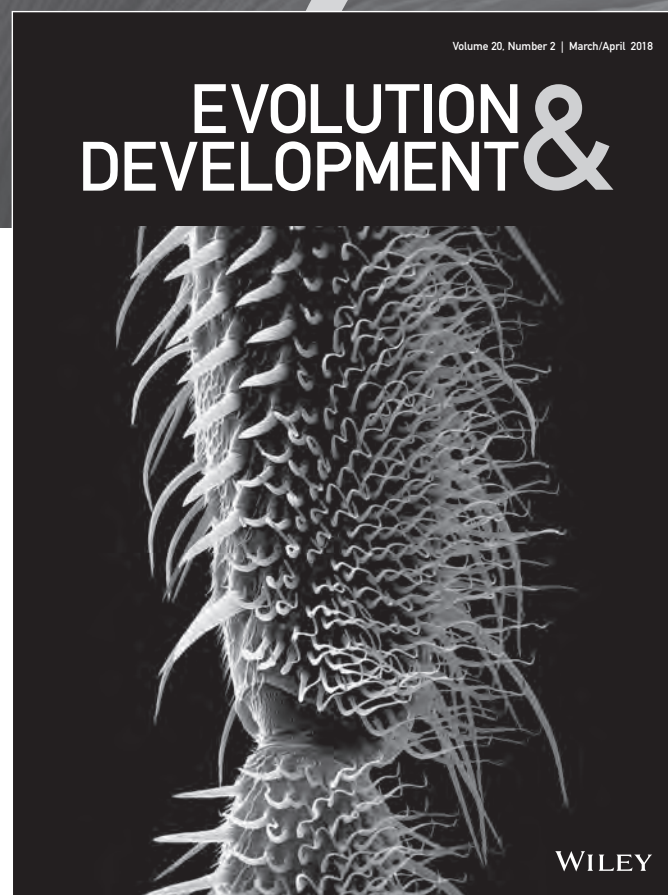
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Symposia

Saturday 4 January

- S1: New Frontiers in Antarctic Marine Biology
Organizers: James McClintock, Charles Amsler, Bill Baker, Art Woods, Amy Moran
Sponsors: DCPB, DEE, DIZ, AMS, TCS
- S2: Epigenetic Variation in Endocrine Systems
Organizers: Tyler Stevenson, Lynn Martin, Haley Hanson
Sponsors: DAB, DCE, DCPB, DEEB, DEDE, DNNSB
- S3: Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology
Organizers: Gareth Fraser, Darrin Hulsey
Sponsors: DCB, DEEB, DEE, DVM

Sunday 5 January

- S4: Reproduction: the Female Perspective from an Integrative and Comparative Framework
Organizers: Virginia Hayssen, Teri Orr
Sponsors: DAB, DCE, DCPB, DEEB, DEE, DEDE, DNNSB, DPCB, DVM, AMS
- S5: Form, structure and function: How plants vs. animals solve physical problems
Organizers: Ulrike Müller, Simon Poppinga, Anna Westermeier
Sponsors: DCB, DIZ, DVM, AMS
- S6: Bio-inspiration of silent flight of owls and other flying animals: recent advances and unanswered questions
Organizers: Christopher Clark, Justin Jaworski
Sponsors: DAB, DCB, DEE, DVM

Monday 6 January

- S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models
Organizers: Karen Burnett, Jonathon Stillman, Donald Mykles, David Durica
Sponsors: DCE, DCPB, DEEB, DEDE, DEE, DIZ, DPCB, AMS, TCS
- S8: Long Limbless Locomotors: The Mechanics and Biology of Elongate, Limbless Vertebrate Locomotion
Organizer: Henry Astley
Sponsors: DAB, DCB, DNNSB, DVM
- S9: Applied Functional Biology: Linking Ecological Morphology to Conservation and Management
Organizers: Lance McBrayer, Eric McElroy, Diego Sustaita
Sponsors: DAB, DCB, DEE, DNNSB, DVM

Tuesday 7 January

- S10: Melding Modeling and Morphology: integrating approaches to understand the evolution of form and function
Organizers: Lindsay Waldrop, Jonathan Rader
Sponsors: DCB, DEEB, DPCB, DVM, TCS
- S11: Integrative comparative cognition: can neurobiology and neurogenomics inform comparative analyses of cognitive phenotype?
Organizers: Yuxiang Liu, Sabrina Burmeister
Sponsors: DAB, DEDE, DEE, DNNSB, DPCB

Workshops and Programs

Friday 3 January

Workshop: Spatiotemporal Dynamics of Communication

9:00 AM – 2:00 PM, Rooms 301-302

This workshop will integrate approaches from neuroscience, cognitive ecology, biomechanics, spatial ecology, machine vision, evolution, and animal behavior to address the spatiotemporal dynamics of complex signaling. Our hope is that participants will leave the workshop better able to apply approaches and knowledge from the other disciplines to generate new experimental designs and analytic tools. We plan to intersperse short presentations, much discussion, and mingling to promote new collaborations.

Workshop In Honor of Stan Rachootin

1:00 PM – 6:00 PM, Rooms 303-304

This workshop honors Professor Stan Rachootin on the occasion of his retirement from Mount Holyoke College. Dr. Rachootin joined the faculty at Mount Holyoke in 1984, and over decades has taught classes on Darwin's works, Ecology and Evolution, Macroevolution, and Invertebrate Zoology, among many others. Dr. Rachootin has had long-term impact on evolutionary and developmental biology through his mentoring of many female scientists. The senior theses of Dr. Rachootin's students were strikingly diverse - the systems ranged from guppies to oligochaetes to mice, and the questions ranged from the evolution of behavior, to the origin of novel structural patterns on insect wings, to studies in the history of science. This workshop will feature talks by many of his students who are continuing to have impact on scientific research in their varied careers be they in academia, industry, or science communication.

Student Worker Orientation & First Timer Orientation*, “How to get the most out of your SICB meeting”

5:30 PM – 6:30 PM, Lonestar Ballroom

**Required for students with Charlotte Mangum support*

Saturday 4 January

Student Postdoctoral Affairs Committee: “How-To?” Daily Booth

9:15 AM – 5:00 PM, Grand Ballroom

Public Affairs Committee Workshop: Embracing Variation Among Humans: Perspectives on LGBTQ+ Experiences in Biology and Academia

12:00 PM – 1:30 PM, Rooms 303-304

This workshop is a collaboration between the Public Affairs Committee and the National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP). NOGLSTP is a national organization with decades of experience empowering “lesbian, gay, bisexual, transgender, and queer individuals in science, technology, engineering, and mathematics by providing education, advocacy, professional development, networking, and peer support.” During this workshop we will openly discuss the perspectives of the LGBTQ+ community within our society, the field of organismal biology, and academia more broadly. A NOGLSTP representative will first lead an eye-opening information session about challenges facing this community at all career levels. This will be followed by a question-and-answer period where audience members can ask SICB members from the LGBTQ+ community about their experiences. We aim to represent the diversity of SICB in sexual orientation, gender identity and expression, career stage, and scientific interests on this panel. The PAC welcomes participations from across our membership at this workshop. No registration is required.

Workshop: Mentorship and Sponsorship: How to Curate Your Support Team and Guide Your Successful Career
12:00 PM – 1:30 PM, Rooms 301-302

What do you expect out of your relationships with mentors? Do you know the difference between a sponsor and a mentor? This workshop will be a discussion to learn what to give and gain from your mentors and sponsors to support your own career goals. You will also learn how to map your mentor and sponsor relationships and build your support team -based around your career goals. This workshop is geared for late-stage graduate students, post-docs, and early career researchers.

DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert
3:30 PM – 5:30 PM, Grand Ballroom

Initiated at our 2019 meeting in Tampa, our DCPB experts are back at SICB 2020 to help your with phylogenetic methods. Bring your questions and datasets and they will be there during each poster session to help!

Broadening Participation Movie and Workshop: “Can We Talk? Difficult Conversations with Underrepresented People of Color: Sense of Belonging and Obstacles to STEM Fields” with Professor Kendall Moore

7:00 PM – 9:00 PM, Rooms 301-302

The Broadening Participation Committee will have a screening of “Can We Talk? Difficult Conversations with Underrepresented People of Color: Sense of Belonging and Obstacles to STEM Fields” by award-winning documentary film-maker Kendall Moore, followed by a discussion of the work with the filmmaker. Dr. Moore is a Professor of Journalism & Film/Media at the University of Rhode Island. Dr. Moore has produced numerous documentaries that have aired on PBS and in film festivals. She is the recipient of 2 Fulbright Scholar Awards and the Rhode Island Film Fellowship for Outstanding Filmmaking.

Sunday 5 January

Student Postdoctoral Affairs Committee: “How-To?” Daily Booth
9:15 AM – 5:00 PM, Grand Ballroom

Workshop: An Introduction to the World of Book Publishing from Editors and Authors
12:00 PM – 1:30 PM, Room 408

Join several authors and book publishers for this introduction to the world of book publishing. Panelists will include Alison Kalett of Princeton University Press, Ian Sherman of Oxford University Press, Cameron Ludwick of University of Texas Press, Prof. David Hu, author of *How to Walk on Water and Climb Up Walls*, and Prof. Mike Ryan, author of *A Taste for the Beautiful*. Publishers will explain the pitching, proposal, review, publication and promotion process. And David and Mike will explain book writing and publishing from an author's perspective. There will be plenty of time for audience questions and a light lunch will be available on a first come first serve basis.

Symposium 5 Workshop: How to Disseminate Your Research
12:00 PM – 1:30 PM, Room 404

The goal of this workshop is to support conference presenters in their ability to disseminate their research to a general public through the press and social media. Participants will be able to interact with experts in science communication and science outreach to develop press releases, social media posts, and other formats to communicate their research to the general public.

Workshops and Programs

Continued

Organizing Meeting for Building Bridges Symposium

12:00 PM – 1:30 PM, Room 407

Workshop: Panel on Research and Working at Primarily Undergraduate Institutions

12:00 PM – 1:30 PM, Room 402-403

The workshop will consist of a panel of faculty members, all of whom are currently at a Primarily Undergraduate Institution (PUI). We will discuss how research at PUIs is conducted, what opportunities are available, applying for those opportunities, and what the challenges are for faculty at PUIs. The moderator of the panel will be Adam Summers, a senior faculty member at the University of Washington and PUI alumnus (Swarthmore College). There will be a brief question and answer session for the panel members, before broadening the workshop to the entire group. We will have breakout stations where small groups of participants can interact individually with one of the panelists, to discuss different aspects of being at a PUI: teaching, research, service, and expectations. Breakout stations will rotate so that each group will have an opportunity to discuss each facet of a PUI.

DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert

3:30 PM – 5:30 PM, Grand Ballroom

Initiated at our 2019 meeting in Tampa, our DCPB experts are back at SICB 2020 to help you with phylogenetic methods. Bring your questions and datasets and they will be there during each poster session to help!

TAL-X Workshop: Teaching Critical Thinking About Science and Technology: GMOs As a Case Study

7:00 PM – 9:00 PM, Rooms 303-304

The 2020 Teaching and Learning Workshop is titled: "Teaching critical thinking about science and technology: GMOs as a case study." It will be a two-hour round table format with drinks and desserts, from 7-9pm on Sunday, January 5th in room 401.

The workshop is being organized by Bram Lutton, Ph.D., Chair of the Educational Council, who has taught ethics in science and technology for the past ten years at Endicott college and the Mount Desert Island Biological Laboratory. Dr. Lutton's co-leader will be Steven Druker, J.D., Executive Director of the Alliance for Bio-Integrity; recipient of a Luxembourg Peace Prize for outstanding work to foster environmental health; a member of the food safety panels at conferences on GMOs held by the FDA and the National Research Council; and the author of *Altered Genes, Twisted Truth*, which Jane Goodall's foreword hails as "without doubt one of the most important books of the last 50 years."

The workshop will provide an excellent opportunity for SICB members interested in science education and/or bioethics to experience the application of critical thinking methods to one of the most important and controversial scientific/technological topics.

Monday 6 January

Student Postdoctoral Affairs Committee: “How-To?” Daily Booth

9:15 AM – 5:00 PM, Grand Ballroom

NSF Program Officers: Funding Opportunities, Integrative Research and Education, and Q&A

12:00 PM – 1:30 PM, Lone Star C

Round-table discussion: Overcoming Challenges for Testing Gene Function in Post-Embryonic Life Stages

12:00 PM – 1:30 PM, Rooms 211-212

Testing gene function is key for illuminating the genome to phenome connection. Post-embryonic processes (e.g., regeneration, larval patterning, growth, homeostasis, metamorphosis) are central to the biology of many animals, but manipulating gene function during these processes can be particularly challenging. This round-table discussion will focus on challenges and approaches for testing gene function specifically in post-embryonic life stages of animals. Light food will be served.

Student Support Committee Brown Bag Workshop for Graduate Students: Writing a competitive GIAR/FGST grant proposal

12:00 PM – 1:30 PM, Room 404

Specific information and tips on writing competitive GIAR & FGST grant proposals will be provided by the Chair of the Student Support Committee followed by an informal Q&A session. Previous award winners are also invited to provide their experiences and insights on the process of applying for these awards.

Workshop: Parenting Through Academia

12:00 PM – 1:30 PM, Rooms 402-403

A growing body of societal research across STEM disciplines has shown that academics experience different professional expectations, salaries, and resource availability as a result of their gender and parenting status. Leaky pipeline notwithstanding, female professionals with children are often thought to be less productive by employers and management (1), despite recent published findings showing higher productivity and greater efficiency from those with children (2); yet a historical bias that it is not possible to be both productive in science and have a family has caused many persons to choose against having children. Parenting can be challenging regardless of professional circumstances, but given the possibility to identify resources, enable opportunities, and create flexibility, academia may in fact be one of the best possible situations in which to be a career-oriented parent. The purpose of this workshop is to present a forum for conversation regarding a diverse range of parenting and professional experiences, with the goal of making useful strategies and lesser-known resources more widely available, in addition to building a community of persons for support and mentorship.

Podcast: Live Recording of Big Biology with Dr. Molly Cummings

3:30 PM – 4:30 PM, Room 407

DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert

3:30 PM – 5:30 PM, Grand Ballroom

Initiated at our 2019 meeting in Tampa, our DCPB experts are back at SICB 2020 to help your with phylogenetic methods. Bring your questions and datasets and they will be there during each poster session to help!

Workshops and Programs

Continued

Tuesday 7 January

Student Postdoctoral Affairs Committee Workshop: Transitions in Science Careers

12:00 PM – 1:30 PM, Lone Star E

How should you approach making the transition from undergrad to Masters/PhD; or PhD to postdoc; or postdoc/fellow to faculty; or other careers? SPDAC is hosting a roundtable lunch event to facilitate (with expert "hosts") discussion and advice for all those interested.

Workshop: Building Bridges from Genome to Phenome: Molecules, Methods and Models

12:00 PM – 1:30 PM, Room 401

Workshop attendees will be asked to evaluate newly developed approaches and models presented or discussed in the Building Bridges sessions in the context of the grand challenge of linking genome to phenome. They will work to identify the leading edges as well as the key barriers to this research with respect, for example, to melding different types of datasets and working across levels of biological organization to inform our understanding of how phenotype variation arises. This synthesis will form the basis for the symposium policy white paper, which will be published in Integrative and Comparative Biology as part of the symposium volume.

Workshop: 3D Visualization and Morphometrics with SlicerMorph

12:00 PM – 3:30 PM, Rooms 502-503

SlicerMorph is an NSF funded project to extend the functionality of the 3D-Slicer with tools that will help biologists working with 3D specimen data. Toolkit enables biologists to retrieve, visualize, measure and annotate high-resolution specimen data both from volumetric scans (CTs and MRs) as well as from 3D surface scanners effectively within 3D-Slicer. Functionalities SlicerMorph offers are: landmark-based statistical shape analysis, 3D visualization of shape deformation, ability to generate movies and more. Free and open-source nature of the project help remove the road blocks to data sharing and collaboration that commercial software impede on research. We will also cover how to do segmentation and visualization in 3D-Slicer as part of the workshop.

General Information

Final Program

SICB does not assume responsibility for any inconsistencies or errors in the abstracts for contributed paper and poster presentations. We regret any possible omissions, changes and/or additions not reflected in this final program..

Speaker Ready Room

All presenters must visit the Ready Room, **Room 405, 4th Floor**, at least one half day prior to his/her session time. It is highly recommended that you preview your presentation prior to your presentation to guarantee that it will work properly. Each presentation will be loaded onto a master file for each session. You may use your own computer, however, your fifteen minute time slot does not include time for set up and testing. There will be students and audio visual personnel to assist you and to check you in during the following hours:

Friday 3 January	12:00 PM – 7:00 PM
Saturday 4 January	7:00 AM – 5:00 PM
Sunday 5 January	7:00 AM – 5:00 PM
Monday 6 January	7:00 AM – 5:00 PM
Tuesday 7 January	7:00 AM – 10:00 AM

Registration

The SICB Registration/Information area is located in the foyer of the Grand Ballroom. The Registration Desk will be open during the following hours:

Friday 3 January	3:00 PM – 7:30 PM
Saturday 4 January	7:00 AM – 5:00 PM
Sunday 5 January	7:30 AM – 3:30 PM
Monday 6 January	7:30 AM – 3:00 PM
Tuesday 7 January	7:30 AM – 2:30 PM

Pop Up Meeting?

Do you need a room for an unscheduled meeting, come to the registration desk and book your time.

Quiet Room

Feeling anxious and need a moment to decompress? A Quiet Room (Room 297) with low lighting is available for attendees to rest quietly and recharge before diving back into the fray.

Committee/Business Meetings

Please refer to the Schedule of Events on the first page of each day's listing for committee meetings and business meetings of your division or co-sponsoring society.

Employment Opportunities

The Employment Opportunity bulletin board will be located in the SICB Registration/Information area. The Employment Opportunity board will provide a place for attendees to post "Positions Wanted," and learn about "Positions Available." Interested attendees may schedule interviews in the room set aside for that purpose. See a registration desk attendant for assistance.

Coffee Breaks

Coffee break service is available each day of the meeting. There will be a morning service from 9:30 AM — 10:30 AM and an afternoon service from 3:30 PM — 4:30 PM. The coffee breaks will be located in the Grand Ballroom.

Keyword Index

Refer to the keyword index located at the end of this program for easy access when looking up a specific subject matter. Each author who is presenting an abstract has supplied up to three keywords for your reference.

SICB Childcare Room

This year, SICB is providing FREE onsite childcare through Preferred Sitters Childcare in Rooms 310-311. Pre-registration was required, but there may be space for drop-ins.

Mother's Room

SICB recognizes that balancing a family and meeting attendance creates unique challenges for parents. There is a Mother's room on the third floor in Room 305, located next-door to the childcare room and within quick access of talks. The Mother's room is a private room equipped with comfortable chairs for nursing, chairs and tables for pumping, outlets, a refrigerator for milk.

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Search: SICB 2020



2020 SICB Exhibitor Floorplan

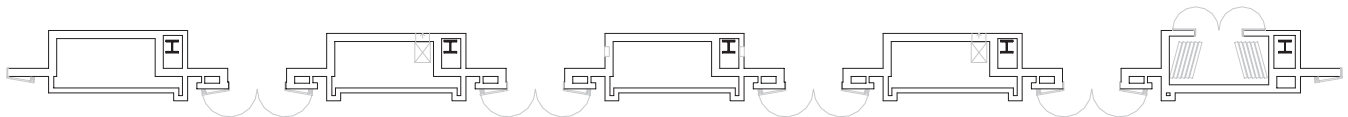
Grand Ballroom • JW Marriott Austin

106	107	206	207	306	307	406	LOUNGE	507
104	105	204	205	304	305	404		505

Food & Beverage

Food & Beverage

University Tables	103	202	203	302	303	402	403	502	503
	101	200	201	300	301	400	401	500	501



ENTRANCE

Exhibit Hours

Saturday 4 January
9:30 AM – 5:30 PM

Sunday 5 January
9:30 AM – 5:30 PM

Monday 6 January
9:30 AM – 5:30 PM

Coffee Breaks

Morning
9:30 AM – 10:30 AM

Evening
3:30 PM – 4:30 PM

Specialty Booths

SICB Journals, Booth 104

Find out more information about SICB's journals, *Integrative and Comparative Biology*, and our new journal, *Integrative Organismal Biology*

DPCB Ask-An-Expert, Booth 505

Get phylogenetic and comparative methods support with an expert

Student Postdoctoral Affairs Committee: "How-To?" Daily Booth

2020 SICB Exhibitors

AEI Technologies

Booth: 404

410 Technology Drive
Bastrop, TX 78602
800-860-5930
www.aeitechnologies.com

AEI Technologies manufactures single and multi-channel metabolic measurement systems providing everything you need to accurately measure energy metabolism by indirect calorimetry. Perfect for insects, amphibians, reptiles, birds, mammals, and humans. Proprietary software enables real-time data acquisition, which can be displayed tabular, graphical or exported to an excel spreadsheet.

American Microscopical Society

Booth: 402

141 E. College Ave.
Decatur, GA 30030
312-369-7395
www.amicros.org

The American Microscopical Society is an international society of biologists organized to encourage the use of microscopy. AMS publishes the journal *Invertebrate Biology* and co-sponsors the SICB Annual Meeting. The AMS booth features the annual Buchsbaum Photomicrography Contest and information on opportunities for student research fellowships.

Arbor Assays

Booth: 107

1514 Eisenhower Place
Ann Arbor, MI 48108
734-677-1776
www.arborassays.com

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Arbor Assays produces state of the art detection and immunoassay kits to quantitate markers for oxidative stress, reproduction, HPA stress, inflammation, cell signaling, metabolism, kidney function, and normalization. We develop, manufacture and QC all products in house, in Ann Arbor, allowing us to provide optimal customer service and technical support.

Biological Bulletin, The

Booth: 200

Marine Biological Laboratory, 7 MBL Street
Woods Hole, MA 02543
508-289-7149
www.journals.uchicago.edu/bbl

The Biological Bulletin is a peer-reviewed, international interdisciplinary journal that publishes outstanding experimental research on a wide range of organisms and biological topics, with a focus on marine systems. Published since 1897, it is one of America's oldest and most respected journals.

The Company of Biologists

Booth: 507

Bidder Building, Station Road
Histon, Cambridge CB24 9LF UK
44 (0)1223 632877
www.biologists.com

The Company of Biologists is a not for profit publishing organisation dedicated to supporting and inspiring the biological community through scientific journals, meetings and grants. The Company publishes five specialist peer-reviewed journals: *Development*, *Journal of Cell Science*, *Journal of Experimental Biology*, *Disease Models & Mechanisms* and *Biology Open*.

The Crustacean Society

Booth: 206

950 Herndon Parkway, Suite 450
Herndon, VA 20170
703-790-1745
www.crustaceansociety.org

The mission of the Crustacean Society is to advance the study of all aspects of the biology of the Crustacea by promoting the exchange and dissemination of information throughout the world.

Expert Digital Imaging

Booth: 302

193 Jefferson Ave, Suite 102
Salem, MA 01970
339-440-4423
www.expertdigitalimaging.com

Expert Digital Imaging is an independent distributor of high-speed and high-resolution camera equipment from various manufacturers, including the full NAC and Mega Speed camera lines. At EDI, we offer hand-held, affordable high-speed cameras, traditional high-speed cameras as well as long-recording high speed systems with associated image tracking software.

Fastec Imaging

Booth: 301

17150 Via Del Campo, Suite 301
San Diego, CA 92127
858-592-2342
www.fastecimaging.com

Fastec designs and manufactures high-speed cameras including the 5-MP portable TS5 and computer-operated IL5, popular for field and lab applications. The new HS Series, with approximately 4x the record speed and 20x the image transfer rate, will be released in January 2020.

IO Industries Inc.

Booth: 303

15940 Robin's Hill Road
London, ON N5V 0A4 Canada
519-663-9570
www.ioindustries.com

IO Industries Inc., London, ON, Canada (est. 1991), designs and manufactures digital video cameras, digital video recorders and software for applications in aerospace, defense testing, medical, scientific, machine vision, broadcast and cinema.

LaVision Inc.

Booth: 201

211 W. Michigan Ave., Suite 100
Ypsilanti, MI 48197
734-485-0913
www.lavision.com

LaVision provides integrated imaging systems to scientific, industrial and educational markets. LaVision has extensive experience in optical techniques such as 2-D, stereo, and tomographic particle image velocimetry, gaseous and liquid laser induced fluorescence, shadowgraphy for multi-phase flows, digital image correlation for deformation/strain, high-speed and ultra-high-speed imaging, and intensified camera systems.

Lehigh University

Booth: 105

Department of Biological Science

111 Research Drive
Bethlehem, PA 18015
610-758-6235
www.lehigh.edu/~inbios

Lehigh's Department of Biological Sciences provides a collaborative, interdisciplinary environment for pursuing a PH.D in Biology, less and 1.5 hours from New York and Philadelphia. Chose from over 20 faculty research labs, and four concentrations: Evolution and Behavior, Neuroscience, Cell and Molecular Biology, and Biochemistry. Visit https://www.lehigh.edu/~inbios/Grad/Grad_General.html for more information.

Loligo® Systems

Booth: 403

Toldboden 3, 2nd floor
Viborg, 8800 Denmark
45 6166 6929
www.loligosystems.com

Loligo® Systems develops research equipment for aquatic biology. Our products allow scientists all over the world to excel in the fields of swimming performance, respirometry, blood physiology and behavior analysis in a diversity of marine and freshwater organisms. We offer customized solutions as well as free scientific advice and support.

Micro Photonics

Booth: 400

1550 Pond Rd., Suite 110
Allentown, PA 18104
610-366-7103
www.microphotonics.com

Micro Photonics and partner Bruker MicroCT are leading the advancement in high resolution micro-CT solutions for comparative biology research. SkyScan Micro-CTs meet the 3D high-resolution and versatility required for any demanding research laboratory. Micro Photonics offers contract services and system sales for Bruker Micro-CTs.

National Science Foundation

Booth: 501

2415 Eisenhower Avenue
Alexandria, VA 22314
703-292-8420
www.nsf.gov

The National Science Foundation, an independent federal agency created by Congress in 1950, supports non-medical basic research in all science and engineering fields with an annual budget of about \$7 billion. NSF funds approximately 20% of all federally supported basic research conducted by US colleges and universities.

Oxford University Press

Booth: 304

198 Madison Avenue
New York, NY 10016
800-445-9714
global.oup.com

Oxford University Press is proud to publish one of the most highly respected and cited journals in the field of biology, Integrative and Comparative Biology, and the 2019 new launch journal Integrative Organismal Biology, in partnership with The Society for Integrative and Comparative Biology.

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide. As a press, we take pride in this mission, which allows us to enable, support, and facilitate research and scholarship.

Princeton University Press Booth: 203

41 William Street
Princeton, 08540
609-258-4900
press.princeton.edu

Princeton University Press publishes distinguished titles in the biological sciences. New titles include *How to Walk on Water and Climb up Walls* by David Hu, *Computing Skills for Biologists* by Stefano Allesina and Madlen Wilmes, *The Lives of Bees* by Thomas Seeley, and *Ecological Mechanics* by Mark Denny. Purchase at our booth or order online at press.princeton.edu and enter coupon code BIO20 to receive 30% off. Offer expires February 15, 2020.

Qubit Systems Inc. Booth: 300

1573 John Counter Boulevard
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613-384-1977
www.qubitsystems.com

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Royal Society Publishing Booth: 204

6-9 Carlton House Terrace
London, SW1Y 5AG UK
44 207 451 2647
www.royalsociety.org/journals

Royal Society Publishing has several journals of interest to the SICB community, including *Journal of the Royal Society Interface*, *Proceedings B* and *Biology Letters*. We offer high quality peer review, rapid publication and open access options. Visit booth 204 to find out more about what we've been publishing in the field of integrative and comparative biology. Further information at <http://royalsociety.org/journals>

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North Las Vegas, NV 89032
702-269-4445
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Booth: 205

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Booth: 202

UW Friday Harbor Laboratories

620 University Rd
Friday Harbor, WA 98250
360-378-2165
fhl.uw.edu

The UW Friday Harbor Laboratories offers the ideal setting to study the marine world. Faculty and researchers from the University of Washington and around the world come to FHL to study oceanography, chemistry, biology, ecology and other marine disciplines. Students find opportunities to immerse themselves in research and coursework, connecting classroom learning to the rich ecosystems thriving throughout the San Juan Archipelago.

Booth: 401

Silver Sponsor

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617-225-0080
www.xcitex.com

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Booth: 305

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Zoological Lighting Institute

85 Broad Street, 29th Floor
New York, NY 10004
212-317-2927
www.zoolighting.org

The Zoological Lighting Institute is a 501 (c)(3) dedicated to 'supporting the sciences of light and life through the arts for animal welfare and wildlife conservation'. ZLI provides grants to researchers and promotes the value of photobiological research to the public through a variety of mission related programming and campaigns.

Booth: 406

University Tables

Clemson University Biological Sciences Department

132 Long Hall
Clemson, SC 29634
864-656-2328
www.clemson.edu/science/departments/biosci

Clemson University's Biological Sciences Department provides opportunity for integrative M.S. and Ph.D. projects in organismal biology. From Molecules to Ecosystems, our research spans the tree of life, with expertise in behavioral ecology, biomechanics, evo-devo, evolutionary morphology, macroevolution, modeling, and physiology. We value diversity and offer strong TA support.

University of Michigan – Department of Ecology and Evolutionary Biology

1105 North University Avenue
Ann Arbor, MI 48109
734-764-1443
lsa.umich.edu/eeb

The University of Michigan Department of Ecology and Evolutionary Biology is recruiting at several career stages. We have a fully funded Frontiers Masters program, a NextProf workshop to equip students with the skills to land their dream job in academia, and several postdoctoral fellowships, many of which bridge into professorships.

New Mexico State University Department of Biology

Box 30001, MSC 3AF
Las Cruces, NM 88003-8001
575-646-3613
rise.nmsu.edu

The NMSU RISE (Research Initiative for Scientific Enhancement) to the Postdoctorate Program aspires to augment the interest, skills, and competitiveness of graduate students in pursuit of biomedical and biobehavioral research careers. NMSU RISE Scholars are prepared for the next step of their career through, mentored research experiences in four NMSU colleges, scientific workshops that develop cutting edge quantitative and technical skills, guided expansion of their professional network, career planning, and training for the professoriate, biomedical research seminars, formal courses, research internships at STARTUP partner institutions, tuition, health care, and budget for research supplies and travel to present at scientific conferences.

Texas A&M University Gulf Center for Sea Turtle Research

200 Seawolf Parkway
Department of Marine Biology
Galveston, TX 77553
409-740-4884
www.tamug.edu/GulfCenterforSeaTurtleResearch

The Gulf Center for Sea Turtle Research was created to address the research needs to conserve sea turtles throughout the Gulf of Mexico. The Center seeks to organize sea turtle biologists in the region, to speak with one voice to attract attention, and funding, for sea turtle research and conservation.

Friday Schedule of Events

Events take place in the JW Marriott Austin, unless otherwise noted

EVENT

Speaker Ready Room
Exhibitor Set-Up
Registration

TIME

12:00 PM – 7:00 PM
1:00 PM – 6:00 PM
3:00 PM – 7:30 PM

LOCATION

Room 405
Grand Ballroom
Grand Ballroom Foyer

SPECIAL LECTURE

Plenary Session: Dr. Sheila Patek: Impact & Discovery:
Extreme Movement in an Interdisciplinary and Political World

7:30 PM – 8:30 PM

Lone Star Ballroom

COMMITTEE AND BOARD MEETINGS

SICB Executive Committee Meeting
Student Worker Orientation & First Timer Orientation*
“How to get the most out of your SICB meeting”
**Required for students with Charlotte Mangum support*
Student Support Committee

2:30 PM – 5:30 PM
5:30 PM – 6:30 PM

Brazos
Lonestar Ballroom

5:30 PM – 7:00 PM

Room 301

WORKSHOPS AND PROGRAMS

Workshop: Spatiotemporal Dynamics of Communication
Workshop In Honor of Stan Rachootin

9:00 AM – 2:00 PM
1:00 PM – 6:00 PM

Rooms 301-302
Rooms 303-304

SOCIAL EVENT

Outgroup-In Sober Social and Meeting
Broadening Participation Meet & Greet
SICB Welcome Reception

5:30 PM – 6:30 PM
6:30 PM – 7:30 PM
8:30 PM – 10:00 PM

Rooms 201-202
Room 401
Griffin Hall

Saturday Schedule of Events

Events take place in the JW Marriott Austin, unless otherwise noted

EVENT

Registration	7:00 AM – 5:00 PM	Grand Ballroom Foyer
Speaker Ready Room	7:00 AM – 5:00 PM	Room 405
Poster Session 1 Set Up	7:00 AM – 8:00 AM	Grand Ballroom
Coffee Break AM	9:30 AM – 10:30 AM	Grand Ballroom
Exhibit Hall	9:30 AM – 5:30 PM	Grand Ballroom
Coffee Break PM	3:30 PM – 4:30 PM	Grand Ballroom
Poster Session 1 Even Numbers Authors Present	3:30 PM – 4:30 PM	Grand Ballroom
Poster Session 1 Odd Numbers Authors Present	4:30 PM – 5:30 PM	Grand Ballroom
Poster Session 1 Teardown	5:30 PM – 6:00 PM	Grand Ballroom

SPECIAL LECTURE

Bartholomew Lecture: Dr. Mary Caswell Stoddard Diversity of Form and Function in the Colorful World of Birds	7:00 PM – 8:00 PM	Salons D-E
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SYMPOSIUM ORAL PRESENTATIONS

S1: New Frontiers in Antarctic Marine Biology Chairs: James McClintock, Charles Amsler, Bill Baker, Art Woods, Amy Moran	7:45 AM – 3:30 PM	Rooms 203-204
S2: Epigenetic Variation in Endocrine Systems Chairs: Tyler Stevenson, Lynn Martin, Haley Hanson	7:45 AM – 3:30 PM	Brazos
S3: Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology Chairs: Gareth Fraser, Darrin Hulsey	8:00 AM – 3:30 PM	Lone Star D

CONTRIBUTED PAPER ORAL PRESENTATIONS

MORNING

Session 1: Neuroanatomy & Neurobiology	8:00 AM – 9:30 AM	Lone Star A
Session 2: DEE Best Student Paper: Huey Award	8:00 AM – 10:00 AM	Lone Star B
Session 3: It's Not the Fall That Kills You, It's the LANDING	8:00 AM – 9:45 AM	Lone Star C
Session 4: Living in Syrup: Dealing with Viscosity	8:00 AM – 9:30 AM	Lone Star E
Session 5: Energy: Checks and Balances	8:00 AM – 9:45 AM	Lone Star H
Session 6: Sensory Neurobiology and Control	8:00 AM – 9:30 AM	Rooms 301-302
Session 7: Temperature Effects from Development to Life History	8:00 AM – 10:00 AM	Rooms 303-304
Session 8: Microbiome: Living with Multitudes	8:00 AM – 10:00 AM	Room 205
Session 9: Movement in Space	8:00 AM – 9:45 AM	Rooms 201-202
Session 10: DPCB Best Student Paper: Wake Award	8:00 AM – 10:00 AM	Rooms 402-403
Session 11: Predator Prey	10:15 AM – 12:00 PM	Lone Star A
Session 12: Species and Speciation	10:30 AM – 12:00 PM	Lone Star B
Session 13: Evolutionary Ecology and Life History	10:15 AM – 12:00 PM	Lone Star C
Session 14: DCB Best Student Paper: Mimi A.R. Koehl and Steven Wainwright Award	10:00 AM – 12:00 PM	Lone Star E
Session 15: Rising Star in Organismal Botany Award	10:00 AM – 12:00 PM	Lone Star F
Session 16: Undergraduate Education Success Stories	10:00 AM – 12:00 PM	Lone Star G
Session 17: Sensing, Signaling and Transduction	10:15 AM – 12:00 PM	Lone Star H
Session 18: Social Neuroethology	10:00 AM – 12:00 PM	Rooms 301-302
Session 19: Connubiality, Conjugalility, or Civil Union? Symbiotic Relationships, Part I	10:00 AM – 11:00 AM	Rooms 303-304
Session 20: Population Variation in Life-history Traits	10:30 AM – 12:00 PM	Room 205
Session 21: Foraging: Memory and Mechanisms	10:00 AM – 12:00 PM	Rooms 201-202
Session 22: Evolution of Behaviour	10:30 AM – 12:00 PM	Rooms 402-403

AFTERNOON

Session 23: Evolutionary Ecology	1:45 PM – 3:00 PM	Lonestar A
Session 24: DEDE Best Student Paper Competition	1:30 PM – 3:30 PM	Lone Star B
Session 25: On the Wing	1:30 PM – 3:15 PM	Lone Star C
Session 26: Biological Rhythms	1:30 PM – 3:15 PM	Lone Star E
Session 27: DEDB Best Student Paper	1:30 PM – 3:30 PM	Lone Star F
Session 28: Make the Flow Go	1:30 PM – 3:15 PM	Lone Star G
Session 29: Biological Mousetraps: Springs and Latches	1:30 PM – 3:30 PM	Lone Star H
Session 30: Flying and Swimming Behaviour	1:30 PM – 3:15 PM	Rooms 301-302
Session 31: Connubiality, Conjugalit, or Civil Union? Symbiotic Relationships, Part II	1:30 PM – 3:00 PM	Rooms 303-304
Session 32: (Eco)Energetics	1:30 PM – 3:30 PM	Room 205
Session 33: Plasticity	1:30 PM – 3:15 PM	Rooms 201-202
Session 34: Comparative Genomics and Phylogenetics of the Spineless	1:30 PM – 3:30 PM	Rooms 402-403

COMMITTEE AND BOARD MEETINGS

ICB Editorial Board	7:00 AM – 8:30 AM	Room 408
Division Chairs, President/President Elect	12:00 PM – 1:30 PM	Room 406
TCS Board Meeting	5:30 PM – 10:00 PM	Room 406
AMS Executive Committee Meeting	8:00 PM – 10:30 PM	Room 404

BUSINESS MEETINGS

DAB Meeting	5:45 PM – 6:30 PM	Lone Star E
DNNSB Meeting	5:45 PM – 6:30 PM	Lone Star F
DCPB Meeting	5:45 PM – 6:30 PM	Lone Star G
DVM Meeting	5:45 PM – 6:30 PM	Rooms 303-304
DEE Meeting	5:45 PM – 6:30 PM	Room 205
DEDE Meeting	5:45 PM – 6:30 PM	Rooms 201-202
DEDB Meeting	5:45 PM – 6:30 PM	Lone Star H

WORKSHOPS AND PROGRAMS

Student Postdoctoral Affairs Committee: “How-To?” Daily Booth	9:15 AM – 5:00 PM	Grand Ballroom
Public Affairs Committee Workshop: Embracing Variation Among Humans: Perspectives on LGBTQ+ Experiences in Biology and Academia	12:00 PM – 1:30 PM	Rooms 303-304
Workshop: Mentorship and Sponsorship: How to Curate Your Support Team and Guide Your Successful Career	12:00 PM – 1:30 PM	Rooms 301-302
DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert	3:30 PM – 5:30 PM	Grand Ballroom
Broadening Participation Movie and Workshop: “Can We Talk? Difficult Conversations with Underrepresented People of Color: Sense of Belonging and Obstacles to STEM Fields” with Professor Kendall Moore	7:00 PM – 9:00 PM	Rooms 301-302

SOCIAL EVENTS

Morning Run	6:00 AM	JW Marriott Lobby
DCPB Social and BART Reception	8:00 PM – 10:00 PM	Griffin Hall

Saturday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM Symposium S1 Rooms 203-204

New Frontiers in Antarctic Marine Biology

Chairs: James McClintock, Charles Amsler

7:45 am	S1-1	McClintock JB, Amsler CD, Baker B, Moran AL, Woods HA; University of Alabama at Birmingham, University of South Florida, University of Hawaii at Manoa, University of Montana	Introduction to the Symposium: New Frontiers in Antarctic Marine Biology
8:00 am	S1-2	Heiser S, Shilling AJ, Amsler CD, McClintock JB, Baker BJ; University of Alabama at Birmingham, University of South Florida	Allies, Cheaters and Thieves: Macroalgal-Mesograzer Interactions on the Western Antarctic Peninsula
8:30 am	S1-3	Polito MJ, Michelson CI, McMahon KW; Louisiana State University, University of Rhode Island	Advances in the use of biogeochemical markers to track the diets and movement of Antarctic marine predators
9:00 am	S1-4	Ziegler AF, Hahn-Woernle L, Powell B, Lundesgaard Ø, Cape M, Smith CR; University of Hawaii at Manoa, Norwegian Polar Institute, University of Washington	From Glaciers to Benthos: Fjord Ecosystem Processes in a Changing Climate
9:30 am	Coffee Break		Grand Ballroom
10:00 am	S1-5	Steinberg DK, Conroy JA, Thibodeau PS; Virginia Institute of Marine Science, College of William & Mary	New Insights Into Patterns of Zooplankton Abundance Along the Rapidly Changing Western Antarctic Peninsula
10:30 am	S1-6	Mahon AR, Halanych KM; Central Michigan University, Auburn University	Revisiting phylogeographic patterns in Antarctica in the age of “-omics.”
11:00 am	S1-7	Countway PD, Matrai PA; Bigelow Laboratory for Ocean Sciences	Antarctic Microbial Interactions Revealed by Continuous Flow Incubation and Variable Rates of DMSP Supply
11:30 am	S1-8	Gast RJ, Sanders RW; Woods Hole Oceanographic Institution, Temple University	You are what you eat: mixotrophic protists in Antarctic marine plankton communities
12:00 pm	Lunch Break		
1:30 pm	S1-9	Young JN, Dawson HM, Rundell SM; University of Washington	Responses of Antarctic Microalgae to Seasonal Shifts in Temperature and Salinity
2:00 pm	S1-10	Hindle AG; University of Nevada Las Vegas	Diving deep: Mechanistic insights into the extreme physiology of Antarctic seals
2:30 pm	S1-11	Todgham AE; University of California Davis	Two Plus Two Doesn't Equal Four: The Importance of Incorporating Realistic Environmental Variability in Understanding the Resilience of Antarctic Fishes to Climate Change
3:00 pm	S1-12	Woods HA, Moran AL; University of Montana, University of Hawaii'i at Mānoa	Reconsidering the oxygen-temperature hypothesis of polar gigantism: successes, failures, and nuance
3:30 pm	Coffee Break		Grand Ballroom

7:45 AM – 3:30 PM Symposium S2 Brazos

Epigenetic Variation in Endocrine Systems

Chairs: Haley Hanson, Tyler Stevenson

7:45 am	S2-1	Hanson H, Martin LB, Stevenson TJ*; University of South Florida, University of Glasgow	Introduction to Epigenetic Variation in Endocrine Systems
8:00 am	S2-2	Hanson HE, Wang C, Schrey AW, Jiang RHY, Martin LB; University of South Florida, Georgia Southern Armstrong Campus	Epigenetic Potential and DNA Methylation Across an Ongoing Avian Range Expansion
8:30 am	S2-3	Lancaster LT, McCaw B, Areshi S, Leonard A, Moore B, Stevenson TJ; University of Aberdeen, University of Glasgow	Epigenetic effects on thermal tolerance and resource use shifts in insects, with implications for range shift potential and life history syndromes

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9:00 am	S2-4	<i>Eyck HJF, Sarma RR, Crino OL, Waters PD, Crossland M, Shine R, Rollins LA*; UNSW, Deakin University, Macquarie University</i>	Corticosterone response to experimental manipulation of methylation in invasive amphibian larvae
9:30 am	Coffee Break		
10:00 am	S2-5	<i>Rubenstein DR; Columbia University</i>	Epigenetic Programming and the Evolution of Adaptive Coping
10:30 am	S2-6	<i>Silvestre F, Carion A, Chapelle V, Voisin AS, Fellous A, Suarez-Ulloa V, Markay A, Hetru J, Goujon V, Wauthier E, Chatterjee A, Earley RL; University of Namur, University of Otago, University of Alabama</i>	The Self-Fertilizing Mangrove <i>Rivulus</i> as a Model Species in Environmental Epigenetics
11:00 am	S2-7	<i>Phelps SM; University of Texas at Austin</i>	Genetic and epigenetic influences on alternative tactics in the mostly monogamous prairie vole
11:30 am	S2-8	<i>Lindner M, Viltaniemi H, Van Oers K, Visser M., Laine V, Verhagen I, Husby A*; Netherlands Institute of Ecology, University of Helsinki, Uppsala University</i>	Epigenetic regulation of seasonal timing of reproduction
12:00 pm	Lunch Break		
1:30 pm	S2-9	<i>Champagne FA; University of Texas at Austin</i>	Epigenetics and Reproductive Trade-offs in Response to Stress
2:00 pm	S2-10	<i>Van Oers K, Sepers B, Sies W, Gawehns-Bruning F, Laine VN, Verhoeven KJF; Netherlands Institute of Ecology (NIOO-KNAW)</i>	Epigenetic insights into the Heritability of Exploratory Behaviour in a Songbird
2:30 pm	S2-11	<i>Tolla E; University of Glasgow</i>	Rhythmic Neuroendocrine Expression of DNA Methyltransferase Enzymes in Seasonal Models
3:00 pm	S2-12	<i>Hunter RG; University of Massachusetts Boston</i>	Transposons, Stress and the Endocrinology of the Deep Genome
3:30 pm	Coffee Break		

8:00 AM – 3:30 PM	Symposium S3	Lone Star D
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Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology

Chairs: Gareth Fraser, Darrin Hulsey

8:00 am	S3-1	<i>Hulsey CD; University of Konstanz</i>	The evolutionary developmental genetics of vertebrate tooth size
8:30 am	S3-2	<i>Miller CT; University of California Berkeley</i>	Developmental Genetic Analysis of Tooth Number Variation in Sticklebacks
9:00 am	S3-3	<i>Cohen KE, Weller HI, Summers AP; University of Washington, Brown University</i>	What is homodonty?
9:30 am	Coffee Break		
10:00 am	S3-4	<i>Brink KS, Chuong CM, Wu P, Richman J; University of British Columbia, University of Southern California</i>	Effects of Premature Tooth Extraction on Tooth Replacement Rates in <i>Iguana iguana</i>
10:30 am	S3-5	<i>Crofts SB, Smith SM, Anderson PLS; UIUC, Field Museum of Natural History</i>	Crushing and puncturing: biomechanics of tooth shape
11:00 am	S3-6	<i>Karagic N, Meyer A, Hulsey CD; University of Konstanz</i>	Plasticity of Vertebrate Dentition
11:30 am	S3-7	<i>Tucker AS; King's College London</i>	Developmental basis of tooth regeneration
12:00 pm	Lunch Break		
1:30 pm	S3-8	<i>Johanson Z, Underwood C, Manzanares E, Fernandez V, Clark B, Smith M; Natural History Museum, University of London, Universitat de Valencia, King's College</i>	Evolution of the Dentition in Sharks

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2:00 pm	S3-9	<i>Bhullar BAS, Manafzadeh AR, Miyamae JA, Hoffman EA, Brainerd EL, Musinsky C, Crompton AW; Yale University, Brown University, American Museum of Natural History, Harvard University</i>	The origin of chewing in mammals required rolling of the jaw and involved broad continuity in molar form and function
2:30 pm	S3-10	<i>Sadier A, Dessales R, Santana S, Sears K; UCLA, University of Washington</i>	Finding new rules for the patterning and shape of mammalian dentition: insights from Noctilionoid bats
3:00 pm	S3-11	<i>Fraser GJ, Thiery A, Martin KJ, James K, Cooper RL, Howitt C, Johanson Z; University of Florida, King's College, University of Sheffield, Natural History Museum</i>	Dental EvoDevOmics: Novel and conserved gene expression in shark tooth development
3:30 pm	.....	Coffee Break	 Grand Ballroom

Saturday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:30 AM Session 1 Lone Star A

Neuroanatomy & Neurobiology

Chair: Ross DeAngelis

8:00 am	1-1	<i>McDonald MS, Cohen JH, Porter ML; University of Hawai'i at Mānoa, University of Delaware</i>	Evidence for Ultraviolet Vision in Larval Stomatopod Crustaceans
8:15 am	1-3	<i>Young BA; Kirksville College of Osteopathic Medicine</i>	CSF flow dynamics in <i>Alligator mississippiensis</i> : The role of the myodural bridge
8:30 am	1-4	<i>Tovar RU, Gignac PM; University of Texas at Austin, Oklahoma State University Center for Health Sciences</i>	The Comparative Anatomy ...of Degenerate Neural Structures Using Diffusible Iodine-based Contrast-enhanced Computed Tomography (diceCT)
8:45 am	1-5	<i>Deangelis RS, Rhodes JS; University of Texas, University of Illinois</i>	Nonapeptides Mediate Trade-Offs in Parental Care Strategy
9:00 am	1-6	<i>Vargas M, Martinez Acosta VG; Univ of the Incarnate Word, Marine Biological Laboratory</i>	Regeneration of Negative Phototactic Response in <i>Lumbriculus variegatus</i>
9:15 am	1-7	<i>Haney WA, Strother JA; University of Florida</i>	Time to Panic? Stressors modulate exploratory behavior in larval zebrafish
9:30 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 2 Lone Star B

DEE Best Student Paper: Huey Award

Chair: Cameron Ghalambor

8:00 am	2-1	<i>Klepac CN, Barshis DJ; Old Dominion University</i>	Decreased thermal tolerance in corals from high-frequency variable environments
8:15 am	2-2	<i>Powers SD, Thompson LM, Parry D, Grayson KL, Agosta SJ; Virginia Commonwealth University, Clemson University, State University of New York</i>	Climate-related variation in metabolic rate across the geographic range of an invasive ectotherm
8:30 am	2-3	<i>Naragon TH, Brückner A, Wijker RS, Sessions AL, Parker J; Caltech</i>	Cuticular hydrocarbons and the integration of myrmecophile rove beetles into ant colonies
8:45 am	2-4	<i>Chung AK, Cox RM, Logan ML, McMillan WO, Cox CL; University of California Los Angeles, University of Virginia, University of Nevada Reno, Smithsonian Tropical Research Institute, Georgia Southern University</i>	Sex-biased Gene Expression and Sexual Dimorphism in Anole Lizards
9:00 am	2-5	<i>Treidel LA, Clark RM, Williams CM; UC Berkeley, Sienna College</i>	Females pay the price: high costs of reproduction dictate sensitivity to diet quality in adult crickets

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9:15 am	2-6	Costello RA, Cook PA, Formica VA, Brodie III ED; <i>University of Virginia, Swarthmore College</i>	Habitat Structure Influences Sex-Specific Patterns of Multilevel Selection in Experimental Populations of Forked Fungus Beetles
9:30 am	2-7	Burford B, Wild L, Schwarz R, Kosma M, Chenoweth E, Sreenivasan A, Gilly W, Heintz R, Field J, Hoving HJ, Straley J, Denny M; <i>Stanford University, University of Alaska Fairbanks, GEOMAR, University of Alaska Southeast, Alaska Fisheries Science Center, Southwest Fisheries Science Center</i>	Poleward proliferation of an inshore squid
9:45 am	2-8	Barts N, Greenway R, Henpita C, Arndt S, Shaw J, Kelley J, Tobler M; <i>Kansas State University, Oklahoma State University, University of Cambridge, Washington State University</i>	Repeated mitochondrial evolution underlies adaptation to extreme environments
10:00 am	 Coffee Break		
Grand Ballroom			

8:00 AM – 9:45 AM **Session 3** **Lone Star C**

It's Not the Fall That Kills You, It's the LANDING

Chairs: Nicholas Smith, John Whitehead

8:00 am	3-1	<i>Brown CE, Deban SM, Dudley R, Sathe EA; University of South Florida, University of California, Berkeley</i>	Directed Aerial Descent in Arboreal Salamanders
8:15 am	3-2	<i>Duman A, Azizi E; University of California, Irvine</i>	Olympians of Controlled Deceleration: Cane Toads Stick the Landing Across Surface Stiffness
8:30 am	3-3	<i>Khandelwal PC, Hedrick TL; UNC Chapel Hill</i>	Gliding through clutter – obstacle-avoidance and path-planning in the flying lizard <i>Draco dussumieri</i>
8:45 am	3-4	<i>Smith NM, Dickerson AK; University of Central Florida</i>	Mosquitoes use multiple bounces to engage landing zones
9:00 am	3-5	<i>Kleinheerenbrink M, France LA, Taylor GK; University of Oxford</i>	Modelling the flight envelope for transition to an unpowered perching manoeuvre.
9:15 am	3-6	<i>Whitehead JG, Worrell TA, Socha JJ; Virginia Tech</i>	Influence of approach trajectory on water landings in mallards
9:30 am	3-7	<i>Tucker EL, Hsieh ST; Temple University</i>	Leg Length, Not Stiffness, Allows Bipedal Lizards To Navigate Drops
9:45 am	 Coffee Break		Grand Ballroom

8:00 AM – 9:30 AM **Session 4** **Lone Star E**

Living in Syrup: Dealing with Viscosity

Chairs: Julie Cass, Terry Dial

8:00 am	4-1	<i>Dial TR, Lauder GV; Harvard University</i>	Longer Development Provides First-Feeding Fish with the Jaw Kinematics to Escape Hydrodynamic Constraints
8:15 am	4-2	<i>Matthews DG, Dial TR, Lauder GV; Harvard University</i>	Suction feeding in zebrafish is improved by upregulated Wnt signaling
8:30 am	4-3	<i>Ozalp MK, Miller LA, Strickland C; UNC Chapel Hill, UT Knoxville</i>	Plankton Dispersion Through Vegetative Seabed Within Complex Flow Environments
8:45 am	4-4	<i>Cass JA, Williams CD, Knijnenburg TA, Theriot J; Allen Institute for Cell Science, University of Washington</i>	A Bayesian framework for the detection of diffusive heterogeneity
9:00 am	4-5	<i>Li DH, Katija K, Gilly WF; Stanford University, Monterey Bay Aquarium Research Institute</i>	Hydrodynamic constraints on jet propulsion in squid paralarvae at intermediate Reynolds numbers
9:15 am	4-6	<i>Kasoju VT, Santhanakrishnan A; Oklahoma State University</i>	Bristled wings in fling: aerodynamic importance of initial inter-wing spacing
9:30 am	 Coffee Break		
Grand Ballroom			

8:00 AM – 9:45 AM Session 5

Lone Star H

Energy: Checks and Balances

Chairs: Callum Ross, Jim Usherwood

8:00 am	5-1	<i>Othayoth R, Thoms G, Li C; Johns Hopkins University</i>	Animals and robots transition from more challenging to easier locomotor modes to traverse obstacles
8:15 am	5-2	<i>Lynch J, Gau JF, Sponberg S, Gravish N; University of California San Diego, Georgia Institute of Technology</i>	Resonance Properties of Insect-Inspired Series-Elastic Flapping Wings
8:30 am	5-3	<i>Jorge J, Patek SN; Duke University</i>	Taking a swing at measuring small-scale, high acceleration impacts: a novel two-pendulum approach
8:45 am	5-4	<i>Jung SJ, Kim S, Wu B, Dombroskie J; Cornell University</i>	Shattering raindrops on biological surfaces (insect wings, bird feathers)
9:00 am	5-5	<i>Xu NW, Dabiri JO; Stanford University, California Institute of Technology</i>	Metabolic costs of enhancing propulsion in live biohybrid robotic jellyfish
9:15 am	5-6	<i>Usherwood JR; Royal Veterinary College, University of London</i>	The possibility of zero-work gaits in sprawled and parasagittal quadrupeds: insights from linkages of the industrial revolution
9:30 am	5-7	<i>Ross CF, Laird MF, Granatosky MC; University of Chicago, University of Southern California, New York College of Osteopathic Medicine</i>	Energetic costs of locomotion and feeding in capuchin primates.
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:30 AM Session 6

Rooms 301-302

Sensory Neurobiology and Control

Chair: Noah Cowan

8:00 am	6-1	<i>Aiello BR, Sponberg S; Georgia Institute of Technology</i>	The visual perception of moving flowers during the flower tracking behavior in descending neurons in the hawkmoth, <i>Manduca sexta</i>
8:15 am	6-2	<i>Cellini BO, Mongeau JM; Pennsylvania State University</i>	Flexible visual control of gaze via head saccades in <i>Drosophila</i> flight
8:30 am	6-3	<i>Kéver L, Bass AH, Parmentier E, Chagnaud BP; Liège University, Cornell University, Ludwig-Maximilian University, University of Graz</i>	Conserved Neural Circuitry among Mochokid Catfish despite Morpho-Functional Diversity of Sonic and Electric Organs
8:45 am	6-4	<i>Yang Y, Pan Y, Uyanik I, Cowan NJ; Johns Hopkins University</i>	The Selection of Stimuli Affects Non-parametric System Identification for Refuge Tracking Behavior in <i>Eigenmannia virescens</i>
9:00 am	6-5	<i>Uyanik I, Sefati S, Cho K, Ankarali MM, Fortune ES, Cowan NJ*; Hacettepe University, Johns Hopkins University, Middle East Technical University, New Jersey Institute of Technology</i>	Variability in Locomotor Dynamics Reveals the Critical Role of Feedback in Task Control
9:15 am	6-6	<i>Lunsford ET, Liao JC; Whitney Laboratories for Marine Bioscience</i>	Lateral line activity is attenuated during the glide phase of intermittent swimming behavior
9:30 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 7

Rooms 303-304

Temperature Effects from Development to Life History

Chairs: Morgan Furze, Racine Rangel

8:00 am	7-1	<i>Thomas PA, Wheeler CR, Peele EE, Pabst DA, Yopak KE, Kinsey ST; UNC-Wilmington, University of Massachusetts Boston</i>	Effects of Elevated Temperature on Muscle Development in Juvenile Epaulette Sharks, <i>Hemiscyllium ocellatum</i>
8:15 am	7-2	<i>Bock SL, Lowers RH, Rainwater TR, Hale MD, Leri FM, Parrott BB; Univ of Georgia, Kennedy Space Center, Clemson Univ, Univ of Virginia</i>	Real-time responses to ecologically-relevant thermal fluctuations during temperature-dependent sex determination in the American alligator

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8:30 am	7-3	Weber CJ, Zhou Y, Lee JG, Looger L, Qian G, Ge C, Capel B; Duke University, Zhejiang Wanli University, HHMI Janelia Research Campus	Temperature-dependent sex determination is mediated by pSTAT3 repression of <i>Kdm6b</i>
8:45 am	7-4	Lidgard AD, French SS, Hudson SB; Utah State University	Stress Sensitivity to Temperature in Plateau Side-blotched Lizards (<i>Uta stansburiana uniformis</i>): Implications for Immune Function
9:00 am	7-5	Furze ME, Drake JE, Wiesenbauer J, Richter A, Pendall E; Harvard University, Yale University, State University of New York, University of Vienna, Western Sydney University	Tracing Sugars Throughout Whole-Trees Exposed to Climate Warming
9:15 am	7-6	Nash SB, Rahman SM; University of Texas Rio Grande Valley	Short-term heat stress attenuates gonadal functions and induces apoptosis and oxidative stress in the American oyster, <i>Crassostrea virginica</i> : molecular mechanisms and signaling pathways
9:30 am	7-7	Sykes BE, Balenger SL; University of Mississippi	Nest Microclimate Manipulation Affects Growth, Development, and Heat-shock Protein Production in the Eastern Bluebird (<i>Sialia sialis</i>)
9:45 am	7-8	Rangel RE, Sorte CJB; University of California Irvine	Staying local: small-scale environmental history influences the metabolic response of marine invertebrates to increased temperature
10:00 am	Coffee Break		Grand Ballroom

8:00 AM – 10:00 AM Session 8

Room 205

Microbiome: Living with Multitudes

Chairs: Gregory Demas, Sarah Gardner

8:00 am	8-1	Mruzek JL, Dimos B, MacKnight N, Kathryn C, Brandt M, Mydlarz LD; University of Texas at Arlington, University of the Virgin Islands	Linking Disease Resistance in Coral to its Ability to Maintain a Complex Microbiome
8:15 am	8-2	Scott-Elliston A, Warne R; Southern Illinois University	Modulation of the gut microbiome affects host developmental and stress response phenotypes
8:30 am	8-3	Guidry ME, Reigel AM, Kelly MW; Louisiana State University	Variation in the Microbiome of the Eastern Oyster: Environmental Influences and Effects on Oyster Health
8:45 am	8-4	Morrison E, Deckard T, Adaniya K, Demas G; Indiana University	Maternal gut dysbiosis via antibiotic administration affects the behavior of offspring Siberian hamsters (<i>Phodopus sungorus</i>)
9:00 am	8-5	Hernandez J, Belden LK, Moore IT; Virginia Tech	Sexual activity and the cloacal microbiome in female tree swallows
9:15 am	8-6	Bo TB, Trevelline BK, Cabezas Ruiz S, Morrissey C, Marchant TA, Eng ML, Latta SC, Kohl KD; Univ of Pittsburgh, Univ of Saskatchewan, National Avary	Glucocorticoid Stress Hormones Affect the Gut Microbiota of Captive Birds
9:30 am	8-7	Slevin MC, Fresin W, Cannataro G, Anderson RC; Florida Atlantic University	Smarts and Symbiosis: Elucidating the Relationship between the Microbiome and Cognitive Performance in Birds
9:45 am	8-8	Gardner SA, Arevalo L, Campbell P; University of California, Riverside, Oklahoma State University	Characterizing the placental microbiome in mouse (<i>Mus</i>) hybrids
10:00 am	Coffee Break		Grand Ballroom

8:00 AM – 9:45 AM Session 9

Rooms 201-202

Movement in Space

Chair: Marc Badger

8:00 am	9-1	Badger MA, Perkes AD, Pfrommer BG, Wang Y, Modh A, Danlilidis K, Schmidt MF; University of Pennsylvania	From moments to months: Multi-timescale tracking and analysis of songbird social interactions in a smart aviary
8:15 am	9-2	Kennedy JR, Mahadevan L, Nagpal R; Harvard University	Mapping spatiotemporal changes of North American beaver (<i>L. Castor canadensis</i>) damming complexes

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8:30 am	9-3	Schulz AK, Ayala J, Zhao W, Rong H, Hu DL; Georgia Institute of Technology, Chengdu Panda Base for Giant Panda Breeding	Panda Cub Climbing for Conservation
8:45 am	9-4	Crall JD, Easton-Calabria A, Cronin K, Thuma J, Dey B, Ford Versypt A, De Bivort BL; Harvard University, Tufts University, Princeton University, Oklahoma State University	The social scaling of stress-sensitivity: Understanding the impacts of pesticide exposure and temperature stress in bumblebee colonies
9:00 am	9-5	Peters JM, Petersen KH; Cornell University	Honeybee swarms use a flow-mediated pheromone signaling scheme to coordinate aggregation
9:15 am	9-6	Nave GK, Tallackson H, Peleg O; University of Colorado, Boulder	The Formation of Honey Bee Swarms
9:30 am	9-7	Wagner JM, Parker J; California Institute of Technology, Pasadena	Chemical Cues Underly an Interspecies Symbiosis by Triggering a Modular Social-Behavioral Program
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 10

Rooms 402-403

DPCB Best Student Paper: Wake Award

Chair: Todd Oakley

8:00 am	10-1	Baker CM, Boyer SL, Giribet G; Harvard University, Macalester College	Phylogenomics and Biogeography of the Gondwanan Vicariant Harvestman Family Pettalidae (Arachnida, Opiliones)
8:15 am	10-2	Corn KA, Martinez CM, Burress ED, Wainwright PC; Univ of California, Davis	High rates of evolution of cranial mobility are characteristic of suction feeding
8:30 am	10-3	Zapfe KL, Larouche O, Price SA; Clemson University	Macroevolutionary Relationships Between High Contrast Patterns and Body Shape in Teleost Fishes
8:45 am	10-4	King TK, Brown JM; Louisiana State University	Identifying Atypical Modes of Continuous Trait Evolution
9:00 am	10-5	Nix RM, Thueson K, Rabinowitz S, Havird JC; Baylor University, University of Texas at Austin	How do mitochondrial genes with high mutation rates remain functional?
9:15 am	10-6	Bardua C, Bon M, Fabre AC, Das K, Herrel A, Stanley EL, Blackburn DC, Goswami A; NHM, London, MfN, Berlin, MNHN, Paris, FMNH, Florida	Macroecology and Morphological Evolution of the Frog Skull
9:30 am	10-7	Friedman ST, Collyer ML, Price SA, Wainwright PC; University of California Davis, Chatham University, Clemson University	Divergent processes drive parallel evolution in marine and freshwater fishes
9:45 am	10-8	Nordén KK, Eliason CM, Stoddard MC; Princeton University, Field Museum of Natural History	Do diverse feather nanostructures increase the colorfulness of iridescent plumage?
10:00 am	.....	Coffee Break	 Grand Ballroom

10:15 AM – 12:00 PM Session 11

Lone Star A

Predator Prey

Chair: Dale Stevens

10:15 am	11-1	Goldberg DL, Bassingthwaite TA, Beilke S, Ward MP, Capparella AP; Illinois State University, Audubon Great Lakes, University of Illinois at Urbana-Champaign	Never Cry Owl: Rails do not Adjust Vocal Activity Rates in Response to Predation Risk
10:30 am	11-2	Stevens II DR, Graham MA, Badjis CB, Mason JN, Baker JA, Foster SA; Clark University	Differences in behavioral plasticity among populations of threespine stickleback experiencing a novel predation threat.
10:45 am	11-3	Michels NO, Hrabik TR, Mensinger AF; University of Minnesota Duluth	To Flee or Not to Flee: A Comparison of Predator Avoidance Behaviors Under Varied Light and Predatory Conditions
11:00 am	11-4	Gripshover ND, Jayne BC; University of Cincinnati	Feeding of Crayfish Snakes: A Model System for Testing the Roles of Predator Anatomy and Behavior on Foraging Ecology

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11:15 am	11-5	Whitford MD, Freymiller GA, Higham TE, Clark RW; San Diego State University, University of California, Riverside	The Effects of Temperature on the Predatory and Defensive Strikes of Rattlesnakes
11:30 am	11-6	Goeppner SR, Luttbeg B; Oklahoma State University	Growth, lifespan, and reproductive investment of <i>Physa</i> snails exposed to predators
11:45 am	11-7	Drown RM, Anderson CV; University of South Dakota	Does individual performance influence antipredator behavioral strategy choice in chameleons?
12:00 pm	Lunch Break		

10:30 AM – 12:00 PM Session 12 Lone Star B

Species and Speciation

Chair:

10:30 am	12-1	Lord NP, Weller HI, Sharkey CR; Louisiana State University, Brown University, University of Minnesota	The Color of Jewels: Evolution of Color Patterns Across a Speciose Lineage of Jewel Beetles
10:45 am	12-2	Kelly JB, Thacker RW; Stony Brook University	Ecological divergence in the sponge genus <i>Ircinia</i>
11:00 am	12-3	Myers CR; University of California Los Angeles	Towards a synthesis on insect host selection and speciation
11:15 am	12-4	Martin CM; University of California, Berkeley	How to investigate the origins of novelty: insights gained from ecology, genomics, function, and fitness landscapes
11:30 am	12-5	Gibson JD, Botnaru L, Cobb BA; Georgia Southern University	Mortality and Physiology of <i>Nasonia</i> Hybrids
11:45 am	12-6	Kuhn BF, Salesa MJ, Mauricio A, Argant A, Randolph-Quinney P, Kgasi L, Gommery D; University of Johannesburg, Museo Nacional de Ciencias Naturales-CSIC, Aix Marseille Univ, LAMPEA, University of Central Lancashire, Ditsong National Museum of Natural History, Sorbonne Université	Evidence for an African Cave Lion (<i>Panthera</i> sp): Multiple <i>Panthera</i> individuals from Bridge Cave, Bolt's Farm, South Africa
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM Session 13 Lone Star C

Evolutionary Ecology and Life History

Chair:

10:15 am	13-1	Somjee U, Anzaldo S, Marting PM, Painting CJ, Powell E, Hickey T; Smithsonian Tropical Research Institute, Arizona State University, University of Auckland, University of Waikato	Extreme size variation in an armed weevil sheds light on the relationship between body mass and metabolic rate
10:30 am	13-2	Powers MJ, Weaver RJ, Heine KB, Hill GE; Auburn University, University of Texas at Austin, Auburn University	First clutch size is a reliable proxy for reproductive success in a marine copepod
10:45 am	13-3	Sorlin MV, Marks JR, Johnson MA, Husak JF, Lailvaux SP; University of New Orleans, Trinity University, University of Saint Thomas	Effect of Exercise Training on Brain Allometry and Cognitive Abilities in <i>Anolis carolinensis</i>
11:00 am	13-4	Mugel SG, Naug D; Colorado State University	Metabolic Rate Variation Shapes Pace of Life Traits at Both the Individual and the Group Level
11:15 am	13-5	Mainwaring MC, Martin TE, Wolf BO, Tobalske BW; University of Montana, University of New Mexico	Nests reduce the energetic costs of brooding offspring for passerine birds in the tropics
11:30 am	13-6	Boggs CL; University of South Carolina, Rocky Mountain Biological Lab	Trans-generational Ecological Determinants of Egg Composition in the Butterfly <i>Speyeria mormonia</i>
11:45 am	13-7	Calede J; Ohio State University	Evidence for a Semi-Aquatic Ecology in a 30-Million-Year-Old Beaver and the Evolution of Locomotion in Castoridae
12:00 pm	Lunch Break		

DCB Best Student Paper: Mimi A.R. Koehl and Steven Wainwright Award

Chair: Stacey Combes

10:00 am	14-1	Manafzadeh AR, Kambic RE, Gatesy SM; Brown Univ, Johns Hopkins Univ	How informative is joint mobility? A 3-D analysis of potential versus realized joint poses in archosaurs
10:15 am	14-2	Crane RL, Denny MW; Stanford University	Resistance and Repair of Mechanical Fatigue in Mussel Shells
10:30 am	14-3	Kahane-Rapport SR, Savoca MS, Cade DE, Segre PS, Bierlich KC, Calambokidis J, Friedlaender AS, Johnston DW, Werth AJ, Goldbogen JA; Stanford University, Duke University, Cascadia Research Collective, University of California, Santa Cruz, Hampden-Sydney College	From Feast Mode to Least Mode: How Lunge Filter Feeding Biomechanics Constrain Rorqual Foraging Ecology Across Scale
10:45 am	14-4	Jacobs C, Day S, Holzman R; Tel Aviv University, Rochester Institute of Technology	A power amplification dyad in Syngnathidae
11:00 am	14-5	Sleboda DA, Wold ES, Roberts TJ; Brown University	The Hydrostatic Skeleton of Muscle
11:15 am	14-6	Harrison JS, Porter ML, Patek SN; Duke University, University of Hawai'i, Manoa	Scaling and development of elastic mechanisms: the tiny strikes of larval mantis shrimp
11:30 am	14-7	Stark AY; Villanova University	Gans Award Lecture: Tenacious Toes and Fastening Feet: Biological Adhesive Systems in Complex Environments
12:00 pm	Lunch Break		

Rising Star in Organismal Botany Award

Chair: Janet Steven

10:00 am	15-1	Morrison CR, Smiley J; University of Texas at Austin, University of California San Diego	Using a Portable Hydrogen Cyanide Gas Meter to Uncover a Dynamic Phytochemical Landscape
10:15 am	15-2	Blumstein MB, Richardson AR, Weston D, Zhang J, Wellington M, Hopkins R; Harvard University, Northern Arizona University, Oak Ridge National Laboratory	A new perspective on ecological prediction reveals limits to climate adaptation in a temperate tree species
10:30 am	15-3	Monroe JG, McKay JK; Max Planck Institute for Developmental Biology, Colorado State University	From satellites to sequences: investigating drought adaptive life history evolution in plants
10:45 am	15-4	Gorman CE, Bond L, Van Kleunen M, Dorken M, Stift M; University of Konstanz, Trent University, Taizhou University	Phenological and pollinator-mediated isolation among selfing and outcrossing <i>Arabidopsis lyrata</i> populations
11:00 am	15-5	Babin CH, Bell CD; University of New Orleans	A global molecular phylogeny of chromosomal evolution in wild onions (<i>Allium</i> , Amaryllidaceae)
11:15 am	15-6	Zumajo-Cardona C, Ambrose BA; New York Botanical Garden, Graduate Center-CUNY	Evolution of the integument and its implication in seed plant evolution.
11:30 am	15-7	Min Y, Ballerini ES, Kramer EM; Harvard University, Sacramento State University	Understanding Floral Meristem Termination by Exploring Genetic Architecture Underlying Stamen Whorl Numbers in <i>Aquilegia</i>
11:45 am	15-8	Katzer AM, Wessinger CA, Hileman LC; University of Kansas	Nectary size is a pollination syndrome trait in <i>Penstemon</i>
12:00 pm	Lunch Break		

10:00 AM – 12:00 PM Session 16

Lone Star G

Undergraduate Education Success Stories

Chairs: Christopher Martine, Jasmine Coyle

10:00 am	16-1	<i>English P, Silverthorn DU*</i> ; University of Texas at Austin	The Minimal Marking Technique: Grading Writing Assignments while Promoting Active Learning
10:15 am	16-2	<i>Yen J, Li W</i> ; Georgia Tech	Bio Inspired Design: translating biology to engineering and design
10:30 am	16-3	<i>Pask GM</i> ; Bucknell University	Working to Learn: Applying Labor-Based Assessment to Scientific Writing and Laboratory Courses
10:45 am	16-4	<i>Killion KD</i> ; Blinn College	Getting Undergrads to Write the Something
11:00 am	16-5	<i>Mineo PM, Hebert AK, Bennett KF, Guenther MF, Ksiazek-Mikenas K, Raimondi SL</i> ; Elmhurst College	Implementing Vision and Change into the first-year biology sequence for majors.
11:15 am	16-6	<i>Martine CT, Kell A</i> ; Bucknell University	Cross-pollination: Art & Sex through the Lens of Botany
11:30 am	16-7	<i>Sharpe SL</i> ; Kansas State University	Creating LGBTQIA+ Inclusive Biology Curricula and Classrooms
11:45 am	16-8	<i>Coyle JA, Lolavar AA, Meredith TL</i> ; Florida Atlantic University	Developing a multidisciplinary, undergraduate research training program for dual enrolled students
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM Session 17

Lone Star H

Sensing, Signaling and Transduction

Chair: James Newcomb

10:15 am	17-1	<i>Harris OK, Kingston ACN, Steichmann NR, Johnsen S, Speiser DI*</i> ; University of Cincinnati, University of South Carolina, Duke University	How and why are the blue eyes of scallops blue?
10:30 am	17-2	<i>Hall BE, Bigman JS, Bedore CN</i> ; Georgia Southern University, Simon Fraser University	Allometric relationships in the visual ecology of sharks
10:45 am	17-3	<i>Briscoe AD, Macias-Muñoz A, Rangel-Olguin AG</i> ; University of California, Irvine	Evolution of Phototransduction Genes in Lepidoptera
11:00 am	17-4	<i>Smedley GD, Serb JM</i> ; Iowa State University	Molluscan Transcriptomes Suggest a More Complex Visual Cycle Homologous to Vertebrates
11:15 am	17-5	<i>Kozma MT, Ngo-Vu H, Senatore A, Bobkov Y, Ache BW, Derby CD</i> ; Georgia State Univ, Univ of Toronto, Mississauga, Univ of Florida	Single Cell Transcriptomics Reveals Expression Patterns of Chemoreceptor Genes in Olfactory Receptor Neurons of the Caribbean Spiny Lobster, <i>Panulirus argus</i>
11:30 am	17-6	<i>Lebow CL, Burt DB, Taylor J</i> ; Stephen F Austin State University	Glare Reduction Properties of Dark Avian Facial Markings
11:45 am	17-7	<i>Newcomb JM, Gingras MA, Nelson SN, McGhee CB, Easter JH, Goodheart JA, Ramirez MD</i> ; New England College, University of California, Santa Barbara, University of Massachusetts, Amherst	Nudibranch opsins: identification, localization and potential roles in extraocular photoreception and circadian rhythms
12:00 pm	Lunch Break		

10:00 AM – 12:00 PM Session 18

Rooms 301-302

Social Neuroethology

Chair: Scott MacDougall-Shackleton

10:00 am	18-1	<i>Rogers LS, Van Wert JC, Mensinger AF</i> ; University of Minnesota Duluth, Marine Biological Laboratory	Multimodal sensory integration of the utricle in freely swimming toadfish, <i>Opsanus tau</i>
10:15 am	18-2	<i>Clements KN, Heagy FK, Blain E, Ward J, Issa FA</i> ; East Carolina University	Repeated Social Defeat Affects Dopaminergic Modulation of Spinal Motor Circuits
10:30 am	18-3	<i>Bentz AB, George EM, Wolf SE, Rusch DB, Buechlein A, Rosvall KA</i> ; Indiana University	Immediate and lasting neurogenomic responses to competition in a free-living songbird: an experimental manipulation of a dynamic social environment

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10:45 am	18-4	Butler JM, Herath E, Whitlow SM, Rimal A, Maruska KP; Louisiana State University	Honey, I Ate the Kids: Role of <i>Galanin</i> in Maternal Care, Infanticide, and Energetics in a Mouthbrooding Fish
11:00 am	18-5	Enns JL, Purdey L, Stojkovic L, Williams TD; Simon Fraser University	Is Coordination Key? Investigating the Timing of Provisioning Visits in a Biparental Songbird Species
11:15 am	18-6	Payette WI, Richter MM, Hodinka BL, Pullum KB, Ashley NT; Western Kentucky University, Simon Fraser University, University of Pennsylvania	Effect of sleep on loss on parental care in Arctic-breeding songbirds
11:30 am	18-7	Fischer EK, Pierson E, Petrillo R, Ellis G, Lagerstrom KM, O'Connell LA; Stanford University, Harvard University	Tadpole Fight Club: Neural Mechanisms of Juvenile Aggression in Poison Frogs
11:45 am	18-8	Diez A, MacDougall-Shackleton SA*; University of Western Ontario	Neurogenesis and the development of neural sex differences in vocal control regions of songbirds
12:00 pm	Lunch Break		

10:00 AM – 11:00 AM Session 19

Rooms 303-304

Connubiality, Conjugalit, or Civil Union? Symbiotic Relationships, Part I

Chair: Kenneth Halanych

10:00 am	19-1	Halanych KM, Li Y, Tassia MG, Waits DS, Bogantes VE, David KT; Auburn University	The Genome of Deep-Sea Seep-Dwelling <i>Lamellibrachia luymesii</i> (Siboglinidae) and Clues on Chemosynthetic Symbiosis
10:15 am	19-2	Haynes L, Beveridge J, Fish O, Giambrone SA, Reed L, Scott Chialvo C*; University of Alabama, Appalachian State University	Characterizing the Impact of a Complex Mix of Toxins on Survival in <i>Drosophila</i> Species
10:30 am	19-3	Ohdera AH, Sharp V, Watson K, Steinworth B, Diaz-Almeyda E, Poole AZ, Fitt W, Martindale MQ, Medina M; Pennsylvania State University, University of Florida, New College of Florida, Berry College, University of Georgia	Alterations in transcriptional and developmental regulation: Evolutionary implication of symbiosis in <i>Cassiopea xamachana</i>
10:45 am	19-4	Fontaine SS, Kohl KD; University of Pittsburgh	Temporal effects of temperature on tadpole gut microbial communities
11:00 am	Lunch Break		

10:30 AM – 12:00 PM Session 20

Room 205

Population Variation in Life-history Traits

Chairs: Mark Garcia, Talene Yeghissian

10:30 am	20-1	Fudickar AM, Brewer DE; Indiana University	Distance Matters: Experimental Test of the Influence of Avian Migration Distance on Readiness to Breed in Spring
10:45 am	20-2	Delclos RJ, Meisel RP; University of Houston	Genotype-by-temperature effects on thermal preference in the house fly <i>Musca domestica</i>
11:00 am	20-3	Garcia MJ, Teets NM; University of Kentucky	Genetic Variation and Molecular Regulation of Cold Hardiness in Spotted Wing <i>Drosophila</i>
11:15 am	20-4	Awde DN, Lecheta MC, Unfried LN, Jacobs NA, Powers B, Bora K, Waters JS, Axen HJ, Frietze SE, Lockwood BL, Cahan SH, Teets NM; University of Kentucky, University of Vermont, Providence College, Salve Regina University NM	Genetic mechanisms of basal thermal tolerance in <i>Drosophila melanogaster</i>
11:30 am	20-5	Wong S, Bigman JS, Dulvy NK; Simon Fraser University	Ontogenetic scaling of gill area and brain size between two populations of blacktip shark (<i>Carcharhinus limbatus</i>)
11:45 am	20-6	Yeghissian TG, Darnell MZ; University of Southern Mississippi	Impact of Thermal-Hydric Stress on Surface Activity and Waving Behavior of Fiddler Crabs
12:00 pm	Lunch Break		

Foraging: Memory and Mechanisms

Chair: Caroline Strang

10:00 am	21-1	Muth F, Francis JS, Leonard AS; University of Texas at Austin, University of Nevada	Bumblebee cognition and the influence of anthropogenic stressors
10:15 am	21-2	Strang CG, Brown EK, Sherry DF, Hampton RR; University of Western Ontario, Emory University	Memory systems in food-caching caching and non-caching birds
10:30 am	21-3	Cade DE, Carey N, Domenici P, Potvin J, Goldbogen JA; Stanford University, Scottish Association of Marine Science, IAS-CNR, Istituto per l'Ambiente Marino Costiero, Saint Louis University	Predator-informed looming stimulus experiments reveal how large filter feeding whales capture highly maneuverable forage fish
10:45 am	21-4	Behbahani AH, Rak AK, Skutt-Kakaria KJ, Dickinson MH; California Institute of Technology	Flies Remember Multiple Food Locations in the Absence of External Cues
11:00 am	21-5	Mora YA, Sustaita D, Farabaugh SM; California State University San Marcos, San Diego Zoo Global	Analysis of Loggerhead Shrike wing-flashing movements during hunting
11:15 am	21-6	Law CJ, Tinker MT, Fujll JA, Nicholson T, Staedler M, Tomoleoni J, Young C, Mehta RS; American Museum of Natural History, Nhydra Ecological Consulting, Monterey Bay Aquarium, US Geological Survey, California Department of Fish and Wildlife, University of California Santa Cruz	Tool use increases mechanical and bioenergetic foraging success in southern sea otters
11:30 am	21-7	Johnson MW, Tricomo AS, Shough AE, Sanders JC, Cohen SC; San Francisco State University, Humboldt State University, University of Portland, Southern Illinois University Edwardsville	Investigating the Foraging Behavior of <i>Leptasterias</i> spp. Across Intertidal Microhabitats
11:45 am	21-8	Paggeot LX, Gosliner TM; California Academy of Sciences	Stinger Thieves: Nematocyst Acquisition Process in Aeolid Nudibranchs
12:00 pm	Lunch Break		

Evolution of Behaviour

Chair: Angela Freeman

10:30 am	22-1	Phipps N, Stein LR, Hoke K; Colorado State University, University of Oklahoma	Genetic Background and Sexual Experience Jointly Determine Courtship Strategy
10:45 am	22-2	Young RL, Hofmann HA; University of Texas at Austin	Leveraging Network Analysis to Study the Evolution of Sociality in Vertebrates
11:00 am	22-3	Culumber ZW; University of Alabama in Huntsville	Variation in Animal Personality Across a Major Environmental Gradient
11:15 am	22-4	Bensky MK, Bell AM; University of Illinois Urbana-Champaign	The evolution of cognition and behavior during a natural biological invasion
11:30 am	22-5	Schumm MR, Cummings ME, Ramsey ME; UT	Testing cognitive flexibility in non-model organisms: Poeciliid fishes vary by species, sex and context in detour performance
11:45 am	22-6	Freeman AR, Ophir AG, Sheehan MJ; Cornell University	Doing more with less: African giant pouched rats specialize in olfaction with a typical olfactory receptor repertoire
12:00 pm	Lunch Break		

Saturday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:45 PM – 3:00 PM Session 23 Lonestar A

Evolutionary Ecology

Chair: Patrick Kelly

1:45 pm	23-2	Kelly PW, Pfennig DW, Pfennig KS; UNC Chapel Hill	Sexual Selection and Adaptive Evolution in Variable Environments: Phenotypic Plasticity as a Good-Genes Effect
2:00 pm	23-3	King RW, Wund MA, Foster SA, Baker JA; Clark University, University of New Jersey	Salinity mediated shape plasticity in oceanic threespine stickleback
2:15 pm	23-4	Rippe JP, Dixon GB, Matz MV; University of Texas at Austin	Genomic evidence of environmental specialization and cryptic speciation in two massive coral species on the Florida Keys Reef Tract
2:30 pm	23-5	Wilson LE, Curlis JD, Lonsdale G, Cox CL; Georgia Southern University, University of Michigan, University of Plymouth, Florida International University	The role of sympatry on predator-based selection on coral snake mimicry components in the montane tropics
2:45 pm	23-6	Griffiths JS, Johnson KM, Kelly MW; Louisiana State University	Evolutionary Change in the Oyster, <i>Crassostrea virginica</i> , Following an Experimental Low Salinity Event
3:00 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM Session 24 Lone Star B

DEDE Best Student Paper Competition

Chairs: Dan Becker, Daniel Becker

1:30 pm	24-1	Kernbach ME, Unnasch TR, Martin LB; University of South Florida	Differential Effects of Spectral Composition of Nighttime Lighting on West Nile Virus Resistance and Mortality in House Sparrows
1:45 pm	24-2	Thublin RN, Moore PA; Bowling Green State University, University of Michigan	Crayfish self-medication: crayfish alter their feeding preferences based on parasite loads
2:00 pm	24-3	Amonett SD, Balenger SL; University of Mississippi	Mother Knows Best: Immune-based Maternal Effects in Response to <i>Mycoplasma gallisepticum</i> Infection in Eastern Bluebirds (<i>Sialia sialis</i>)
2:15 pm	24-4	Dimos BA, MacKnight NJ, Brandt M, Mydlarz LD; University of Texas at Arlington, University of the Virgin Islands	Differential Disease Susceptibility Between Closely Related Coral Species is due to Regulation of Mitochondrial Genes
2:30 pm	24-5	Slama SL, Sandmeier FC, Sheedy MD, Painter MN; Colorado State University Pueblo	Quantifying Phagocytic Activity of Lymphocytes in Ectotherms
2:45 pm	24-6	Houtz JL, Shipley JR, Zimmer C, Vitousek MN; Cornell University, Max Planck Institute of Animal Behavior	Impacts of Gut Microbiota on Developmental Temperature Priming in Birds
3:00 pm	24-7	MacKnight NJ, Dimos BA, Brandt M, Muller E, Mydlarz L; University of Texas at Arlington, University of Virgin Islands, Mote Marine Laboratory	The species-specific and shared immune competence of seven Caribbean coral when exposed to white plague disease
3:15 pm	24-8	Names G, Krause J, Schultz E, Hunt K, Heal M, Hahn T, Cornelius J, Wingfield J; Univ of California, Davis, Univ of Nevada, Reno, Wittenberg Univ, George Mason Univ, Bangor Univ, Oregon State Univ	Immunological consequences of circulating corticosterone: an experimental investigation comparing avian malaria-tolerant and -susceptible Hawaii Amakihi (<i>Hemignathus virens</i>)
3:30 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM		Session 25	Lone Star C
On the Wing			
<i>Chairs: Aimy Wissa, Tomer Urca</i>			
1:30 pm	25-1	<i>Bustamante J, Ahmed M, Daniel TL; University of Washington</i>	Restricting abdominal flexion yields poor flight performance in hawkmoths
1:45 pm	25-2	<i>Urca T, Ribak G; Tel-Aviv University</i>	The Effect of Body Mass on Long-Distance Flight Efficiency in a Wood Boring Beetle, the 'Mango Stem Borer', <i>Batocera Rufomaculata</i> .
2:00 pm	25-3	<i>McCarty B, Matthews M, Sponberg S; Georgia Institute of Technology</i>	Flexibility Maintains Leading-edge Vortex Structure on <i>Manduca</i> Wings
2:15 pm	25-4	<i>Schwab RK, Jankauski MA; Montana State University</i>	Efficient Modeling of Fluid-Structure Interaction in Single Degree-of-Freedom Flapping Wings
2:30 pm	25-5	<i>Cheney JA, Song J, Windsor SP, Stevenson JPJ, Dierksheide D, Nila A, Bomphrey RJ, Usherwood JR; Royal Veterinary College, Dongguan University of Technology, University of Bristol, LaVision GmbH, LaVision UK Ltd</i>	The tails of gliding birds disrupt induced drag minimization and instead approach optimal viscous drag minimization
2:45 pm	25-6	<i>Williamson CJ, Spelt A, Windsor SP*; University of Bristol</i>	Are complex wind fields beneficial for soaring? An urban gull's perspective
3:00 pm	25-7	<i>Wissa AA; University of Illinois Urbana-Champaign</i>	Aerodynamic Characterization of a Leading-Edge Alula-Inspired Device
3:15 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:15 PM		Session 26	Lone Star E
Biological Rhythms			
<i>Chair: Helen Chmura</i>			
1:30 pm	26-1	<i>Wingfield JC, Reid AMA, Perez JH, Bishop VR, Krause JS, Meddle SL; University of California, Roslin Institute University of Edinburgh, University of Glasgow, University of Nevada Reno</i>	Divergence of Hypothalamic-pituitary-gonadal (HPG) Axis Gene Expression and Testosterone in Migrant and Resident Female White-crowned Sparrows
1:45 pm	26-2	<i>Chmura HE, Duncan CM, Barnes BM, Buck CL, Christian HC, Loudon AS, Williams CT; University of Alaska Fairbanks, Northern Arizona University, Oxford University, University of Manchester</i>	Reimagining the hibernating brain: Hypothalamic remodeling in an arctic hibernator
2:00 pm	26-3	<i>Bilak JD, Whiles MR, Milanovich JR, Bystriansky JS, Warne RW; Southern Illinois University, Shedd Aquarium</i>	Understanding the physiological mechanisms causing seasonal movement changes in common mudpuppies.
2:15 pm	26-4	<i>Shankar A, McCahon S, Callegari K, Seitz T, Drown D, Williams CT; University of Alaska Fairbanks</i>	SAD rats: Effects of short photoperiod on sleep disruption, the gut microbiome, and carbohydrate consumption in diurnal grass rats
2:30 pm	26-5	<i>Kahn AS, Pennelly CW, Leys SP; Moss Landing Marine Laboratories, University of Alberta</i>	Factors Affecting the Behaviors of Sessile Animals on the Deep Seafloor
2:45 pm	26-6	<i>Fisette SD, Bussy U, Huerta B, Li W; Michigan State University</i>	Diel Pattern of Pheromone Production and Release in Sea Lamprey, <i>Petromyzon marinus</i>
3:00 pm	26-7	<i>Hernandez E, Vázquez O, Torruco A, Rahman MD; University of Texas Rio Grande Valley</i>	Histological evidence of annual and lunar reproductive rhythms of Atlantic sea urchin, <i>Arbacia punctulata</i> in the southern Gulf of Mexico: changes in nutritive phagocytes in relation to gametogenesis
3:15 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:30 PM **Session 27** **Lone Star F**

DEDB Best Student Paper

Chair: Kim Hoke

1:30 pm	27-1	<i>Pomerantz AF, Kishi Y, Pinna C, Elias M, Patel NH; University of California Berkeley, California Institute of Technology, Museum National d'Histoire Naturelle, Marine Biological Laboratory</i>	Making it Clear: Evolution and Development of Wing Transparency in Lepidoptera
1:45 pm	27-2	<i>Nunez SA, Sanger TJ; Loyola University Chicago</i>	The Physiological Basis of Structural Malformations in Thermally Stressed Lizard Embryos
2:00 pm	27-3	<i>Morris ZS, Pierce SE, Abzhanov A; Harvard University, Imperial College London</i>	Developmental mechanisms shaping crocodylian snouts
2:15 pm	27-4	<i>Steinworth BM, Martindale MQ, Ryan JF; University of Florida</i>	The evolution of cnidarian and bilaterian Hox genes
2:30 pm	27-5	<i>Lanza AR, Seaver EC; University of Florida</i>	Activin/Nodal signaling is required for establishing the dorsal-ventral axis in <i>Capitella teleta</i>
2:45 pm	27-6	<i>Zang H, Nagayasu N; Lyon College, University of Arkansas</i>	The evolution of novel neuropeptides in Cnidaria: investigating the function of a lineage-specific neuropeptide RPamide during sea anemone development
3:00 pm	27-7	<i>Guemsey MW, Van Kruistum H, Reznick DN, Pollux BJA, Baker JC; Stanford University School of Medicine, Wageningen University, University of California, Riverside, Wageningen University</i>	<i>Poeciliopsis</i> maternal follicle transcriptomes reveal importance of placenta and secretory genes in the emergence of live-birth
3:15 pm	27-8	<i>Senevirathne G, Baumgart S, Shubin NH, Hanken J; University of Chicago, Laboratory Schools, Harvard University</i>	Ontogeny of the anuran urostyle: the developmental context of evolutionary novelty
3:30 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM **Session 28** **Lone Star G**

Make the Flow Go

Chair: Konstantin Kornev

1:30 pm	28-1	<i>Kaczmarek EB, Li EY, Brainerd EL; Brown University</i>	XROMM Analysis of Air-Breathing in the Royal Knifefish, <i>Chitala blanci</i>
1:45 pm	28-2	<i>Grand Pre CA, Hedrick BP, Schachner ER; Louisiana State University Health Science Center</i>	Movement and Function of the Hepatic-Piston Pulmonary Apparatus During Various Modes of Respiration in the American Alligator (<i>Alligator mississippiensis</i>)
2:00 pm	28-3	<i>Cieri RL, Farmer CG; University of Utah</i>	Net-unidirectional airflow patterns vary with pulmonary anatomy in monitor lizards (<i>Varanidae</i>): insights from a multi-species computational fluid dynamics investigation
2:15 pm	28-4	<i>Hossain M, Staples A; Virginia Tech</i>	Passive Vortical Flows Compensate for Low Flow Speeds in the Interior of a Coral Colony
2:30 pm	28-5	<i>Gaddam MG, Santhanakrishnan A; Oklahoma State University</i>	Squishy suction pumps: pore water release by upside-down jellyfish
2:45 pm	28-7	<i>Ahmed S, Shearer B, O'Brien H; Northeastern State University, NYU School of Medicine, OSU Center for Health Sciences</i>	The Hemodynamics Of The Carotid Rete In The Brown Greater Galago, <i>Otolemur crassicaudatus</i>
3:00 pm	28-8	<i>Kornev K, Aprelev P, Brasovs A, Adler P, Beard E; Clemson University</i>	Probing viscosity of insect blood at different spatial and time scales
3:15 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM **Session 29** **Lone Star H**

Biological Mousetraps: Springs and Latches

Chairs: Sarah Longo, Jeffrey Olberding

1:30 pm	29-1	<i>Olberding JP, Ilton M, Crosby AJ, Azizi E; University of California, Harvey Mudd College, University of Massachusetts</i>	Limits and Losses: the Power of Recoiling Biological Springs
1:45 pm	29-2	<i>Longo SJ, Cox SM, Azizi E, Ilton M, Olberding JP, St. Pierre R, Patek SN; Duke University, Pennsylvania State University, UC Irvine, Harvey Mudd College, Carnegie Mellon University</i>	Beyond power amplification: new insights from latch-mediated spring actuation (LaMSA)
2:00 pm	29-3	<i>Stinson Easterling CM, Seis C, Deban SM; Northwest University, University of South Florida</i>	Evidence of power amplification and thermal robustness in salamandrid feeding mechanisms
2:15 pm	29-4	<i>Mendoza E, Olberding JP, Azizi E; University of California, Irvine</i>	Temperature dependence of elastic recoil mediated by a mechanical advantage latch
2:30 pm	29-5	<i>Bolmin O, Alleyne M, Wissa AA; University of Illinois at Urbana-Champaign</i>	How does Morphology Affect Jumping Kinematics of Click Beetles?
2:45 pm	29-6	<i>Gibson JC, Suarez AV; University of Illinois at Urbana-Champaign</i>	Functional morphology and biomechanics of trap-jaw ants in the <i>Daceton</i> genus group
3:00 pm	29-7	<i>Acharya R, Challita EJ, Bhamla MS; Georgia Institute of Technology</i>	Ultrafast Finger Snap is Mediated by a Frictional Skin Latch
3:15 pm	29-8	<i>Jan I, Sangha G, Schulz JR; Occidental College</i>	The Cone Snail Strikes Back: A Biomechanical Study of an Ultrafast Prey Capture
3:30 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM **Session 30** **Rooms 301-302**

Flying and Swimming Behaviour

Chair: Matthew Lefauve

1:30 pm	30-1	<i>Lefauve MK, Hernandez LP; George Washington University</i>	Invasive Behavioral Syndrome in Cypriniform Fishes
1:45 pm	30-2	<i>O'Mara MT, Amorim F, Scacco M, McCracken GF, Safi K, Mata V, Tomé R, Swartz SM*, Wikelski M, Beja P, Rebelo H, Dechmann DKN; Southeastern Louisiana University, University of Porto, University of Konstanz, University of Tennessee, University of Lisbon, Brown University DKN</i>	European Free-tailed Bats Use Wind Regimes to Fly High and Fast
2:00 pm	30-3	<i>Burnett NP, Badger MA, Combes SA; University of California, Davis</i>	Wind and canopy height affect honey bee flight performance in cluttered environments
2:15 pm	30-4	<i>Tidswell BK, Tytell ED; Tufts University</i>	Using physical models to examine sensory coordination during fish schooling
2:30 pm	30-5	<i>Katija K, Govindarajan A, Llopiz J, Wiebe P, Breier J, Hobson B, Risi M, Robison B, Rock S, Yoeberger D; Monterey Bay Aquarium Research Institution, Woods Hole Oceanographic Institution, Stanford University</i>	Mesobot: Toward autonomous observations of organismal behavior in the ocean's midwaters
2:45 pm	30-6	<i>White CF, Whitney NM, Weber DN, Frazier BS; Harvard University, New England Aquarium, Texas A&M, Department of Natural Resources</i>	Survival and Swimming Behavior of Red Drum (<i>Sciaenops ocellatus</i>) Following Recreational Capture and Release
3:00 pm	30-7	<i>Khursigara AJ, Esbaugh AJ; University of Texas at Austin</i>	Does crude oil exposure alter behavior in fish?
3:15 pm	.....	Coffee Break	 Grand Ballroom

Connubiality, Conjuality, or Civil Union? Symbiotic Relationships, Part II

Chair: Hanny Rivera

1:30 pm	31-2	<i>Fifer JE, Bui V, Berg J, Gabriel M, Bentlage B, Davies S; Boston University, University of Guam</i>	Coral Microbial Community Shifts Along a Steep Environmental Gradient
1:45 pm	31-3	<i>Rivera HE, Davies SW; Boston University</i>	What does it take to stay together? Uncovering symbiosis gene networks in a facultatively symbiotic coral
2:00 pm	31-4	<i>Howe-Kerr LI, Bachelot B, Wright RM, Kenkel C, Bay LK, Correa AMS; Rice University, Smith College, University of Southern California, Australian Institute of Marine Science</i>	Symbiont diversity correlates with variability in holobiont stress tolerance
2:15 pm	31-5	<i>Bedwell H, Abbott E, Balogh A, Kolodziej G, Hejmadi P, Diaz L, Huynh K, Ma J, Matz MV, Kenkel C; University of Texas at Austin, NOAA, University of Southern California</i>	Hurricane-driven asexual reproduction in massive boulder corals in the Florida Keys
2:30 pm	31-6	<i>Cassavaugh CM, Szuch CP, Kephart MK, Sevigny JL, Simpson S, Lamont S, Carfagno A, Bishop BM, Gillevet PM, Thomas WK, Cook GM*; New England College, University of New Hampshire, George Mason University</i>	Bioprospecting for Novel Antimicrobial Peptides in Corals and their Associated Microbiome
2:45 pm	31-7	<i>Barfield SJ, Davies SW, Matz MV; University of Texas, Austin, Boston University</i>	Co-recruitment of Relatives Leads to Emergence of Inbred Genetically Isolated Group within a Panmictic Population of a Broadcast-spawning Reef-Building Coral
3:00 pm	.....	Coffee Break	 Grand Ballroom

(Eco)Energetics

Chairs: Rebecca Clark, Hugh Ellis

1:30 pm	32-1	<i>John JS, Thometz NM, Boerner K, Denum L, Kendall T, Richter BP, Gaspard JC, Williams TM; University of California Santa Cruz, San Francisco University, Mote Marine Laboratory & Aquarium, Pittsburgh Zoo, PPG Aquarium</i>	Energetics of swimming in tropical marine mammals-Examining metabolic tradeoffs in West Indian manatees and Hawaiian monk seals
1:45 pm	32-2	<i>Dolan JE, Musial NA, Hammond KA; UC, Riverside</i>	Energy expenditure of cage activity versus wheel running in deer mice
2:00 pm	32-3	<i>Clark RM, Fox TP, Harrison JF, Fewell JH; Siena College, Arizona State University</i>	Energetic Savings of Grouping During Nest Initiation in Harvester Ants
2:15 pm	32-4	<i>Prinzing TS, Bigman BS, Skelton Z, Wegner NC, Dulvy NK; Simon Fraser University, Scripps Institution of Oceanography, NOAA Southwest Fisheries Science Center</i>	Paired Estimates of Metabolic Rate and Gill Surface Area in the Horn Shark (<i>Heterodontus francisci</i>)
2:30 pm	32-5	<i>Oliver KD, Martin TE, Wolf BO; University of New Mexico, University of Montana</i>	Air Temperature Limits Metabolic Scope in Mid-elevation Tropical Birds
2:45 pm	32-6	<i>Ellis HI, San Francisco S; University of San Diego, Texas Tech University</i>	Sustained Metabolic Scope: Verification from Eared Grebe Time and Energy Budgets
3:00 pm	32-7	<i>Goodchild CG, Durant SE; Oklahoma State University, University of Arkansas</i>	Is a novel marker of oxidative damage linked to aerobic scope and flying performance in birds exposed to crude oil?
3:15 pm	32-8	<i>Kunkel EL, Dale AS, Fuller NW, McGuire LP; Texas Tech University</i>	Partial Migration in Mexican free-tailed Bats: Ecology and Bioenergetics of Winter Residents
3:30 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM Session 33 Rooms 201-202

Plasticity

Chairs: David Coughlin, Javier Mendez Narvaez

1:30 pm	33-1	<i>Mendez-Narvaez J, Warkentin K; Boston University, Smithsonian Tropical Research Institute</i>	Nitrogen Excretion Plasticity and Reproductive Colonization of Land by Frogs: Multiple Strategies to Avoid Ammonia Toxicity
1:45 pm	33-2	<i>Foster SA, Baker JA; Clark University</i>	Plasticity and the Origin of Evolutionary Pattern
2:00 pm	33-3	<i>Rosso AA, Logan ML, McMillan WO, Cox CL; Georgia Southern University, University of Nevada Reno, Smithsonian Tropical Research Institute, Florida International University</i>	Phenotypic Plasticity and the Response to Increasing Temperatures in a Tropical Lowland Lizard
2:15 pm	33-4	<i>Coughlin DJ; Widener University</i>	Thermal Acclimation Studies in Cold-Water Fishes: Do They Reveal the Potential Impact of Climate Change?
2:30 pm	33-5	<i>Helms Cahan S, Fietze SE, Gerrard DL, Bora K, Kaplan I, Perez M, Lockwood BL, Teets NM, Waters JK, Axen HJ; University of Vermont, LeTourneau University, University of Kentucky, Providence College, Salve Regina University</i>	Developmental temperature alters brain gene expression in adult <i>Drosophila melanogaster</i>
2:45 pm	33-6	<i>Esbaugh AJ, Lonchay J; University of Texas at Austin</i>	The Development of Acid-base Pathways in Marine Fish: Implications for Ocean Acidification
3:00 pm	33-7	<i>Dijkstra PD, Fialkowski RJ, Janeski HM, Aufdenberg PM; Central Michigan University</i>	Sexual Selection Favors Phenotypic Plasticity in Body Coloration in a Polymorphic Cichlid Fish
3:15 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:30 PM Session 34 Rooms 402-403

Comparative Genomics and Phylogenetics of the Spineless

Chair:

1:30 pm	34-1	<i>Spagna JC, Espinosa AJ, Crews SC; William Paterson University, California Academy of Sciences</i>	Grass Spiders of North America and Europe: A Long-Distance Relationship Lasting 50 Million Years
1:45 pm	34-2	<i>Yap-Chiongco MK, Varney RM, Kocot KM; University of Alabama, Alabama Museum of Natural History</i>	What the Shell-less Aplacophorans Can Tell us About Molluscan Biomineralization
2:00 pm	34-3	<i>Kocot KM; University of Alabama</i>	Revolutionizing Biodiversity and Systematics Research on Aplacophora (Mollusca) and Training the Next Generation of Invertebrate Systematists
2:15 pm	34-4	<i>Cannon JT, Kocot KM, Varney RM, Eernisse DJ, Speiser DI, Oakley TH; UC Santa Barbara, University of Alabama, Cal State Fullerton, University of South Carolina</i>	Target-capture phylogenomics of Polyplacophora and the origins of shell eyes
2:30 pm	34-5	<i>Ballou L, Iliffe T, Olesen J, Bracken-Grissom HD; Texas AM University at Galveston, University of Copenhagen, Florida International University</i>	Molecular Phylogeny of Remipedia: Providing Preliminary Insights into the Evolution of Feeding across an Enigmatic Crustacean Group
2:45 pm	34-6	<i>Ontano AZ, Benavides L, Harvey M, Giribet G, Sharma PP; University of Wisconsin, Harvard University, Western Australian Museum</i>	Disentangling Arachnid Systematics Through Rare Genomic Events
3:00 pm	34-7	<i>Kitchen SA, Brückner A, Kishi Y, Miller DR, Naragon T, Wagner J, Parker J; California Institute of Technology</i>	Genomic insights into gland development of rove beetles
3:15 pm	34-8	<i>Ballesteros JA, Aharon S, Gainett G, Zern J, Zehms PP, Gavish-Regev E, Sharma PP; University of Wisconsin-Madison, Hebrew University of Jerusalem</i>	An Integrative Investigation Of Eye Loss In Levantine Arachnids
3:30 pm	.....	Coffee Break	Grand Ballroom

7:00 PM – 8:00 PM BART Lecture Sponsored by Sable Systems Salons D-E

BART Lecture	<i>Stoddard MC; Princeton University</i>	Diversity of Form and Function in the Colorful World of Birds
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Saturday POSTER SESSION P1

Grand Ballroom, 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

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| P1-1 | <i>Chavarria R, Smith FW; University of North Florida</i> | The loss of several Wnt genes is correlated with the loss of posterior growth in Tardigrada |
| P1-2 | <i>Austiff JK; Harvard University</i> | Development of the Stomach of the Carnivorous Tadpoles of the Budgett's Frog, <i>Lepidobatrachus laevis</i> Compared to Filter Feeding Tadpoles |
| P1-3 | <i>Silva MAP, Nakanishi N; University of Arkansas</i> | Assessing the Function of the POU-Domain Transcription Factor Pit-1 During Development of the Cnidarian <i>Nematostella vectensis</i> |
| P1-4 | <i>Neal S, Daly CMS, Koenig KM; Harvard University</i> | Differentiation and Notch signaling in the Cephalopod Retina |
| P1-5 | <i>Larocca-Stravalle Z, Kauffman J, Gillen K*; Kenyon College</i> | Labial A and Post-1 Hox Gene Expression in <i>Lumbriculus variegatus</i> |
| P1-6 | <i>Rojas AM, Smith FW; University of Connecticut, University of North Florida</i> | A Secondarily Simplified Mechanism Patterns the Tardigrade Through-Gut |
| P1-7 | <i>Phelps AN, Luc HM, Gross JB; University of Cincinnati</i> | Comparative developmental expression of neural crest genes in the blind Mexican cavefish, <i>Astyanax mexicanus</i> |
| P1-8 | <i>Romano L, Broady C, Ji K, Madar M, Scoggins N, Wong M; Denison University</i> | Comparative analysis of developmental mechanisms and their plasticity with regard to changes in the environment: derived species versus the pencil urchin, <i>Eucidaris tribuloides</i> . |
| P1-9 | <i>Dao TK, Lambert JD; University of Rochester</i> | The possible roles of retinoic acid pathway in the shell and the embryonic development of the mollusc <i>Tritia</i> . |
| P1-10 | <i>Whitesel CA, Barone V, Lyons DC; UC San Diego</i> | Studying Neuroanatomy in <i>B. Stephanieae</i> through Immunohistochemistry |
| P1-11 | <i>Gavazzi LM, Cooper LN, Thewissen JGM; Kent State University, Northeast Ohio Medical University</i> | Patterning and development of the beluga whale (<i>Delphinapterus leucas</i>) fluke |
| P1-12 | <i>Daniel L, Dubansky B, Burggren W; University of North Texas</i> | Differences in Early Embryo Cleavage Rate in Two Populations of Killifish (<i>Fundulus grandis</i>) |
| P1-13 | <i>Luc HM, Berning DJ, Adams H, Gross JB; University of Cincinnati</i> | Expression Analysis of In-Frame Indel Mutations in <i>Astyanax</i> Cave- and Surface-Dwelling Fish |
| P1-14 | <i>Breen CM, Funk EC, McCune AR; Cornell University</i> | Role of <i>Bmps</i> in Evolution of Gas Bladder in Ray-Finned Fishes |
| P1-15 | <i>Arnaoudoff LA, Sanger TC; Loyola University</i> | Three-Dimensional Embryological Atlas of <i>Anolis sagrei</i> based on micro-CT. |
| P1-16 | <i>Cumming M, Smith FW; University of North Florida</i> | Genomic and developmental origins of tardigrade legs |
| P1-17 | <i>Hogan AVC, Balanoff AM, Bever GS; Johns Hopkins School of Medicine</i> | Developmental and Evolutionary Scaling in the Olfactory System of Birds |
| P1-18 | <i>Luo YJ, Ricci L, Hulett RE, Srivastava M; Harvard University</i> | Single-cell profiling of acoel stem cell dynamics during development and regeneration |

DEE BSP: Huey Award

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| P1-19 | <i>Fräs Vellón AI, Krantz J, Macrander J; Florida Southern College</i> | The Impact of Microplastics on Sea Anemone Behavior, Survivorship, and Gene Expression |
| P1-20 | <i>Villafranca N, Weglarz M, Hamlyn S, Vaughan D, Stenesen DS, Soper DM; University of Dallas, University of Dallas, Mote Marine Laboratory, Plant A Million Corals, University of Dallas, University of Dallas</i> | Investigation of Coral Growth and The Genetic Expression of The Hippo Growth Signaling Pathway in <i>Orbicella faveolata</i> |
| P1-21 | <i>Giancarli SM, Dunham AE, O'Connor MP; Drexel University, University of Pennsylvania</i> | Examining Metabolic Allometry Among Birds: A Phylogenetic Approach |

P1-22	Miller-Crews I, Matz MV, Hofmann HA; University of Texas at Austin	2bRAD-seq Paternity Testing Pipeline for Complex and Mixed DNA Samples
P1-23	Cordova KC, Farr D, Dethier MN, Dobkowski KA; California Polytechnic State University, University of Southern California, Friday Harbor Laboratories, University of Washington, Bates College	Mismatched: Do Northern Kelp crabs (<i>Pugettia producta</i>) eat where they live?
Cladistics and Phylogenetics		
P1-24	Hamilton N, Rodriguez E, Izumi T, Yap N, Daly M; Texas A&M University, American Museum of Natural History, University of Tokyo, National University of Singapore, Ohio State University	Phylogenetic relationships among burrowing sea anemones in the family Haloclavidae (Cnidaria: Anthozoa: Actiniaria)
P1-25	Oyekwe OL, Waits DS, Halanych KM; Auburn University	LTR retrotransposons in the non-model marine invertebrate <i>Lamellibrachia luymesii</i> (Annelida)
P1-26	Spillane JL, Lapolice TM, MacManes MD, Plachetzki DC; University of New Hampshire	Transcriptome assembly quality affects phylogenomic inference
P1-27	Schneider SQ, Bastin BR, Ho S; Academia Sinica, Iowa State University	Unique Tektin Gene Complements Support the Position of Xenacoelomorpha at the Base of Bilaterians, and the Inclusion of Chaetognaths within a Spiralian Clade
P1-28	Morisawa R, Derkarabetian S, Boyer SL; Macalester College, Harvard University	Phylogeny of the New Zealand harvestman genus <i>Rakaia</i> (Arachnida, Opiliones, Cyphophthalmi, Pettalidae) based on Ultra-Conserved Elements, with a description of new species
P1-29	Kyle OM, Gibb AC, Minicozzi MR, Braga A; Northern Arizona University	Can Air Breathing Ability in Teleost Fishes be Used to Predict Terrestrial Behavior?
P1-30	Ghione C, Lough-Stevens M, Dean M; University of Southern California	Male body size evolves more rapidly than female body size
Population Genetics		
P1-31	Harper FM, Clarke DG; Rollins College	Very low genetic diversity in two species of North Atlantic sea stars
P1-32	Redak C, Williams AS, Halanych KM, Whelan NV; Auburn University, United States Fish and Wildlife Service	Effects of reservoirs on genetic diversity and gene flow of an endangered freshwater snail, <i>Pleurocera foremani</i>
P1-33	Wright AD, Williams AS, Garrison NL, Whelan NV; Tuskegee University, Auburn University	Population Genetics of the Critically Imperiled Oblong Rocksnail <i>Leptoxis compacta</i>
P1-34	Tardelli Canedo P, Baker CM, Morisawa R, Pessereau EJ, Boyer SL; Macalester College, Harvard University	Phylogeography of <i>Neopurcellia salmoni</i> , a widespread mite harvestman from the South Island of New Zealand, with the first report of male polymorphism in the suborder Cyphophthalmi
P1-35	Corder KR, Schweizer RM, Cheviron ZA; University of Montana	The Role of Mitonuclear Coevolution in High Altitude Adaptation
Evolutionary Ecology and Physiology		
P1-36	Fargevieille A, Cox RM, Delaney DM, Hall JM, Kahrl AF, Mitchell TS, Pearson PR, Reedy AM, Warner DA; Auburn University, University of Virginia	Phenotypic variation of invasive lizard populations following experimental introduction on small islands
P1-37	Casement B, Cox C, McMillan O, Logan M; Heidelberg University, Georgia Southern, Smithsonian Tropical Research Institute, University of Nevada	The effects of abiotic conditions on activity time in tropical forest lizards, a large-scale field experiment in the Panama Canal
P1-38	Ammen SC, Davis JE; Radford University	From Killer Hornet Saliva to Mutated Super Flies: Investigating the Effect of Vespa Amino Acid Mixture (VAAM) on Energetics, Longevity, and Fitness
P1-39	Graham ZG, Paloro AV, Vargas C, Angilletta MJ; Arizona State University, Universidade Federal de Sao Paulo	The Offense and Defense of a Regenerated Weapon
P1-40	Diorio RD, Howey CAF; University of Scranton	The Persistence of Resistance to Timber Rattlesnake Venom in Small Mammals
P1-41	Faria S; University of São Paulo, Bermuda Institute of Ocean Sciences, University of California Riverside	Learning Evolution from Crustacean Physiology: a Phylogenetic Perspective on Habitat Diversification
P1-43	Peterson CR, Bolnick DI; University of Texas at Austin, University of Connecticut	Phenotypic Variation in Invasion and Community Assembly

- P1-44** Robertson CM, Giakas JA, Styga JM, Fortunato JA, Earley RL; University of Alabama, Centre College
Phenotypic and Genetic Correlations between Life History Traits in a Self-Fertilizing Hermaphroditic Fish
- P1-45** Huebner CD, Treidel LA, Roberts KT, Williams CM; UC Berkeley
Effects of Life History and Starvation on Temperature Preference of a Wing-Dimorphic Cricket, *Gryllus lineaticeps*
- P1-46** Hall KC, Kolmann MA, Wilson GP, Hundt PJ; University of Washington, George Washington University, University of Minnesota
Chimaeras, sharks, skates and rays, oh my! Ecological structuring and evolutionary life-history traits of Chondrichthyes
- P1-47** Miladin JR, Steven JC, Collar DC; Christopher Newport University
Abiotic ecological niche parameters are associated with leaf and flower size in *Silene*
- P1-48** Woodman TE, Emberts Z, Miller CW; University of Florida
A high quality diet leads to improved puncture resistance of a weapon in the leaf-footed cactus bug (*Narnia femorata*)
- P1-49** Guzman A, Kolonin A, Aspbury A, Gabor C; Texas State University
Land Use Conversion Affects Stress Physiology and Life-History of Western Mosquitofish
- P1-50** Wilson EJ, Delich C, Tobler M, Lee STM, Zeglin LH; Kansas State University
Host-Microbiome Associations in Livebearing Fishes Adapted to Sulfidic Environments
- P1-51** Tran HN, Lower SE; Bucknell University
Using computational approach to identify candidate odorant receptor genes in the most common firefly species in North America, *Photinus pyralis*
- P1-52** Gerringer ME, Yancey PH, Tikhonova OV, Vavlov NE, Zgodva VG, Davydov DR; State University of New York at Geneseo, Whitman College, Institute of Biomedical Chemistry, Washington State University
Evolving pressure tolerance in enzymes of abyssal and hadal fishes

Evolutionary Paleobiology

- P1-53** Moroz MJ, Kemp ME; University of Texas at Austin
Fossil bats' (*Myotis velifer*) jaw morphology changes through time and with climate change in Hall's Cave, Texas
- P1-54** Hoffman DK, Uyeda JC, Nesbitt SJ; Virginia Tech
Variable Evolutionary Rates in the Morphology of the Extinct Clade Aetosauria (Reptilia: Archosauria)
- P1-55** Tsai HP, Griffin C; Missouri State University, Virginia Tech
The cartilaginous hips of Diplodocoidea: functional implications for highly specialized locomotor behaviors among sauropods
- P1-56** Abbott CP, Lockwood R, Sues HD, Hunt G, Angielczyk KD; University of Chicago, William & Mary, Smithsonian Institution, Field Museum
How useful are extant tetrapods as analogues for non-mammalian synapsid posture?
- P1-57** Scott BR, Anderson PSL; University of Illinois Urbana-Champaign
Possible niche overlap based on similarities in body form among early jawed and jawless vertebrates
- P1-58** Orcutt JD, Ritchey TE, Vietri CB; Gonzaga University
Otospermophilus mckayensis and the Evolution of Burrowing in Oligo-Miocene Squirrels

Adaptation and Sexual Selection

- P1-59** Matz MV; University of Texas at Austin
LD networks, a new approach to detect sites under polygenic selection, applied to characterize patterns of introgression among coral ecomorphs.
- P1-60** Dunn PO, Henschen A, Whittingham LA; University of Wisconsin-Milwaukee, University of Memphis
Gene Expression and Reliable Signaling in a Plumage Ornament
- P1-61** Wittman TN, Cox RM; University of Virginia
Experimental evidence that parasites alter patterns of phenotypic selection in a wild lizard population
- P1-62** Kelly AP, Maddux SD; UNT Health Science Center
The interaction of climatic and energetic factors on human nasal morphology
- P1-63** Lundeen IK, Bertrand OC, Silcox MT; University of Texas at Austin, University of Edinburgh, University of Toronto Scarborough
Ecogeographic variation and phylogenetic signature in rodent respiratory turbinates
- P1-64** Bhawe RS, Reedy AM, Wittman T, Cox RM; University of Virginia
Copulatory transfer of fluorescent powder suggests sexual selection for larger males in a wild lizard population
- P1-65** Ramos-Guivas B, Jawor J, Wright TF; New Mexico State University
Glucocorticoids and reproductive success in captive Puerto Rican Parrot *Amazona vittata*

- P1-66** Tosto NM, Rose E, Masonjones HD; University of Tampa
Quantifying Sexually Selected Traits in the Female Gulf Pipefish (*Syngnathus scovelli*)
- P1-67** Robles KD, Lin C, Osborn K; Brown University, Smithsonian Institution
Visualizing Deep-Sea Eye Adaptations Using Micro-CT 3D Reconstructions
- P1-68** Comerford MS, Carroll SP, Egan SP; Rice University, University of California Davis
Spatial sorting drives rapid ecological adaptation of the soapberry bug
- P1-69** Axen HJ, Taft C, Wilson-Wuestefeld A, Depelligrini F, Clifford M; Salve Regina University
Assessing Physiological Plasticity in the Face of Climate Change in Natural and Lab Reared *Drosophila* Species Collected Across Elevational Gradients
- P1-70** Gams HC, Yerga KM, Young VKH; Saint Mary's College
Rodents of unusual size? Fox squirrel (*Sciurus niger*) body mass at Saint Mary's College
- P1-71** Yerga KM, Gams HC, Young VKH; Saint Mary's College
Body mass in female and male fox squirrels (*Sciurus niger*) at Saint Mary's College
- P1-72** Barts N, Nieves N, Trojahn S, Kelley J, Tobler M; Kansas State University, Washington State University
Exaptation as a possible mechanism facilitating invasion of extreme environments
- P1-73** Larson TR, Jacobs JL, Smith EN; University of Texas at Arlington
Sexual dimorphism in the fanged-frog genus *Limnonectes* (Anura: Dicroglossidae): skull differences between males and females

Parental Care and Reproduction

- P1-74** Westrick SE, Van Kesteren F, Boutin S, Lane JE, McAdam AG, Dantzer B; University of Michigan, University of Alberta, University of Saskatchewan, University of Guelph
Behavioral and Physiological Effects of Variation in Maternal Care and Glucocorticoids
- P1-75** Gogel CA, Mullin SM, Leese JM; DeSales University
Environmental factors influence sex roles and nest site selection in cichlids
- P1-76** Van Breukelen NA, Santangelo N*; Salem Community College, Hofstra University
Aggression by convict cichlid pairs as a means to deter brood mixing in a natural setting
- P1-79** Brandt EE, Rosenthal MF, Elias DO; University of Western Ontario, University of California Berkeley
Temperature Effects on Multimodal Sexual Signals in an Ectotherm: a Network Analytical Approach
- P1-80** Fernandez Y, Dowdy N, Conner W; Wake Forest University
Acoustic Communication in *Bertholdia trigona* (Lepidoptera: Arctiinae): High Duty Cycles Promote Survival and Mating
- P1-81** Musgrove CM, Watson LAR, Hinds AD, Carvalho CM, Ambardar M; Fort Hays State University
Relationships among Parental Care, Heterophil to Lymphocyte Ratio, and Reproductive Success in a Songbird
- P1-82** Riley AK, Grindstaff JL; Oklahoma State University
Paternal removal leads to changes in learning ability and sociality in zebra finch (*Taeniopygia guttata*) offspring
- P1-83** Miller NA, Foltz SL; Radford University
Correlating nest defense behaviors in eastern bluebirds (*Sialia sialis*) and tree swallows (*Tachycineta bicolor*) with features of the nesting site and nest stage.
- P1-84** Viernes RC, Farrar VS, Austin S, Feustel T, Flores L, Asmai R, Arias JG, Calisi RM; University of California Davis
Ex-spleen-ing Trade-offs Between Immunity and Reproduction during Parental Care in the Rock Dove, *Columba livia*
- P1-85** Utt DJ, Foltz SL; Radford University
The Effects of Light Pollution on Nesting Behavior in Eastern Bluebirds and Tree Swallows
- P1-86** Holloway F, De Bruijn R, Khoshaba E, Lopes PC; Chapman Univ
Neurogenomic Changes During the Transition to Parental Care in Virgin Japanese Quail
- P1-87** Sam A, Malcangi S, Lam C, León C, Ramírez-Estrada J, Bauer C; Adelphi University, Pontificia Universidad Católica de Chile
Postnatal maternal stress decreases locomotive play behaviors in *Octodon degus* pups

Sensory Biology

- P1-88** Congdon ER, Evans MB; Bethune-Cookman University, TheraPet Inc
Using Therapeutic Play to Alleviate Stress in Shelter Dogs
- P1-89** Kamska V, Daley M, Badri-Sprowitz A; Max Planck Institute for Intelligent, University of California Irvine
Potential for elastic soft tissue deformation and mechanosensory function within the lumbosacral spinal canal of birds
- P1-90** Henderson KW, Roche AS, Hale ME; University of Chicago
Hindbrain and spinal cord sensory neuron innervate of the pectoral fin

P1-91	Venuto A, Crowe S, Nicolson T, Erickson T; East Carolina University, Stanford School of Medicine	Life without a lateral line: A new genetic model to study lateral line-mediated behaviors in zebrafish.
P1-92	Yeh SY, Meade ME, Roginsky JE, Schulz JR; Occidental College	Primary Cell Culture of Adult Zebrafish Spinal Neurons for Electrophysiological Studies
P1-93	Bagge LE, Goldstein DH, Lyons BA, Wehling MF; Air Force Research Lab, University of Florida	Circularly Polarized Light Reflectance of and Wing Interference Patterns from Insects
P1-94	Martins L, Lower S; Bucknell University	Dark Firefly Seduction: Identifying the Mate Attracting Mechanism of <i>Ellychnia corrusca</i> via Bioinformatics
P1-95	Harris OK, Morehouse NI; University of Cincinnati	Predator-mimicking sensory exploitation in the courtship display of <i>Maratus</i> jumping spiders.
P1-96	Long HE, Foltz SL, Davis JE, Samuels T; Radford University	ScaryFeeder: Gauging Behavioral Responses When Introduced to Potentially Threatening Stimuli in Wild Songbirds
P1-97	Kane SA, Wang Y*, Fang R, Lu Y, Dakin R; Haverford College, Carleton University	How conspicuous are peacock eyespots and other colorful feathers in the eyes of mammalian predators?
P1-98	Currea JP, Frazer R, Theobald JC, Wasserman S; Florida International University, Wellesley College	Using Microscope or MicroCT Images to Measure Compound Eye Optics
P1-99	Dang A, Bernard GD, Olguin AR, Macias-Muñoz A, Lawrence JP, Hill RI, Mullen SP, Briscoe AD; University of California Irvine, University of Washington, Universidad Nacional Autónoma de México, University of the Pacific, Boston University	Color Vision in Nymphalid Butterfly, <i>Adelpha fessonia</i>
P1-100	Lucia RL, Kingston ACN, Speiser DI; University of South Carolina	The Impact of the Orbital Hood on Spatial Vision in the Snapping Shrimp <i>Alpheus heterochaelis</i>
P1-101	Serba KM, Fasick JI, Algrain H, Robinson PR; University of Tampa, University of Maryland Baltimore County	The Retinal Pigments of Filter-feeding Sharks and their Role in Visual Foraging Ecology
P1-102	Sharkey CR, Leibowitz M, Pinto Benito D, Wardill TJ; University of Minnesota, Cambridge University, Autonomous University of Madrid	<i>In vivo</i> spectral sensitivity of <i>Drosophila</i> photoreceptors
P1-103	Walkowski WG, Santana A, Leslie CE, Gordon WC, Bazan NG, Farris HF; LSUHSC, UT Austin	Endocrine Control of Retinal Sensitivity in <i>Hyla cinerea</i>
P1-104	Padilla GM, Woods CE, Todd KL; Westminster College	Electrophysiological Responses of <i>Hirudo verbana</i> to Different Intensities of Ultraviolet Radiation
P1-105	Solie SE, Johnsen S; Duke University	Contrast Sensitivity and Spatial Resolution in the Trinidadian Guppy (<i>Poecilia reticulata</i>)
P1-106	McCulloch KJ, Koenig KM; Harvard University	Regulatory logic of the retinal determination gene network in the starlet sea anemone, <i>Nematostella vectensis</i>
P1-107	Notar JC, Johnsen S; Duke University	Trends in Spatial Acuity Across the Sea Urchins
P1-108	Taylor BK, Kehl C; University of North Carolina at Chapel Hill	Bioinspired trans-equatorial navigation using sequential measurements of magnetic inclination
P1-109	Taylor BK, Kehl C; University of North Carolina at Chapel Hill	A bioinspired navigation strategy that uses magnetic signatures to navigate without GPS in the Northern Atlantic
P1-110	Tsai E, Naisbett-Jones L, Lohmann C, Lohmann K; University of North Carolina at Chapel Hill	Magnetic Map Sense of Gulf Flounder (<i>Paralichthys albigutta</i>)
P1-111	Capshaw G, Soares D, Christensen-Dalsgaard J, Carr CE; University of Maryland, New Jersey Institute of Technology, University of Southern Denmark	Acoustic reception in salamanders: Skull vibrations enable sound pressure detection
P1-112	Luscavage E, Goldina A; Elizabethtown College	Invasive crayfish <i>Orconectes rusticus</i> exhibit sexually dimorphic responses to conspecific pheromones
P1-113	Kelley MD, Ka C, Mendonça MT*; Auburn University	The Importance of Olfactory Cues from Male Chin Glands & Multimodal Signal Use in Gopher Tortoises <i>Gopherus polyphemus</i>
P1-114	Casleton R, Morgenthaler M, Shaikh S, Sorge M, Tucker B, Essendrup I, Berman S, Peet MM, Aukes DM, He X, Marvi H, Fisher RE; Arizona State University, University of California Los Angeles, University of Arizona College of Medicine-Phoenix	Chemoreception in Octopus bimaculoides

P1-115 Adams AN, Wofford SJ; Jacksonville State University

Using a complex chemical landscape to find an ideal habitat under predation threat

P1-116 York JM, Zakon HH; University of Texas at Austin

Identifying potential molecular thermosensors in Antarctic notothenioid fishes

Biodiversity: a new age of discovery

P1-121 Danziger A, Frederich M; University of New England

Design and use of species-specific *Carcinus maenas* eDNA primers to analyze shedding and degradation rates of eDNA

P1-122 Kolker Ghatan M, Belmaker Y, Kiflawi M, Meiri S, Holzman R; Tel Aviv University, Ben-Gurion University

Using a meta-barcoding method for studying population dynamics of larval invasive and native fishes in the Eastern Mediterranean

P1-123 McCutcheon MM, Kocot KM; University of Alabama, Alabama Museum of Natural History

Uncovering the Biodiversity of New Zealand Aplacophorans

P1-124 Brady K, Kovacs J, Voisin D, Welch J; Spelman College

Characterizing the gut microbiome of honeybees

P1-126 Schwartz ML; University of Washington

Nemertean Diversity in the Southern Ocean

P1-127 Berlow M, Kohl KD, Derryberry EP; University of Tennessee Knoxville, University of Pittsburgh

Can't Kill a Bird Twice: Evaluating Non-Lethal Sampling of Avian Gut Bacteria

Habitats and Ranges: Location Location Location

P1-128 Dobkowski KA, Farr D; Bates College, University of Southern California

What regulates the growth of bull kelp (*Nereocystis luetkeana*) recruits: competition for light or for space?

P1-129 Gilchrist SL; New College of Florida

Shell and Other Object Use by Land Hermit Crabs: Increases in Use of Anthropomorphic Objects on Cayos, Cochinos, Honduras

P1-130 Benedict C, Wood P, Grismer L, Oaks J; Auburn University, La Sierra University

Phylogenetic Placement of Burmese Tree Frogs in the genus *Polypedates* (Gravenhorst, 1829)

P1-131 Clay TA, Hess AJ, Bonett RM; Nicholls State University, University of Tulsa

Biogeography of the Ouachita Dusky Salamander, *Desmognathus brimleyorum*

P1-132 Moore CL, McDonnell AJ, Schuette S, Martine CT*; Bucknell University, Chicago Botanic Garden, Western Pennsylvania Conservancy

Prairies in Pennsylvania?: Assessing the conservation status of *Baptisia australis* var. *australis* through natural history and metapopulation lenses.

P1-134 Carlson TC, Cabrera-Guzmán EC, Fox SF; Oklahoma State University

First Documentation of Breeding Aggregations of the Ringed Salamander, *Ambystoma annulatum*, in Oklahoma, USA

P1-134.5 Evangelista D, Edwards C, Hall M, Martin W, Nemani S; US Naval Academy, United States Navy

Thermal imaging of a sea turtle *arribada* using an Unmanned Aerial System (UAS)

Interspecific interactions

P1-135 Profetto GM, Howard JJ; University of New Orleans

Management of *P. montana* Effects on Plant Community Diversity

P1-137 Jendrey CR, Turner M; University of Washington

Star Gazing: Observations on the Movement and Feeding Behaviors of Ochre Sea Stars (*Pisaster ochraceus*)

P1-138 Pimienta MC, Ruiz CA, Koptur S; Florida International University

Do Diurnal Floral Visitors Increase the Fruit-set of a Sphingophilous Plant?: The Case of the Rough-leaf Velvetseed (Rubiaceae)

P1-140 Cupp PV; Eastern Kentucky University

Interspecific Cooperation of *Philomycus* Slugs and Green Salamanders, *Aneides aeneus*, May Enhance Water Economy

P1-141 Hernandez AM, Wainwright DK, Farrell BD; Harvard University, Yale University

Locomotion on a Leaf: Measuring the Microtopography of a Leaf Surface

P1-142 Akkipeddi SMK, Xu M, Chan KYK; Swarthmore College

Halogenated compound secreted by marine bacteria halts larval urchin development

P1-143 Walters LJ, Philips EJ, Badylak S, McClenahan G, Sacks PE, Donnelly MJ; University of Central Florida, University of Florida

Recruitment and Survival of the Eastern Oyster *Crassostrea virginica* when Challenged by the Brown Tide *Aureoumbra lagunensis*: Field Results

P1-144 Drummond JA, Brandao PB, Brandt ME, Egan SP, Correa AMS; Rice University, University of the Virgin Islands

Environmental DNA captures shifts in Caribbean fish communities associated with the invasive seagrass *Halophila stipulacea*

- P1-145** Tapsak ST, Hranitz JM, Percival CR, Pulley KL, Gonzalez VH, Petanidou T, Tscheulin T, Kantsa A, Barthell JF; Bloomsburg University of Pennsylvania, Pomona College, University of Texas at El Paso, University of Kansas, University of the Aegean, University of Central Oklahoma
Generalist Pollinators are the Foundation of a Summer Coastal Pollination Network in Dune Habitat.
- P1-146** Connor C, Zinn D, Williams DA, Watson CM; Midwestern State University, Texas Christian University
Dietary Niche Overlap of Native and Invasive Anoles on Dominica
- P1-147** Leavitt HE, Adrienne C, Amanda NN, Ford M; Eckerd College, NOAA Office of Ocean Exploration and Research, NOAA Fisheries Marine Ecosystems Division
Investigating Remotely Operated Vehicle Avoidance Behavior and Distribution of Mesopelagic Fauna
- P1-148** Orr TJ, Yamada KYH, Nelson MD, Matocq MD, Nielsen DP, Shaprio MD, Dearing MD; New Mexico State University, Auburn University, University of Utah, University of Nevada Reno
Diet switching in mammalian herbivores: dietary specialization and toxin tolerance in two woodrat species
- P1-149** Armstrong R, Torres T, Watson CM, Shipley MM; Midwestern State University
Characterization of Fatty Acid Profiles of the Butterfly Weed (*Asclepias tuberosa*) and its Specialist Predator, the Monarch Butterfly (*Danaus plexippus*).
- P1-150** Semanchik P, Bergey L, Labar J, Ritchie L, Horvath T; Centenary University
Comparison of Parasite Occurrence Between Three Native and one Non-native Palaemon Species of Grass Shrimp

Animal Communication

- P1-151** Austin AA, Davis J, Foltz S; Radford University
Frustrated Foragers: Can Displacement Behavior Communicate Food Quality and Accessibility Within and Between Species in the Wild?
- P1-152** Ludington SC, McKinney JE, O'Connell LA; Stanford University
Role of Transcription Factor FOXP2 in Tadpole Social Communication
- P1-152.5** McKinney JE, Ludington S, O'Connell LA; Stanford University
Nonapeptide Regulation of Begging and Aggressive Behavior in a Social Tadpole
- P1-153** Hellmich DL, Wright TF; New Mexico State University
Mapping the Contact Call Variation of Urban Invasive Parrots as a Model for Understanding Vocal Dialect Formation.
- P1-154** Kane SA, Xia S*, Fang R, Lu Y, Ulzli-Orshikh N, Wu J, Dakin R; Haverford College, Carleton University
Multispectral imaging reveals the design of iridescent visual signals in peacocks and related pheasants
- P1-155** Ruvina K, Bergman DA*, Wright MA; Grand Valley State University
The Sniff of Victory: The Road to Identify an Aggressive Male Chemosignal in Crayfish
- P1-156** Slattery JD, Rodriguez IM, Bilotta AJ, Wacker DW; University of Washington Bothell
Caw and Response: Context-Dependent Group Calling In American Crows
- P1-157** Hardt B, Benedict L; University of Northern Colorado
Assessing the Influences of Habitat Structure on Bird Song Propagation
- P1-158** Hensley NM, Gerrish GA, Saha R, Oakley TH, Rivers TJ; University of California Santa Barbara, University of Wisconsin Madison, Bates College, University of Kansas
Does ecological overlap drive the evolution of mating display discrimination in female sea fireflies?
- P1-159** Krieg CA, Getty T, Wade J; University of Scranton, Michigan State University, University of Connecticut
Sex Differences in Morphology of the Song Control Circuit in House Wrens, a North Temperate Species with Female Song
- P1-160** Wiser SD, Markham MR; University of Oklahoma
Electrosensory and metabolic responses of weakly electric fish to changing water conductivity
- P1-161** Dupin MK, Dahlin CR, Wright TF; New Mexico State University, University of Pittsburgh at Johnstown
Assessment of Population Size and Dialect Presence in the Endangered Yellow-Naped Amazon, *Amazona auropalliata*
- P1-162** Williams MD, Moosavi SK, Hutchins CE, Roberto DP, Breen MK, Ahmed ZB, Sullivan TJ, Jabir AH, Kolonko KJ, Harbison CW*; Siena College
Pheromone Communication and Aggregation Behavior in a Bird Ectoparasite
- P1-163** Smith C, Reichert M; Oklahoma State University
Chemical Communication and the effect of Calling Behavior in *Hyla chrysoscelis*
- P1-164** Hom KN, Terrazas M, Forlano PM; CUNY Graduate Center, St Mary's College, CUNY Brooklyn College
Oyster toadfish calling in noisy NYC waters
- P1-165** Gomes Aversa MD, Hartley JG, Leese JM; DeSales University
Female Mate Preference in Convict Cichlids Influenced by Intrasexual Competition and Male Quality

- P1-166** Coomes CM, Derryberry EP; University of Tennessee Knoxville Some like it hot: Do female songbirds discriminate between songs produced under hot and cold temperatures?
- P1-167** Kironde E, Furlan F, Fuxjager MJ, Preininger D, Mangiameli L; Smith College, Université Paris Diderot, Brown University, Vienna Zoo Androgens modulate dynamic changes in multimodal display structure in the Bornean rock frog (*Staurois parvus*)
- P1-168** Sung JY, Morehouse NI; University of Cincinnati Selection for Distinctiveness in Chinese Opera Masks
- Animal Movement**
- P1-169** Hoover EL, Dickerson S, Beck H, Oufiero CE; Towson U Modulation of takeoff kinematics in a nocturnal gliding mammal under varying photic environments.
- P1-170** Morrell A, Bartlam-Brooks H, Bennitt E, Wilson A; Royal Veterinary College, University of Botswana Navigation of zebra between grazing grounds and distant water sources in Botswana, Africa
- P1-171** Jackson CP, Fischer EK, O'Connell LA; Stanford University Behavioral Variation of Poison Frog Tadpoles in an Open Field
- P1-172** Vernasco BJ, Emmerson MG, Gilbert ER, Sewall KB, Watts HE; Washington State University, Virginia Tech Migratory state and patterns of steroid hormone receptor expression in the pectoralis muscle of a nomadic migrant, the pine siskin (*Spinus pinus*)
- P1-173** Hall LM, Enriquez MS, Mensinger AF; University of Minnesota Duluth The Effects of Intensive Trapping on the Population Dynamics of the Invasive Round Goby (*Neogobius melanostomus*)
- P1-174** Davis TJ, Wyneken J; Florida Atlantic University Diving Behavior of Captive Reared Leatherback Turtles
- P1-175** Hahn TP, Dingle H, Ramenofsky M, Cussen VA, Cornelius JM; Univ of California Davis, Oregon State Univ Strategies for use of unpredictable dynamic resources
- P1-176** Evangelista D, Figueroa S; United States Naval Academy Biomechanics of Herndon Climb
- P1-177** Ahmadyar S, Tran T, Rivera AS; University of the Pacific Serotonin induces female swimming behavior in sexually dimorphic ostracod crustaceans

DVM BSP: Karel F. Liem Award

- P1-179** Black CR, Armbruster JW; Auburn University Shape Variation of Armored Catfishes in a Phylogenomic and Ecological Context Using 3D Geometric Morphometric Techniques (Loricariidae)
- P1-180** Wynd BM, Uyeda JC, Nesbitt SJ; Virginia Tech Allometric growth and shifting diet in the large-bodied traversodontid cynodont, *Exaeretodon argentinus*, with implications for modeling growth in distorted specimens

DCB BSP: Steven Vogel Award

- P1-181** Galloway KA, Porter ME; Florida Atlantic University Lionfish puncture performance is impacted by the target tissue type
- P1-182** Puffel F, Labonte D; Imperial College London Scaling of bite forces in leaf-cutter ants
- P1-183** Attipoe AEL, Kaimaki DM, Labonte D; Imperial College London Surface Tension of the Insect Pad Secretion
- P1-184** Quimby K, Crews SC, Spagna JC; William Paterson University Impact of Leg Loss on Rotating Prey Strikes in "Flattie" Spiders of Genus *Karaops*
- P1-185** Salem W, Xu S, Mongeau JM; Pennsylvania State University Kinematic control of the yaw optomotor response in *Drosophila* flight
- P1-186** Smith SK, Hakansson J, Frazel PW, Long MA, Elemans CPH, Phelps SM; University of Texas Austin, University of Southern Denmark, NYU Langone An Intralaryngeal Whistle Using an Elaborated Structure Enables Song in Alston's Singing Mouse

Eco/evomorphology - Jaws and Skulls

- P1-187** Xiong D, Churchill M; University of Wisconsin Prey Capture Strategy is Correlated with Temporalis Muscle Size in Toothed Whales (Odontoceti)
- P1-188** Gilbert MC, Lerosé C, Conith A, Moyer JK, Huskey S, Albertson RC; Univ MA Amherst, Western KY Univ Osteology and Myology of *Pterycombus petersii*, with Insights into the Functional Tradeoff Between Feeding and Locomotion
- P1-189** Fabre AC, Noirault E, Fernandez V, Portela-Miguez R, Goswami A; Natural History Museum Morphological integration of the skull in marsupials: impact of diet and locomotion
- P1-190** Shelburne EC; Fort Hays State University Something's Fishy: A Comparative Structural Analysis of the Feeding Morphology of the Fish *Xiphactinus audax* and *Megalops atlanticus* Using 2D and 3D Morphometrics

P1-191	Gilbert MC, Lerosé C, Conith A, Cox FC, Albertson RC; Univ MA Amherst, Instituto Nacional de Pesquisas da Amazônia	Ontogeny of <i>Caquetaia spectabilis</i> : Delayed Skull Development Accommodates Extreme Jaw Protrusion
P1-192	Griner JG, Diamond KM, Blob RW; Clemson Univ	Comparative body shapes of amphidromous goby fishes living in different predator regimes
P1-193	Tse A, Caledé J; Ohio State University	Quantifying the link between cranial morphology and diet in Soricidae using geometric morphometrics
P1-194	Peredo CM, Marshall CD; University of Michigan, Texas A&M University	Orientation of the orbit predicts feeding ecology in marine mammals
P1-195	Hernandez CA, Heinicke M, Gamble T, Siler CD, Daza JD; University of Texas Arlington, Sam Houston State University, University of Michigan, Marquette University, University of Oklahoma	Morphological Variation of Gliding Geckos and Other Closely Related Forms
P1-196	Jones DD, Schmitz L.; Claremont McKenna, Scripps, and Pitzer Colleges	Retinal Topography of Mudskippers and Related Gobiid Fishes
P1-197	Hodge JR, Price SA, Wainwright PC; Clemson University, University of California Davis	Ancestral effects on convergence in zooplanktivorous butterflyfishes
P1-198	Hernandez AI, Scanlan LG, Cook W, Schmitz L.; Claremont McKenna, Scripps, and Pitzer College	Visual Fields in Mudskippers and Related Gobiid Fishes
P1-199	West JV, Lawing AM; Texas A&M University	Grab the Lizard by the Horns: Morphological Patterns in Horned Lizard Skulls

Morphology and Mechanics - Skeletons and Teeth

P1-200	Sekits NF, Tunnell Wilson WT, Jackson K; Whitman College	The Striped Beaked Snake really is a Skaapsteker adapted for digging: Evidence from cranial morphology
P1-201	Heerdegen I, Parker L, Ruddy B, Ingle D, Porter ME; Florida Atlantic University	Interspecific and regional variation in shark vertebral mineral structure and content
P1-202	Sullivan SP, Middleton KP, Holliday CM; University of Missouri	Morphology and Function of the Avian Furcula
P1-203	Skonieczny KL, D'Emic MD, Burk C, Hoffmann S; NYIT College of Osteopathic Medicine, Adelphi University, Northport High School	Cementum Analysis for Age Estimation in Fossil Mammals: Micro-CT vs Histological Thin Sections
P1-204	Crownover LA, Anderson CV; Univ South Dakota	Diversification patterns and evolutionary drivers in the chameleon axial skeleton
P1-205	Clark A, Caruso A, Gignac P, Uyeno T; College of Charleston, Oklahoma State University, Valdosta State University	Three-dimensional reconstruction of the hagfish feeding apparatus using diceCT
P1-206	Summers DA, Wainwright DK; Harvard University, Yale University	Crushers: When Lanternfish Develop Modified Pharyngeal Jaws
P1-207	Womble AL, Clark AJ, Uyeno TA; Valdosta State University, College of Charleston	The Functional Morphology of the Hagfish Feeding Apparatus Dental Plate Complex
P1-209	Newbrey MG, Woolfolk FR, Martín-Abad H, Maissey JG; Columbus State University, Universidad Autónoma de Madrid, American Museum of Natural History	Chronological ages of the coelacanths <i>Latimeria chalumnae</i> and <i>Axelrodichthys araripensis</i> by comparing ages from scales and bones
P1-210	Rehorek SJ, Elsey R, Beeching SC; Slippery Rock University, Louisiana Department of Wildlife and Fisheries	<i>Morphometrics of the American Alligator (Alligator mississippiensis) Embryonic Head.</i>
P1-211	Garcia PA, Deban SM, Jones MEH, Lappin AK; Univ South Florida, Natural History Museum, California Polytechnic Univ	Effects of bite out-lever and gape angle on bite force in the brown anole (<i>Anolis sagrei</i>)
P1-212	Berning DJ, Powers AK, Gross JB; University of Cincinnati, Harvard Medical School	Convergent and Constructive Craniofacial Trait Evolution in Three Cave-Dwelling Populations of <i>Astyanax Mexicanus</i>
P1-214	Baxter D, Farina SC, Fath MA, Tytell ED, Donatelli CM; Tufts University, Howard University, University of Ottawa	Evolution of notochordal foramina in actinopterygian fishes
P1-215	Goodvin DM, Rosenbach KL, Wilson JA; University of Michigan Ann Arbor	A New Method of Measuring Air Space Proportion in Pneumatic Skeletal Tissue
P1-216	Robishaw TE, Secor SM; University of Alabama	Comparative Allometry and Contribution of Snake Skeletal Mass
P1-217	Shea-Vantine CS, Kajiura SM, Porter ME, Galloway KA; Florida Atlantic University	Puncture performance of the barbs from the Atlantic stingray, <i>Hypanus sabinus</i> and the Bluntnose stingray, <i>Hypanus say</i>

Feeding and Digestion

- P1-218** Menegaz R, Rossiter JA, Larocque H, Boley A, Kile R, Saavedra R; University of North Texas Health Science Center Diet-Related Plasticity in Rodent Masticatory Muscles
- P1-219** Li EY, Kaczmarek EB, Olsen AM, Weller HI, Camp AL, Brainerd EL; Brown University, University of Liverpool The Relationship Between Movement Coordination and Suction Power During Feeding in Royal Knifefish (*Chitala blanci*)
- P1-220** Chadwell BA, Olson RA*, Montuelle SJ, Williams SH; Idaho College of Osteopathic Medicine, Ohio University FeedCycle: Facilitating rapid post-processing of XROMM data from mammalian feeding experiments
- P1-221** Lammers AR, Gould FDH, Ding P, German RZ; Cleveland State University, Rowan University, John Hopkins University, Northeast Ohio Medical University Hyoid kinematics during swallowing: effects of different vagus nerve lesions in infant pigs
- P1-222** Edwards KM, Reznick DN; University of California, Riverside Feeding Performance Differences in High and Low Predation Guppies Raised with Different Food Presentations
- P1-223** Montuelle SJ, Tewksbury C, Wilkinson K, Olson R, Williams SH, Gerstner G; University of Michigan, Ohio University Variability in Mammalian Chewing using Functional Data Analysis: Differences in Jaw Pitch Amplitude and Velocity throughout the Chewing Cycle
- P1-224** Tewksbury C, Wilkinson K, Montuelle S, Gerstner G, Williams SH; University of Michigan, Ohio University Variability in mammalian chewing using functional data analysis: flexibility in jaw movements in response to food properties in pigs
- P1-225** Kehl CE, Neustadter DM, Chiel HJ; University of North Carolina at Chapel Hill, Cardiac Success Ltd, Case Western Reserve University A 3D Model for Validating Hypotheses in Feeding Behavior in *Aplysia californica*
- P1-226** Chennault M, Martinez C, Wainwright P; Howard University, University of California Davis Comparing Functional Traits in Feeding Morphologies of Hybrid Sunfish
- P1-227** Violot E, Devine K, Kenaley CP; Boston College A Matter of Scales: Evaluating the Function of Fangs in Deep-sea Fishes

Complementary to S3: Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology

- P1-228** Gauthier SM, Cohen KE, Summers AP; Lewis and Clark College, University of Washington Getting to the Point: Characterizing the Function of Conical Teeth in Deep-Sea Stomiiformes
- P1-229** Bakari KI, Lomax JJ, Farina SC; Howard University, Brown University, University of Washington Friday Harbor Laboratories Relating Occlusal Offset to Diet in Piranhas and Pacus
- P1-230** Johanson Z, Underwood C, Twitchett R, Smith M; Natural History Museum, University of London, King's College Microstructure and Mineralogy in Dental Plates of *Harriotta raleighae* (Holocephali): Novel Dentine and Conserved Patterning Combine to Create a Unique Chondrichthyan Dentition
- P1-231** Holding ML, Trevine V, Zinenko O, Strickland JL, Rautsaw RM, Hofmann EP, Hogan MP, Grazziotin FG, Parkinson CL, Santana SE, Davis MR, Rokyta DR; Florida State University, Instituto Butantan, VN Karazin Kharkiv National University, Clemson University, University of Washington The beak of the snake: fang length evolution in vipers is predicted by diet

Science Communication & Outreach

- P1-232** Tanner RL; Washington State Univ Building a Network of Science Communicators for Change: Strategies from the National Network for Ocean and Climate Change Interpretation
- P1-233** Thawley CJ, Kostka AL, Kolbe JJ; Davidson College, University of Rhode Island Ecology by the people: How can citizen science inform our understanding of lizard ecology?
- P1-234** Butler JM, Wayne CR*, Maruska KP; Louisiana State University If fish could talk: Using cartoons and comics to disseminate and enhance science literacy
- P1-235** Sacks PE, Walters LJ, Donnelly MJ; University of Central Florida Oral Histories to Improve Coastal Restoration
- P1-236** Schwalb A, Lepkowski J, Renninger A, Davidson B; WB Saul High School, University of Pennsylvania, Swarthmore College Relevance and Complexity: Teaching Cancer Biology to Middle School Students
- P1-237** Lucas KN, Keep S, Morey S; University of Michigan, BiteScis, Abbott Lawrence Academy BiteScis: Teacher-Researcher Partnerships to Develop Engaging Research-Based Lessons

P1-238 Maltby R, Willis KL, Markham MR; University of Oklahoma

Weakly Electric Fish as Charismatic Midi-fauna: Lessons in Neuroscience Broader Impacts.

Stress

P1-239 Nebhut AN, Semro MR, Shinkle JR; Trinity University

The Relevance of Short Wavelength UV-B Radiation in Natural Light Environments

P1-240 Semro MR, Nebhut AN, Carroll KR, Shinkle JR; Trinity University

Stress then Acclimation: Effect of UV Radiation on Kale Growth, Pigmentation, and Antioxidant Content

P1-241 Wright-Lichter JX, Gormally BMG, Romero LM; Tufts University

Feather corticosterone concentrations not related to DNA damage in house sparrows

P1-242 Dehnert GD, Karasov WH, Lindborg AR; University of Wisconsin

2,4-D impacts on whole-body cortisol response in larval fathead minnows

P1-243 Titon Jr. B, Barsotti AMG, Vaz RI, Teixeira RV, Navas CA, Gomes FR; University of São Paulo

Annual Baseline and Post Restraint Hormonal and Immune Variations in Males of Toads (*Rhinella icterica*)

P1-244 Estrada RS, Gormally BMG, Romero LM; Tufts University

Assessing Background DNA Damage across Tissues in House Sparrows

P1-245 Woodruff MJ, Sermersheim LO, Rosvall KA; Indiana University

Do endotherms acclimate to heat? Physiological responses to a simulated heat wave in free-living birds

P1-246 McGrath MR, Howey CAF; University of Scranton

Ambient Light at Night (ALAN) and the Stress Response of Green Anoles

P1-247 Choi MP, Rubin AM, Wada H; Auburn University

Effects of Incubation Temperatures and Restraint on Beak Coloration in Zebra Finches

P1-248 Coutts VM, Beatty A, Schwartz T, Cooper C, Hurley L, Griffith S, Wada H; Auburn University, Macquarie University

Changes in Gene Expression in Response to Ambient Temperature Fluctuations in the Zebra Finch

P1-249 Gormally BMG, Macy RR, Martin K, Wright-Lichter JX, Romero LM; Tufts University

Expanding the dexamethasone suppression test: assessing multiple synthetic glucocorticoids in house sparrows (*Passer domesticus*)

P1-250 Bryant AR, Gabor CR, Swartz LK, Lowe WH, Wagner R; Texas State University, University of Montana, Ohio University

Steam Salamander Larvae Downregulate Corticosterone in the Presence of Fish Predators

P1-251 Hoffman AJ, Finger JW, Wada H; Auburn University

Mild Developmental Stress and its Effects on Adult Tissue Oxidative Status

P1-252 Ridenour M, Grindstaff JL*; Oklahoma State University

Hormonal Mediation of Sibling Rivalry in Eastern Bluebirds (*Sialia sialis*)

P1-253 Semel MA, Ratovoson JC, Moore IT; Virginia Tech, University of Antananarivo

Impact of habitat type and disturbance level on golden-crowned sifaka (*Propithecus tattersalli*) fecal glucocorticoid metabolite levels

P1-254 Martinez V, Grace JK; Texas A&M University

Interactions between stress hormones and blood parasites along elevation gradients

P1-255 Chrisler AD, Antunes IK, Kimball MG, Malisch JL; St Mary's College of Maryland, Louisiana State University

Modeling glucocorticoid physiology, glucose mobilization, and return rate in migrating Mountain White-crowned Sparrows (*Zonotrichia leucophrys oriantha*)

P1-256 Gardner LE, Watson CM, Shipley MM; Midwestern State University

The Physiological Effects of Cannabidiol on Toads

P1-257 Falso PG, Marshall LV, Gustafson KL, Falso MS, Zajac JM, Strain SR; Slippery Rock University

Effect of Neonicotinoid Pesticide Exposure On The Stress Response In African Clawed Frogs (*Xenopus laevis*)

P1-258 Antunes IK, Johnson EB, Mertz PS, Malisch JL; St Mary's College of Maryland, University of Pittsburgh

Development of an Enzyme Linked Immunosorbent Assay for Avian Corticosterone Binding Globulin

P1-259 Walker NJ, Morales OJ, Boyles JG, Warne RW; Southern Illinois University

Glucocorticoid and Behavioral Responses to Environmental Perturbations

P1-260 Bebus SE, Jones BC, Anderson RC; Florida State University, Florida Atlantic University

Brood-parasitized nestlings have higher baseline corticosterone concentrations

P1-260.5 Arlinghaus K, Challenger R*; Bellarmine University

Impacts of Ultraviolet Light Exposure on the Activity of Antioxidant Enzymes in the Coelomocytes of the Sea Urchins *Lytechinus variegatus* and *Arbacia punctulata*

Lipids

- P1-261** Montano DF, Kanatous SB; Colorado State University
Are you what you eat? Do lipids cause an intracellular response within skeletal muscle cells?
- P1-262** Rippamonti JR, De Silva IW, Dzialowski EM, Verbeck GF, Price ER; University of North Texas
Investigation of Lipid Changes During the Ontogeny of Endothermy
- P1-263** Torres T, Watson CM, Shipley MM; Midwestern State University
Fatty acid composition of native milkweed species (*Asclepias*) of North Texas made available to insect predators
- P1-264** Brogren D, Burley A, Holihan M, Graves S, Chrysler J, Popp K, Scott J; Saginaw Valley State University
High fat diets induce early signs of non-alcoholic fatty liver disease (NAFLD) independent of carbohydrate content
- P1-265** Moniz LE, Lyons K, Hoopes L, Lewis JM, Bedore CN; Georgia Southern University, Georgia Aquarium
Lipid Metabolites as Energy Stores in Batoids

Microbiomes: the multitudes

- P1-266** Krishnan A, Singh A, Faber-Hammond JJ, Renn SCP; Reed College
Effect of Social Stress on Gut Microbiome in *Astatotilapia burtoni*
- P1-267** Williams CE, Kueneman JG, McMillan WO, Cox CL, Logan ML; Northeastern Univ, Smithsonian, Georgia Southern Univ, Univ Nevada, Reno
The response of the gut microbiome to climate warming in a vertebrate ectotherm: A field-transplant experiment in the Panama Canal
- P1-268** Titus BM, Laroche RAS*, Rodríguez E, Wirshing H, Meyer CP; American Museum of Natural History, Rice University, Smithsonian Institution
Host Identity and Symbiotic Association Affects the Genetic and Functional Diversity of the Clownfish-Hosting Sea Anemone Microbiome
- P1-269** Murphy KM, Watkins M, Finger JW, Kelley MD, Elseey RM, Warner DA, Mendonça MT; Auburn University, Rockefeller Wildlife Refuge
Xenobiotic estradiol-17B and the microbial gut communities of hatchling American alligators (*Alligator mississippiensis*)
- P1-270** Miller A, Agyei D, Jilani C, Joshi D, Odaka Y, Owen P, Tran M, Wilson K; University of Cincinnati Blue Ash College
Effects of Plant-based Diet on the Gut Microbiota in Rusty Crayfish (*Faxonius rusticus*)
- P1-271** Grimes CJ, Labontè J, Lopez JV, Schulze A; Texas A&M University at Galveston, Nova Southeastern University
Microbiomes of a corallivore (*Hermodice carunculata*): where in the worm are the coral microbes?
- P1-272** Heitzman NS, Lower SE; Bucknell University
Relationship between sex, life stage, and gut microbial communities in *Photuris* fireflies

Sunday Schedule of Events

Events take place in the JW Marriott Austin, unless otherwise noted

EVENT

Poster Session 2 Set Up
Speaker Ready Room
Registration
Coffee Break AM
Exhibit Hall
Coffee Break PM
Poster Session 2 Even Numbers Authors Present
Poster Session 2 Odd Numbers Authors Present
Poster Session 2 Teardown

TIME

7:00 AM – 8:00 AM
7:00 AM – 5:00 PM
7:30 AM – 3:30 PM
9:30 AM – 10:30 AM
9:30 AM – 5:30 PM
3:30 PM – 4:30 PM
3:30 PM – 4:30 PM
4:30 PM – 5:30 PM
5:30 PM – 6:00 PM

LOCATION

Grand Ballroom
Room 405
Grand Ballroom Foyer
Grand Ballroom
Grand Ballroom
Grand Ballroom
Grand Ballroom
Grand Ballroom
Grand Ballroom

SPECIAL LECTURE

AMS Lecture: Dr. Sara Lindsay
The Art of Seeing: Using Microscopy to Power STEAM Learning in Biology
Bern Lecture: Dr. George Bentley
A Bird's Eye View of Reproductive Endocrinology

7:00 PM – 8:00 PM
7:00 PM – 8:00 PM

Rooms 301-302
Salons D-E

SYMPOSIUM ORAL PRESENTATIONS

S4: Reproduction: the Female Perspective from an Integrative and Comparative Framework
Chairs: Virginia Hayssen, Teri Orr
S5: Form, structure and function: How plants vs. animals solve physical problems
Chairs: Ulrike Müller, Simon Poppinga
S6: Bio-inspiration of silent flight of owls and other flying animals: recent advances and unanswered questions
Chairs: Chris Clark, Justin Jaworski

7:45 AM – 4:00 PM
8:30 AM – 3:30 PM
8:00 AM – 3:30 PM

Lone Star D
Rooms 303-304
Lone Star H

CONTRIBUTED PAPER ORAL PRESENTATIONS

MORNING

Session 35: Complementary to S3: Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology
Session 36: Comparative Genomics and Phylogenetics in Vertebrates
Session 37: Macroevolution and Evolutionary Paleobiology
Session 38: Fire When Ready: Muscle Activity
Session 39: DNNSB Best Student Paper
Session 40: Walking in Water
Session 41: What I Need: a Good Immune Defense
Session 42: Morphology and Function: A Rocky Relationship
Session 43: Adaptation and Changes in Environment
Session 44: Hot Flashes to Molecular Modulation – Thermo and Chemical Ecology
Session 45: Special Session: Celebrating the Scientific Contributions of Rosemary Knapp: Hormones and Alternative Reproductive Tactics, Part I
Session 46: Devo-evo
Session 47: Complementary to S2: Epigenetic Variation in Endocrine System
Session 48: DIZ Best Student Paper Session
Session 49: Special Session: Digestive Physiology: A Session in Honor of Bill Karasov, Part I
Session 50: DVM Best Student Paper: D. Dwight Davis Award
Session 51: Neuroethology & Visual Sensing
Session 52: Getting Real: Effects of Multiple Stressors on Organisms
Session 53: Immune-based Tradeoffs

8:00 AM – 10:00 AM
8:00 AM – 9:30 AM
8:00 AM – 10:00 AM
8:00 AM – 9:30 AM
8:00 AM – 10:00 AM
8:00 AM – 9:45 AM
8:15 AM – 10:00 AM
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8:00 AM – 9:30 AM
8:00 AM – 9:45 AM
10:30 AM – 12:00 PM
10:00 AM – 12:00 PM
10:30 AM – 12:00 PM
10:00 AM – 12:00 PM
10:15 AM – 12:00 PM
10:15 AM – 12:00 PM
10:30 AM – 11:45 AM

Lone Star A
Lone Star B
Lone Star C
Lone Star E
Lone Star F
Lone Star G
Rooms 301-302
Room 205
Rooms 201-202
Rooms 203-204
Brazos
Rooms 402-403
Lone Star A
Lone Star B
Lone Star C
Lone Star E
Lone Star F
Lone Star G
Rooms 301-302

Session 54: Adaptation and Genes	10:15 AM – 12:00 PM	Room 205
Session 55: Growth Factors & Neuropeptides	10:30 AM – 12:00 PM	Rooms 201-202
Session 56: Beat it (the Heat)- Combating Stress in Coral Reefs, Part I	10:00 AM – 12:00 PM	Rooms 203-204
Session 57: Special Session: Celebrating the Scientific Contributions of Rosemary Knapp: Hormones and Alternative Reproductive Tactics, Part II	10:15 AM – 12:00 PM	Brazos
Session 58: Evo-devo	10:15 AM – 11:30 AM	Rooms 402-403

AFTERNOON

Session 59: Complementary to S1: New Frontiers in Antarctic Marine Biology	1:30 PM – 3:00 PM	Lone Star A
Session 60: The Biology Underground	1:30 PM – 3:30 PM	Lone Star B
Session 61: Special Session: Digestive Physiology: A Session in Honor of Bill Karasov, Part II	1:30 PM – 2:45 PM	Lone Star C
Session 62: Animals in Compliance: Structural Mechanics	1:30 PM – 3:15 PM	Lone Star E
Session 63: DAB Best Student Paper: Marlene Zuk Award	1:30 PM – 3:15 PM	Lone Star F
Session 64: You Got the Touch (and Sight and Sound)	1:30 PM – 3:15 PM	Lone Star G
Session 65: Education and External Partnerships	1:30 PM – 3:15 PM	Rooms 301-302
Session 66: Thermoregulation	1:30 PM – 3:15 PM	Room 205
Session 67: Molecular Evolution	1:30 PM – 3:00 PM	Rooms 201-202
Session 68: Beat it (the Heat) – Combating Stress in Coral Reefs, Part II	1:30 PM – 3:00 PM	Rooms 203-204
Session 69: DCE Best Student Paper - Aubrey Gorbman Award	1:30 PM – 3:15 PM	Brazos
Session 70: Sensory Biology & Neuroethology	1:30 PM – 3:15 PM	Rooms 402-403

COMMITTEE AND BOARD MEETINGS

Advisory Committee	7:00 AM – 8:00 AM	Room 401
Membership Committee	7:00 AM – 8:00 AM	Room 409
Broadening Participation Committee Meeting	12:00 PM – 1:30 PM	Room 409
Educational Council	12:00 PM – 1:30 PM	Room 401

BUSINESS MEETINGS

TCS Business Meeting	12:00 PM – 1:30 PM	Room 309
AMS Business Meeting	12:00 PM – 1:30 PM	Room 406
DCE Meeting	5:45 PM – 6:30 PM	Lone Star A
DCB Meeting	5:45 PM – 6:30 PM	Lone Star B
DIZ Meeting	5:45 PM – 6:30 PM	Lone Star C
DOB Meeting	5:45 PM – 6:30 PM	Room 205
DPCB Meeting	5:45 PM – 6:30 PM	Rooms 301-302

WORKSHOPS AND PROGRAMS

Student Postdoctoral Affairs Committee: "How-To?" Daily Booth	9:15 AM – 5:00 PM	Grand Ballroom
Workshop: An Introduction to the World of Book Publishing from Editors and Authors	12:00 PM – 1:30 PM	Room 408
Organizing Meeting for Building Bridges Symposium	12:00 PM – 1:30 PM	Room 407
Symposium 5 Workshop: How to Disseminate Your Research	12:00 PM – 1:30 PM	Room 404
Workshop: Panel on Research and Working at Primarily Undergraduate Institutions	12:00 PM – 1:30 PM	Room 402-403
DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert	3:30 PM – 5:30 PM	Grand Ballroom
TAL-X Workshop: Teaching Critical Thinking About Science and Technology: GMOs As a Case Study	7:00 PM – 9:00 PM	Rooms 303-304

SOCIAL EVENTS

Morning Run	6:00 AM	JW Marriott Lobby
DIZ/DEE/TCS/AMS/DPCB/DEDB/DOB Social	8:00 PM – 10:00 PM	South-East Lobbies
Outgroup Social: LGBTQ+ social (allies welcome!), 21+	8:30 PM – 10:30 PM	Location TBD

Sunday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 4:00 PM Symposium S4 Lone Star D

Reproduction: the Female Perspective from an Integrative and Comparative Framework

Chairs: Virginia Hayssen, Teri Orr

7:45 am	S4-1	Orr TJ, Hayssen V; New Mexico State University, Smith College	Introduction
8:00 am	S4-2	Hayssen V; Smith College	Misconceptions about Conception and Other Fallacies: Historical Bias in Reproductive Biology
8:30 am	S4-3	Hook KA, Fisher HS; University of Maryland	The importance of female reproductive traits: from mice to seed beetles
9:00 am	S4-4	Sirot LK; College of Wooster	Opportunities for Female Modulation of Seminal Fluid Molecules
9:30 am	Coffee Break		Grand Ballroom
10:00 am	S4-5	Wolfner MF; Cornell University	The female side of the male x female interactions that modulate sperm competition and reproduction
10:30 am	S4-6	Lipshutz SE, Rosvall KA; Indiana University	Neuroendocrinology of sex-role reversal
11:00 am	S4-7	Karachiwalla Z, Decarvalho T, Burns M*; University of Maryland Baltimore County	Spermathecal Variation By Mating System in Temperate Harvestmen
11:30 am	S4-8	Kimmit AA, Sinkiewicz DM, Ketterson ED; Texas A&M University, Indiana University	Female Songbirds that Differ in Migratory Strategy Also Differ in Neuroendocrine Measures in Early Spring
12:00 pm	Lunch Break		
1:30 pm	S4-9	Holekamp KE, Montgomery TM, Strauss ED; Michigan State University, University of Nebraska	Social competition and cooperation affect reproductive success of female spotted hyenas
2:00 pm	S4-10	Lynch KS, Ryan MJ; Hofstra University, University of Texas at Austin	Social Regulation of Hormones and the Implications for Female Mate Choice
2:30 pm	S4-11	Hawkes K; University of Utah	The centrality of grandmothers in human evolution
3:00 pm	S4-12	Orr TJ, Hayssen V; New Mexico State University, Smith College	Where now? Future directions in reproductive biology framed by the female perspective
3:30 pm	S4-13	Orr TJ; New Mexico State University	Round Table Discussion for Reproduction: the Female Perspective from an Integrative and Comparative Framework
4:00 pm	Coffee Break		Grand Ballroom

8:15 AM – 3:30 PM Symposium S5 Rooms 303-304

Form, structure and function: How plants vs. animals solve physical problems

Chairs: Ulrike Müller, Simon Poppinga

8:15 am	S5-1	Müller UK, Poppinga S; California State University Fresno, University of Freiburg, Botanic Garden	Introduction to the symposium
8:30 am	S5-2	Bauer U; University of Bristol	Functional Surfaces of Insect-trapping Pitcher Plants
9:00 am	S5-3	Stark AY, Yanoviak SP; Villanova University, University of Louisville, Smithsonian Tropical Research Institute	Adhesive Performance of Tropical Arboreal Ants on Canopy Substrates
9:30 am	S5-4	O'Donnell MK, Deban SM; Brown University, University of South Florida	The Effect of Water on Salamander Cling Performance at the Critical Roughness
10:00 am	Coffee Break		Grand Ballroom
10:30 am	S5-5	Deban SM, Holzman R, Müller UK; University of South Florida, Tel Aviv University, California State University	Suction feeding in small animals and carnivorous plants

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11:00 am	S5-6	<i>Whitaker DL; Pomona College</i>	Nature's weapons of mass reproduction: Ballistic dispersal of seeds and spores
11:30 am	S5-7	<i>Cho MS, Neubauer P, Fahrenson C, Rechenberg I; Technical University of Berlin, Bionics and Evolution Techniques</i>	A Filament-like Structure for Flight?: The Ballooning Flight of Spiders
12:00 pm	Lunch Break		
1:30 pm	S5-8	<i>Deban SM, Holzman R, Müller UK; University of South Florida, Tel Aviv University, California State University Fresno</i>	Suction feeding in small animals and carnivorous plants
2:00 pm	S5-9	<i>Jaffar-Bandjee M, Steinmann T, Krijnen G, Casas J*; University of Tours, CNRS, University of Twente</i>	Efficiency of odor capture by multiscale pectinate insect antennae
2:30 pm	S5-10	<i>Poppinga S, Speck T; University of Freiburg</i>	Abstraction of Slow and Fast Plant Movement Principles for the Technical Transfer into Biomimetic Motile Structures
3:00 pm	S5-11	<i>Lentink D, Chin DD, Hightower BJ, Ingersoll R; Stanford</i>	Design principles of Fluid Force and Moment Platforms for biological locomotion studies
3:30 pm	Coffee Break		

Grand Ballroom

8:00 AM – 3:30 PM	Symposium S6	Lone Star H
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Bio-inspiration of silent flight of owls and other flying animals: recent advances and unanswered questions

Chairs: Chris Clark, Justin Jaworski

7:45 am	S6-1	<i>Clark CJ; University of California Riverside</i>	Introduction to the Symposium on Bioinspiration of silent flight of owls and other flying animals
8:00 am	S6-2	<i>Boonman A, Eitan O, Yovel Y; University of Tel Aviv</i>	The acoustics of flapping flight in birds and bats; a preliminary analysis
8:30 am	S6-3	<i>Yack JE; Carleton University</i>	What does a Butterfly Hear? Neurophysiological and Behavioural Responses to Predator Sounds
9:00 am	S6-4	<i>Liu H, Rao C, Nakata T; Chiba University</i>	Robust strategies in owl silent flight: aerodynamic force production and noise suppression
9:30 am	S6-5	<i>Lepiane KL, Clark CJ; University of California Riverside</i>	The dorsal velvet surface of owl feathers decreases sounds of rubbing during flapping flight
10:00 am	Coffee Break		
10:30 am	Grand Ballroom		
10:30 am	S6-6	<i>Jaworski JW; Lehigh University</i>	Acoustic models for wing specializations of silent owl species
11:00 am	S6-7	<i>Krishnan K, Ben-Gida H, Guglielmo CG, Gurka R*; CCU, Technion, UWO</i>	Wake Flow Mechanisms and Aerodynamic Forces of Owls During Flapping Flight
11:30 am	S6-8	<i>Krishnamoorthy K, Capuano F, Gurka R*, Balaras E; Coastal Carolina University, University of Naples Federico II, George Washington University</i>	Numerical and experimental study of owls flapping flight
12:00 pm	Lunch Break		
1:30 pm	S6-9	<i>Clark CJ, Le Piane K; University of California Riverside</i>	Evolutionary and ecological correlates of silent flight in owls, nightbirds and hawks: Does silent flight evolve for stealth, or to reduce self-masking?
2:00 pm	S6-10	<i>Gall MD, De Koning M, Beatini JR, Proudfoot GA; Vassar College</i>	Directional sensitivity of Northern saw-whet owls: implications for prey and wing sound detection
2:30 pm	S6-11	<i>Gómez-Bahamón V, Worm A, Castaño M, Donahue E, Tuero D, Clark C, Bates J; University of Illinois, Arkansas State University, Universidad de los Andes, Universidad de Buenos Aires, University of California Riverside, Field Museum</i>	Non-vocal Acoustic Signals in Kingbirds (genus <i>Tyrannus</i>)
3:00 pm	S6-12	<i>Clark CJ; UC Riverside</i>	Final roundtable discussion on bioinspiration of silent flight
3:30 pm	Coffee Break		
	Grand Ballroom		

Sunday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 10:00 AM Session 35

Lone Star A

Complementary to S3: Biology at the Cusp: Teeth as a Model Phenotype for Integrating Developmental Genomics, Biomechanics, and Ecology

Chairs: Natasha S. Vitek, Tyler A. Square

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|---------|-------------|---|--|
| 8:00 am | 35-1 | <i>Burroughs RW; University of Chicago</i> | Modeling rodent tooth morphogenesis reveals constraints on mammalian tooth evolution |
| 8:15 am | 35-2 | <i>Birlenbach DM, Keller JS, Fox DL; University of Minnesota, University of New Mexico</i> | Morphological Similarity in the Dentition of Competing and Non-Competing Rodents |
| 8:30 am | 35-3 | <i>Vitek NS, McDaniel SF, Bloch JI; Stony Brook University, University of Florida, Florida Museum of Natural History</i> | Is variation in molar tooth crown morphology of the Grasshopper Mouse (<i>Onychomys leucogaster</i>) a reflection of selection or drift? |
| 8:45 am | 35-4 | <i>Eddins HMS, Kligman BT, Nesbitt SJ, Marsh A, Parker W, Stocker MR; Virginia Tech, Petrified Forest National Park</i> | New Triassic Reptile Reveals Oldest Record of a Complete Envenomation Apparatus |
| 9:00 am | 35-5 | <i>Kay DI, Gignac PM, O'Brien HD; Oklahoma State University</i> | Do sockets shape teeth in non-mammalian thecodonts? A case study in <i>Alligator mississippiensis</i> |
| 9:15 am | 35-6 | <i>Kim SL, Yeakey JD, Eberle JJ, Zeichner SS; University of California, Merced, University of Colorado, Boulder, California Institute of Technology</i> | Impacts of Environmental Gradients on Shark Body Size: a Comparison from Fossil Evidence and Demographic Modeling of Sand Tigers |
| 9:30 am | 35-7 | <i>Colombero CR, Wainwright DK, Lauder GV; Harvard University, Yale University</i> | Shark Dermal Denticles: Loss and Regeneration Patterns Vary with Body Position and Ecotype |
| 9:45 am | 35-8 | <i>Square TA; University of California, Berkeley</i> | Stem Cell Markers Reveal Conservation of Tooth and Hair Regeneration |

10:00 am **Coffee Break** **Grand Ballroom**

8:00 AM – 9:30 AM Session 36

Lone Star B

Comparative Genomics and Phylogenetics in Vertebrates

Chair: Dave Blackburn

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|---------|-------------|--|--|
| 8:00 am | 36-1 | <i>Hill EC, Jarman MJ, Butler MA; University of Hawaii</i> | The Resolution Solution: Increasing Nodal Support in the Problematic Phylogeny for a Large Adaptive Radiation of Papuan Asterophryne Frogs |
| 8:15 am | 36-2 | <i>Blackburn DC, Nielsen SV, Barej M, Rödel MO; University of Florida, Museum für Naturkunde</i> | Systematics and Biogeography of the African Slippery Frogs (genus <i>Conraua</i>), Including the World's Largest Living Frog |
| 8:30 am | 36-3 | <i>Marshall TL, Davis DR, Hillis DM; University of Texas at Austin, University of Texas Rio Grande</i> | Mitochondrial Discordance in the North American corn snakes (<i>Pantherophis guttatus</i> complex) |
| 8:45 am | 36-4 | <i>Osmanski AB, Johnson M, Gongora J, Densmore III LD, Ray DA; Texas Tech University, University of Sydney</i> | Genomic Signatures of Selection Detection Across the Order Crocodylia |
| 9:00 am | 36-5 | <i>Perry BW, Schield DR, Mackessy SP, Castoe TA; University of Texas Arlington, University of Northern Colorado</i> | Mechanisms Driving Venom Gene Regulation in Rattlesnakes Revealed Through Integrative Analyses of Genome Structure and Function. |
| 9:15 am | 36-6 | <i>Simpson DY, Telemeco R, Langkilde T, Schwartz TS; Auburn University, California State University, Pennsylvania State University</i> | Differential Gene Expression to heat or fire ant envenomation in <i>Sceloporus undulatus</i> |

9:30 am **Coffee Break** **Grand Ballroom**

8:00 AM – 10:00 AM Session 37

Lone Star C

Macroevolution and Evolutionary Paleobiology

Chair: Tom Stewart

8:00 am	37-1	Chapman BR, Wilson LE; Fort Hays State University	Predicting habitat preferences of <i>Hesperornis</i> (Aves: Hesperornithiformes) in the Western Interior Seaway through occupancy modeling
8:15 am	37-2	Stocker MR, Nesbitt SJ, Angielczyk K, Sidor C, Fortner J, Olroyd S, Lungmus J, Smith R; Virginia Tech, Field Museum, University of Washington, Southern Methodist University, University of Chicago, University of the Witwatersrand	A New, Small Arboreal Reptile from the Upper Permian of Tanzania
8:30 am	37-3	Stewart TA, Lemberg JB, Shubin NH; University of Chicago	The evolution of dermal rays in tetrapodomorph paired fins
8:45 am	37-4	Lynch LM, McKenna ME, Dudgeon JV; Washington University, Idaho State University, Center for Archaeology, Materials, and Applied Spectroscopy Center	Living on the edge: ecology of the extinct Noble marten as determined by morphological and isotopic evidence
9:00 am	37-5	Ledesma D, Kemp M; University of Texas, Austin	Changes in central Texas fossil herpetofauna
9:15 am	37-6	Felice RN, Pol D, O'Connor PM, Goswami A; UCL, CONICET, Ohio University, NHM	Crocodyliform Cranial Constraint and Convergence
9:30 am	37-7	Stayton CT, Price SA, Wainwright PC, Friedman ST; Bucknell University, Clemson University, UC Davis	What does it take to make an eel? Convergence and adaptation in the evolution of an eel-like body plan
9:45 am	37-8	Miyashita T, Gess RW, Coates MJ; University of Chicago, Albany Museum	The Evolutionary Origin of the Filter-feeding Larval Phase in Lampreys
10:00 am	 Coffee Break		Grand Ballroom

8:00 AM – 9:30 AM Session 38

Lone Star E

Fire When Ready: Muscle Activity

Chair: David Carrier

8:00 am	38-1	Rice N, Jeong S, Nishikawa K; Northern Arizona University	How do Muscle Length and Activation Interact to Determine Muscle Force Production?
8:15 am	38-2	Jimenez YE, Brainerd EL; Brown University	Regionalized contributions of the epaxial musculature to swimming and suction feeding in bluegill sunfish
8:30 am	38-3	Wood LJ, Tobalske BW, Altshuler DL; University of British Columbia, University of Montana	A Specialized Muscular System Enables Highly Dynamic Wing Motions in Passerine Birds
8:45 am	38-4	Bortoni A, Morris AT, Young IR, Breuer KS, Swartz SM; Brown University	Synchronous Muscle Recruitment for Stable Flight Control in Egyptian Fruit Bats
9:00 am	38-5	Boynton AM, Carrier DR; University of Utah	Function of cervical muscles during human running
9:15 am	38-6	Carrier DR, Boynton AM; University of Utah	The Neck is Part of the Human Core
9:30 am	 Coffee Break		Grand Ballroom

8:00 AM – 10:00 AM Session 39

Lone Star F

DNNSB Best Student Paper

Chair: Mike Baltzley

8:00 am	39-1	Dolphin KE, Fischer EK, Hughes KA, Hoke KL; Colorado State University, Stanford University, Florida State University	What in your right mind would make you do that!? Identifying neural components of courtship decisions
8:15 am	39-2	Duncan CM, Christian H, Chmura H, Buck CL, Barnes BM, Loudon A, Williams C; Univ of Alaska Fairbanks, Univ of Oxford, Northern Arizona Univ, Univ of Manchester	Ultrastructural Changes of Reproductive Neuroendocrine and Endocrine Responding Cells Associated with Circannual Timing in a Hibernating Mammal
8:30 am	39-3	Anselmo CM, Butler JM, Maruska KP; Louisiana State University, Baton Rouge	Can you feel me now?: The lateral line system mediates reproduction in an African cichlid

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8:45 am	39-4	<i>Ko D, Haddad A, Lin HT; Imperial College London</i>	Visual Target Information Encoding Mechanisms in the Dragonfly
9:00 am	39-5	<i>Yarger AM, Smith AJ, Razmi AN, Fox JL; Case Western Reserve University</i>	Haltere synchrony in flies
9:15 am	39-6	<i>Rodriguez-Santiago M, Jordan LA, Hofmann HA; University of Texas at Austin, University of Konstanz</i>	Social Context Affects Learning and Neural Activity Patterns in Dynamic Social Groups
9:30 am	39-7	<i>Kanwal JK, De Bivort BL, Samuel A; Harvard University</i>	Early integration of multisensory information in the <i>Drosophila</i> larva
9:45 am	39-8	<i>Raja SV, Sane SP; National Centre for Biological Sciences, Tata Institute of Fundamental Research</i>	Collective movements of mound-building termites
10:00 am	 Coffee Break		
Grand Ballroom			

8:00 AM – 9:45 AM **Session 40** **Lone Star G**

Walking in Water

Chairs: Amanda Palecek, Melina Hale

8:00 am	40-1	Hale ME, Goolsbee AW; University of Chicago	Substrate-based locomotion in young octopuses.
8:15 am	40-2	Heydari S, Po T, McHenry MJ, Kanzo E; University of Southern California, University of California, Irvine	Sea Star Inspired Crawling and Bouncing
8:30 am	40-3	Gassler TR, Flammang BE; New Jersey Institute of Technology	Animated “Foot” Control During Walking in Skates
8:45 am	40-4	Travis KG, Kawano SM; California State University Long Beach, George Washington University	Comparative biomechanics of submerged and emerged walking in the epaulette shark (<i>Hemiscyllium ocellatum</i>)
9:00 am	40-5	Crawford CH, Cerrato-Morales CL, Flammang BE; New Jersey Institute of Technology	Comparative Kinematics of Terrestrial Walking in Two Balitorid Loaches
9:15 am	40-6	Amplo HE, Flammang BE; Rutgers Univeristy-Newark, New Jersey Institute of Technology	Frogfish Pectoral Fin Functional Morphology
9:30 am	40-7	Palecek-McClung AM, Blob RW; Clemson University	Wading through water: The influence of water depth on the locomotion of the Chilean Flamingo (<i>Phoenicopterus chilensis</i>)
9:45 am	.....	Coffee Break	Grand Ballroom

8:15 AM – 10:00 AM **Session 41** **Rooms 301-302**

What I Need: A Good Immune Defense

Chairs: Catherine Tylan, Katherine Buckley

8:15 am	41-1	<i>Dearborn DC, Warren S, Hailer F; Bates College, Cardiff University</i>	Meta-analysis of Diversity and Selection at MHC Class II A Genes: the Neglected Half of the Vertebrate Immune System's Heterodimer
8:30 am	41-2	<i>Tylan C, Langkilde T; Pennsylvania State University</i>	Immune Function Changes in Response to Consumption of and Stings from Fire Ants, an Invasive Predator and Prey of Native Lizards
8:45 am	41-3	<i>Love AC, Durant SE*, Wilder SM, Youseff NH; U Arkansas, Ok State</i>	Macronutrients, the microbiome, and illness-induced feeding behavior: Are birds shaping immune responses through selective feeding?
9:00 am	41-4	<i>Becker DJ, Schultz EM, Atwell JW, Hall RJ, Ketterson ED; Indiana University, Wittenberg University, University of Georgia</i>	Urban residency, host immunity, and infectious disease dynamics in a traditionally migratory songbird
9:15 am	41-5	<i>Downs CJ, Schoenle LA, Martin LB; SUNY College of Environmental Science & Forestry, Hamilton College, University of South Florida</i>	How Does Microbicidal Capacity of Serum Scale with Body Mass in Mammals?
9:30 am	41-6	<i>Love AC, Grisham K, Durant SE; University of Arkansas, Oklahoma State University</i>	Perception of Infection: Public Information about Disease Influences Immunity in Songbirds
9:45 am	41-7	<i>Buckley KM; Auburn University</i>	Immune Responses in Sea Urchin Larvae Highlight Fundamental Aspects of Animal Immunity
10:00 am	 Coffee Break		
Grand Ballroom			

8:00 AM – 9:45 AM **Session 42** **Room 205**

Morphology and Function: A Rocky Relationship

Chair: Mark Westneat

8:00 am	42-1	Westneat MW, Gartner SM, Cooper WJ; University of Chicago, Washington State Univ	JawsModel 2020: Tracking the Transmission of Force and Motion in Fish Cranial Linkage Systems Through Phylogenetic History
8:15 am	42-2	Larouche O, Friedman ST, Corn KA, Martinez CM, Wainwright PC, Price SA; Clemson University, University of California, Davis	Does Habitat Complexity Affect the Direction of Body Shape Evolution in Marine Fishes?
8:30 am	42-3	Pos KM, Kolmann MA, Gao T, Hernandez LP, Gidmark NJ; George Washington University, University of Chicago, Knox College	Morphological evolution within minnows exhibits decoupling of form & function during periods of climate change in North America
8:45 am	42-4	Juarez BH, Moen DS, Adams DC; Iowa State University, Oklahoma State University	Morphology Predicts Interspecific Jumping Performance in Frogs
9:00 am	42-5	Gray JA, Sherratt E, Hutchinson MN, Jones MEH; Oklahoma State University, University of Adelaide, South Australian Museum, University College London	Dragons of the trees, the rocks, and the ground: the evolution of cranial shape in a continental-scale evolutionary radiation of lizards (Lepidosauria: Agamidae)
9:15 am	42-6	Quinn BL, Morales AE, Simmons NB; Temple University, American Museum of Natural History	Predicting Foraging Strategies from Morphological Traits in <i>Myotis</i>
9:30 am	42-7	Lungmus JK, Angielczyk KD, Luo ZX; University of Chicago, Field Museum of Natural History	Limb Ecometrics Show Limited Applicability for Quantifying Ecological Novelty in the Deep Evolution of Synapsida
9:45 am	.....	Coffee Break	Grand Ballroom

8:00 AM – 9:45 AM **Session 43** **Rooms 201-202**

Adaptation and Changes in Environment

Chair: Carla Madelaire

8:00 am	43-1	Sirovy KA, Kelly MW, Johnson KM; Louisiana State University	Intraspecific variation in the stress response of the Eastern Oyster, <i>Crassostrea virginica</i> , to salinity changes within the northern Gulf of Mexico
8:15 am	43-2	Bontrager M, Muir CD*, Mahony C, Gamble DE, Germain RM, Hargreaves AL, Kleynhans EJ, Thompson KA, Angert AL; University of British Columbia, University of California, Davis, University of Hawai'i, McGill University	Climate anomalies are altering local adaptation
8:30 am	43-3	Grimes CJ, Paiva PC, Petersen L, Schulze A; Texas A&M University at Galveston, Universidade Federal do Rio de Janeiro	How fireworms, <i>Hermodice carunculata</i> , react to hypoxia: morphological, physiological and gene expression responses
8:45 am	43-4	Sharpe SL, Ungerer MC, Nippert JB; Kansas State University	Effects of Abiotic Stress Across Population in Wild Foxtail Millet <i>Setaria viridis</i>
9:00 am	43-6	Velotta JP, Robertson CE, Schweizer RM, McClelland GB, Cheviron ZA; University of Montana, McMaster University	A developmental delay in thermogenesis is associated with adaptive shifts in gene expression in high-altitude deer mice
9:15 am	43-7	Madelaire CB, Barsotti AMG, Wagener C, Sugano Y, Baxter-Gilbert J, Gomes FR, Measey J; Northern Arizona University, University of São Paulo, Stellenbosch University	Invasive toads shift behavioral traits to find water
9:30 am	43-8	Nicholson DJ, Logan ML, Cox CL, McMillan WO, Garner TWJ, Knell RJ; Queen Mary University London, University of Nevada, Florida International University, Smithsonian Tropical Research Institution, Zoological Society of London	Population dynamics and morphological change after experimental colonization of a novel environment.
9:45 am	.....	Coffee Break	Grand Ballroom

8:00 AM – 9:30 AM **Session 44** **Rooms 203-204**

Hot Flashes to Molecular Modulation – Thermo and Chemical Ecology

Chair: Tim Wollesen

8:00 am	44-1	<i>Shields-Estrada AK, Cannatella DC; University of Texas at Austin</i>	Near Infrared Reflectance & Thermoregulation in <i>Epipedobates</i> Poison Frogs
8:15 am	44-2	<i>Toxopeus J, Dowle EJ, Ragland GJ; University of Colorado, University of Otago</i>	Tracking Physiological Time: Timing and Duration of Cold Exposure Impacts Seasonal Life History Timing in a Temperate Insect
8:30 am	44-3	<i>Karasov WH, Dehnert GK; University of Wisconsin, Madison</i>	Non Target Impacts of the Herbicide 2,4,-D on Early Life Stages of Fish
8:45 am	44-4	<i>Fisher II AL, Desjardins N, Degrandi-Hoffman G, Smith B, Johnson M, Kaftanoglu O, Cogely T, Fewell J, Harrison J; Arizona State University, United States Department of Agriculture</i>	A widely-used fungicide produces symptoms of colony collapse disorder in honey bees (<i>Apis mellifera</i>)
9:00 am	44-5	<i>Huynh AH, Rice AM; Lehigh University</i>	Chemical communication in a hybridizing chickadee system: olfaction and reproductive isolation
9:15 am	44-6	<i>Glynn KJ, Zahor DL, Chiparus SL, Cornelius JM; Eastern Michigan University, Oregon State University</i>	Did the Flint water crisis also harm wild birds? Examining blood lead of three urban birds in Flint, MI
9:30 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:45 AM **Session 45** **Brazos**

Special Session: Celebrating the Scientific Contributions of Rosemary Knapp: Hormones and Alternative Reproductive Tactics, Part I

Chairs: Ignacio Moore, Sarah Woodley

8:00 am	45-1	<i>Woodley SK, Moore IT; Duquesne University, Virginia Tech</i>	Introduction to Celebrating the scientific contributions of Rosemary Knapp: hormones and alternative reproductive tactics
8:15 am	45-2	<i>Neff BD; Western University</i>	Hormones and Behavior in Sunfish: Celebrating 17 years of Collaboration with Rosemary Knapp
8:30 am	45-3	<i>Grober MS, Pradhan DS; Georgia State University, Idaho State University</i>	Rosemary Knapp: scientist, colleague, mentor, friend
8:45 am	45-4	<i>Leary CJ; University of Mississippi</i>	Hormonal Regulation of Alternative Mating Tactics in Anuran Amphibians: A Tribute to Rosemary Knapp
9:00 am	45-5	<i>Partridge CG, MacManes MD, Knapp R, Neff BD; Grand Valley State University, University of New Hampshire, University of Oklahoma, University of Western Ontario</i>	Brain transcriptional profiles of alternative reproductive tactics in bluegill sunfish
9:15 am	45-6	<i>Churchman EKL, Hain TJA, Knapp R, Neff BD; University of Western Ontario, University of Oklahoma</i>	Perceived paternity affects parental care behaviour in bluegill sunfish (<i>Lepomis macrochirus</i>)
9:30 am	45-7	<i>Bass AH; Cornell University</i>	Behavioral Timing: The Essential Role of Neurohormonal Mechanisms
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:45 AM **Session 46** **Rooms 402-403**

Devo-evo

Chair: Emily Setton

8:00 am	46-1	<i>Wollesen T, Musser J, Bertucci P, Arendt D; European Molecular Laboratory</i>	Single Cell RNA-sequencing reveals molluscan cell types and sheds light on the evolution of a complex bilaterian body plan
8:15 am	46-2	<i>Rojas Arreola L, Romero R, Diaz Dominguez L, Garcia Carreño F; Centro de Investigaciones Biológicas del Noroeste</i>	Proteolytic profile through larvae development in <i>Penaeus vannamei</i> : activity and transcriptional approach

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8:30 am	46-3	Setton EVW, Sharma PP; University of Wisconsin - Madison	The fly cannot save us: Using developmental transcriptomes to probe the genetic architecture of spider spinnerets
8:45 am	46-4	Oel AP, Lamanna F, Hervas-Sotomayor F, Kaessmann H, Arendt D; EMBL Heidelberg, ZMBH, University of Heidelberg	Evolution of retinal cell types in the sea lamprey, <i>Petromyzon marinus</i>
9:00 am	46-5	Kimura J, Ricci L, Luo YJ, Srivastava M; Harvard University	Development of the acoel worm <i>Hofstenia miamia</i> and the embryonic origin of neoblasts
9:15 am	46-6	Hulett RE, Potter D, Luo YJ, Ricci L, Srivastava M; Harvard University	Identifying regulators of neural cell-type diversity during regeneration in the acoel <i>Hofstenia miamia</i>
9:30 am	46-7	Lochab AK, Extavour CG; Harvard University	Traveling Without a Destination: Primordial Germ Cell Migration in a Hemipteran Insect
9:45 am	.....	Coffee Break	 Grand Ballroom

10:30 AM – 12:00 PM **Session 47** **Lone Star A**

Complementary to S2: Epigenetic Variation in Endocrine System

Chairs: Vania R. Assis, Sebastian G. Alvarado

10:30 am	47-1	Alvarado SG, Krupakar H; Queens College CUNY, GE Healthcare	Developing an automated pipeline for quantifying animal pigmentation using deep learning
10:45 am	47-2	Teixeira RV, Titon SCM, Titon Jr. B, Gomes FR, Assis VR*; University of Sao Paulo	Trace elements and amphibian's immunity - what can we expect?
11:00 am	47-3	Stevenson TJ; University of Glasgow	Rhythmic Epigenetics and the Neuroendocrine Regulation of Reproduction in a Seasonal Rodent.
11:30 am	47-5	Ragsdale AK, Dutoit L, Besson AA, King T, Gemmell NJ, Hore T, Johnson SL; University of Otago, University of Alberta	Paternal hypoxia exposure primes offspring for increased hypoxia resistance
11:45 am	47-6	Schrey A, Miller K, Loggins F, Wieczorek P, McCoy E, Mushinsky H; Georgia Southern University, Dartmouth College, University of South Florida	Epigenetic and Genetic Characteristics of Dispersal of the Florida Sand Skink
12:00 pm	.....	Lunch Break	.....

10:00 AM – 12:00 PM **Session 48** **Lone Star B**

DIZ Best Student Paper Session

Chairs: Ken Halanych, Linda Walters

10:00 am	48-1	Conkling ME, Hesp K, Munroe S, Sandoval K, Martens DE, Sipkema D, Wijffels RH, Pomponi SA; Florida Atlantic University, Wageningen University	Breakthrough in Marine Invertebrate Cell Culture: Sponge Cells Divide Rapidly in Improved Nutrient Medium
10:15 am	48-2	Webb SJ, Sebright Z, Taylor JRA; Scripps Institution of Oceanography, UCSD	Roles pH and Temperature May Play in the Life History of the Tuna Crab, <i>Pleuroncodes planipes</i>
10:30 am	48-3	Liguori AL; Stony Brook University	Exploring local adaptation to salinity and temperature variability in the copepod <i>Tigriopus californicus</i>
10:45 am	48-4	Bedgood SA, Bracken MES; University of California Irvine	Making it Big and Losing Friends: Algal Symbiont Contributions are Shaped by Sea Anemone Life History
11:00 am	48-5	Coelho JC, Poole AZ; Berry College	The Evolution and Role of GTPases of Immunity Associated Proteins (GIMAPs) in Cnidarians
11:15 am	48-6	Barnes DK, Allen JD; William & Mary	Predator-induced plasticity across echinoderm life history stages
11:30 am	48-7	Mack JM, De Carle D, Kvist S; University of Toronto, University of Maryland College Park	Prey, Populations, and the Pleistocene: Evidence for Low COI Variation in a Widespread North American Leech
11:45 am	48-8	Varney RM, Speiser DI, Kocot KM; Univ of Alabama, Univ of South Carolina	The genome of the chiton <i>Acanthopleura granulata</i> : perspectives on biomineralization from polyplacophorans
12:00 pm	.....	Lunch Break	.....

Special Session: Digestive Physiology: A Session in Honor of Bill Karasov, Part I

Chairs: Kevin Kohl, Denise Dearing

10:30 am	49-1	<i>Trevelline BK, Martínez-Mota R, Derting T, Darracq A, Pasch B, Dearing MD, Kohl KD*</i> ; Univ of Pittsburgh, Univ of Utah, Murray State Univ, Northern Arizona Univ	Nutrient manipulation differentially affects microbiome structure and host physiology in rodents with distinct dietary niches
10:45 am	49-2	<i>McWilliams S, Karasov W, Bauchinger U</i> ; University of Rhode Island, University of Wisconsin, Jagellonian University	Spare capacity and phenotypic flexibility in the digestive system of a migratory bird: defining the limits of animal design
11:00 am	49-3	<i>Tracy CR, McWhorter TJ</i> ; University of California Riverside, University of Adelaide Roseworthy	Paracellular absorption in the slow(er) lane: a brief review of reptilian paracellular nutrient absorption
11:15 am	49-4	<i>Price ER, Jara RF</i> ; University of North Texas	A “Dispersal Syndrome” Approach for Relating High Paracellular Absorption in Birds and Bats to Plant Ecology
11:30 am	49-5	<i>Fassbinder-Orth CA</i> ; Creighton University	Effects of Arbovirus Infections on Digestive Physiology, Growth, and Survival in Young Animals
11:45 am	49-6	<i>Secor SM</i> ; University of Alabama	Underlying Mechanisms that Drive an Adaptive Interplay in Digestive Physiology
12:00 pm	Lunch Break		

DVM Best Student Paper: D. Dwight Davis Award

Chair: Patricia Hernandez

10:00 am	50-1	<i>Capano JG, Cieri RL, Weller HI, Brainerd EL</i> ; Brown University, University of Utah	Modular Lung Ventilation in Snakes
10:15 am	50-2	<i>Sellers KC, Middleton KM, Holliday CM</i> ; University of Missouri	Joint Loading and Transformation in Suchian Evolution
10:30 am	50-3	<i>George AB, Westneat MW</i> ; University of Chicago	Swimming Performance Informs Patterns of Evolutionary Ecomorphology Among Triggerfishes and Filefishes (Superfamily: Balistoidea)
10:45 am	50-4	<i>Rupp AE, Moon B</i> ; University of Louisiana Lafayette	Feeding and Digestive Anatomy of Mud Snakes
11:00 am	50-5	<i>Garner AM, Wilson MC, Wright C, Russell AP, Niewiarowski PH, Dhinojwala A</i> ; University of Akron, University of Calgary	Adhesive Setal Morphology and Setal Field Configuration in <i>Anolis equestris</i>
11:15 am	50-6	<i>Phillips JR, Hewes AE, Schwenk K</i> ; University of Connecticut	Novel Air-breathing Modes in Anuran Tadpoles
11:30 am	50-7	<i>Hewes A, Schwenk K</i> ; University of Connecticut	A Comparative Study of Lingual Prey Capture in Iguanian and Scincid Lizards
11:45 am	50-8	<i>Diamond KM, Griner JG, Lagarde R, Ponton D, Powder KE, Schoenfuss HL, Walker JA, Blob RW</i> ; Clemson Univ, Univ Perpignan Via Domitia, Univ La Réunion, St Cloud State Univ, Univ Southern Maine	Linking morphology, performance, and behavior in the migration of stream goby fishes
12:00 pm	Lunch Break		

Neuroethology & Visual Sensing

Chair: Clement Vinauger

10:15 am	51-1	<i>Wynne NE, Fryzlewicz LH, Vinauger C</i> ; Virginia Polytechnic Institute and State University	Navigating Towards Defensive Hosts: Mosquito Visual Avoidance Behavior
10:30 am	51-2	<i>Chappell DR, Speiser DI</i> ; University of South Carolina	Neural processing in distributed visual systems – many eyes, many solutions
10:45 am	51-3	<i>Feller KD, Supple J, Gonzalez-Bellido PT</i> ; Univ of Minnesota, Univ of Cambridge	Multimodal sensory responses from descending neurons in <i>Squilla</i> stomatopod crustaceans

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11:00 am	51-4	Palermo NA, Siddiqui SG, Theobald JC; Florida International University	<i>Drosophila melanogaster</i> uses its regional attention to maximize spatial information during flight.
11:15 am	51-5	Moon H, Anderson T, Travers M, Loew E, Porter M; University of Hawaii at Manoa, Kauai Endangered Seabird Recovery Project, Cornell University	How Do Seabirds See Light? Visual sensitivity and light attraction in Hawaiian seabirds
11:30 am	51-6	Chandrasegaran K, Wynne N, Vinauger C*; Virginia Tech	Visual Avoidance Behavior in Mosquito Larvae and Adults
11:45 am	51-7	Ruiz CA, Theobald JC; Florida International University	Fruit Flies Respond to Ventral Parallax During Strong Sideslip Disturbances

12:00 pm **Lunch Break**

10:15 AM – 12:00 PM **Session 52** **Lone Star G**

Getting Real: Effects of Multiple Stressors on Organisms

Chairs: John VandenBrooks, Carrie Coy

10:15 am	52-1	Padda SS, Johnson DJ, Glass JR, Stahlshmidt ZR; U Pacific, Ariz State U	Alter Investment or Conserve? Assessing animal strategies to limit costs from concurrent weather extremes
10:30 am	52-2	Vandenbrooks JM, Vimmerstedt J, Huffaker M, Angilletta M; Midwestern University, Arizona State University	Oxygen limits the thermal tolerance in embryos of terrestrial endothermic and ectothermic animals
10:45 am	52-3	Ackerly KL, Esbaugh AJ; University of Texas at Austin	Impacts of temperature acclimation and oil exposure on aerobic performance in red drum, <i>Sciaenops ocellatus</i>
11:00 am	52-4	McTernan MR, Sears MW; Clemson University	Thermal and hydric balance: how salamanders respond to interacting stressors
11:15 am	52-5	Rennolds CW, Bely AE; University of Maryland	Injury improves short-term environmental stress tolerance in a freshwater annelid
11:30 am	52-6	Berlow M, Phillips JN, Derryberry EP; University of Tennessee, California Polytechnic State University	Effects of Urbanization and Landscape on Wild Avian Gut Microbiomes
11:45 am	52-7	Coy CO, Moore PA, Belanger RM, Newcomb TJ; Bowling Green State University, University of Michigan Biological Station, University of Detroit-Mercy, Michigan Department of Natural Resources	Perfluoroalkyl Substances in Bluegill (<i>Lepomis macrochirus</i>) and Their Relationship to Histology and Swimming Performance

12:00 pm **Lunch Break**

10:30 AM – 11:45 AM **Session 53** **Rooms 301-302**

Immune-based Tradeoffs

Chairs: Matthew Steffenson, Emily Cornelius Ruhs

10:30 am	53-1	Vargas R, Valentini A, Garcia M, Steffenson M; St Edward's University	The Immunological Response of Leg Autotomy in <i>Tigrosa helluo</i> Involving Hemocyte Protein Analysis
10:45 am	53-2	Chang Van Oordt DA, Taff CC, Ryan TA, Vitousek MN; Cornell University	Raising Defenses: Are There Costs to Stronger Immunity in Breeding Tree Swallows?
11:00 am	53-3	Moreno KR, Weinberg M, Yovel Y, Harten L, Czirájk SL, Salinas-Ramos VB, Herrera Montalvo LG; Tel Aviv University, Leibniz Institute for Zoo and Wildlife Research, University of Naples Federico II, Universidad Nacional Autónoma de México	Sickness in Fruit Bats: Unique Immune Reaction Reflects a Unique Social Behavior
11:15 am	53-4	Hudson SB, Virgin EV, Smith GD, Brodie Jr. ED, French SS; Utah State University, Dixie State University	Energetic strategy, oxidative cost, and performance outcome vary according to magnitude of an integrative immune challenge
11:30 am	53-5	Steffenson M, Garcia M, Valentini A, Vargas R; St Edward's University	The Effect of Elevated Temperature on Basal Immunological Activity in The Wolf Spider <i>Tigrosa helluo</i>

11:45 am **Lunch Break**

Adaptation and Genes

Chairs: Jennifer Kovacs, Zac Cheviron

10:15 am	54-1	Schweizer RM, Jones MR, Bradburd GS, Wolf CJ, Senner NR, Storz JF, Cheviron ZA*; University of Montana, Michigan State University, University of South Carolina, University of Nebraska	Genomic signatures of selection across the oxygen transport cascade in high-altitude deer mice
10:30 am	54-2	Kovacs JL, Werren J; Spelman College, University of Rochester	Horizontal Gene Transfer as a Mechanism for Convergent Evolution in Arthropods
10:45 am	54-3	Coffin JL, Kelley JL, Tobler M; Kansas State University, Washington State University	Adaptation to Life in Acid Mine Drainage: Transcriptomics and Molecular Evolution in Western Mosquitofish
11:00 am	54-4	Oliveira DR, Foster SA, Fitzpatrick SW; Clark University, Michigan State University	Integrating Phenotypes and Genomes in a Fine-Scale Study of Lake-Stream Divergent Rainbow Darters
11:15 am	54-5	Balchan NR, Mackessy SP; University of Northern Colorado	Venom Resistance in an Eastern Colorado Rodent Community
11:30 am	54-6	Holding ML, Strickland JL, Rautsaw RM, Mason AJ, Hofmann EP, Hogan MP, Colston TJ, Nystrom G, Grazziotin F, Gibbs HL, Rokyta DR, Parkinson CL; Florida State University, Clemson University, Instituto Butantan, Ohio State University CL	Comparative analysis of venom complexity and diet diversity in rattlesnakes using a novel, genome-wide phylogeny
11:45 am	54-7	Guerra Canedo VI, Hart MW, Koepfli KP; Simon Fraser University, Smithsonian Conservation Biology Institute	Evidence of positive selection in genes known to regulate fertilization in Mustelids
12:00 pm	Lunch Break		

Growth Factors & Neuropeptides

Chairs: Kendra Sewall, Elizabeth Addis

10:30 am	55-1	Sewall KB, Davies S, Beck ML; Virginia Tech, Quinnipiac University, Rivier University	Relationships Among Neuropeptides, Territorial Aggression, and Urbanization in Male Song Sparrows
10:45 am	55-2	Beatty AE, Schwartz TS; Auburn University	We need to talk...about IGF2: A cross-species comparison of IGF1 and IGF2 expression in amniotes.
11:00 am	55-3	Addis AE, Janzen FJ, Bronikowski AM; Gonzaga University, Iowa State University	A Role of Insulin-Like Growth Factors in Mediating Trade-Offs Between Growth and Reproduction in Painted Turtles
11:15 am	55-4	He L, Shin SHJ, Wang Z, Yuan I, Weschler R, Koyama T, Nijhout HF, Suzuki Y*; Wellesley College, University of Copenhagen, Duke University	Body size sensing in the tobacco hornworm, <i>Manduca sexta</i> : the role of TGF-beta/Activin signaling in metamorphic timing
11:30 am	55-5	Cordova KL, Bersin TV, Saenger EK, Journey ML, Beckman BR, Lema SC; Cal Poly, San Luis Obispo, Northwest Fisheries Science Center	Opposing influences of fasting stress and Igf1 on skeletal muscle gene pathways for Igf-signaling and myofibrillar protein degradation in gopher rockfish
11:45 am	55-6	Marks JR, Sorlin MV, Lailvaux SP, Schwartz TS, Beatty AE; University of New Orleans	Effect of Diet Restriction on Insulin-like Growth Factor 1 and 2 Expression in Female Green Anoles (<i>Anolis carolinensis</i>)
12:00 pm	Lunch Break		

Beat it (the Heat)- Combating Stress in Coral Reefs, Part I

Chair: Nicola Kriefall

10:00 am	56-1	Aichelman HE, Bove CB, Castillo KD, Boulton JM, Knowlton AC, Nieves OC, Ries JB, Davies SW; Boston University, UNC Chapel Hill, Northeastern University	Time Course Physiology of Caribbean Corals Reveals Divergent Responses to Global Change Stressors
10:15 am	56-2	Zhang Y, Barnes SJ, Kenkel C; University of Southern California	Familial effects on the thermal tolerance of the brooding coral <i>Porites astreoides</i> during early life stages
10:30 am	56-3	Correa AMS, Grupstra CGB, Howe-Kerr LI, Veglia AJ, Bryant RL, Conetta D; Rice University, University of Rhode Island	Viral Reefscapes: Microbial Interactions with Threatened Coral Hosts and Reef Ecosystems

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10:45 am	56-4	Kriefall NG, Matz MV, Kanke M, Davies SW; Boston University, UT Austin, Cornell University	Symbiotic partners diverge across reef environments in a panmictic coral population
11:00 am	56-5	Abbott EA, Dixon GB, Matz MV; University of Texas	Disentangling coral stress and bleaching responses by comparing gene expression in symbiotic partners
11:15 am	56-6	Reich HG, Rodriguez IB, Tripp SE, Warner ME, Kemp DW, Ho TY, Lajeunesse TC; Penn State University, University of the Philippines, University of Delaware, University of Alabama at Birmingham, Academia Sinica	Symbiotic dinoflagellates pump iron (and other trace metals) to beat the heat
11:30 am	56-7	Matsuda SB, Chakravarti LJ, Cunnning JR, Van Oppen MJH, Gates RD; Hawaii Institute of Marine Biology, Australian Institute of Marine Science, Shedd Aquarium	Coral (<i>Acropora tenuis</i>) background symbiont, <i>Symbiodinium</i> , competes with <i>Durussinus</i> as dominant symbiont at elevated temperatures in multiple-genus symbiont-choice
11:45 am	56-8	Benson BE, Aichelman HE, Baumann JH, Nieves OC, Stanizzi DA, Castillo KD, Davies SW*; Boston University, UNC CH	Diel thermal variation supports growth and symbiosis in a reef-building coral
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM **Session 57** **Brazos**

Special Session: Celebrating the Scientific Contributions of Rosemary Knapp: Hormones and Alternative Reproductive Tactics, Part II

Chairs: Sarah Woodley, Ignacio Moore

10:15 am	57-1	Hews D, Lisiuè D, Glogoà Ki M, Blažević SA, Hranilović D; Indiana State Univ, Univ Zagreb	Behavior and Neuroendocrine Differences in Island and Mainland Populations of Wall Lizards (<i>Podarcis sicula</i>): Do They Mirror Typical Within-Population Variation in Stress-Coping Styles?
10:30 am	57-2	Maney DL; Emory University	Evolution of alternative behavioral phenotypes: A story of genes and bird brains
10:45 am	57-3	Thaker M, Batabyal A, Amdekar M; Indian Institute of Science	Alternative strategies and the dynamism of color
11:00 am	57-4	Pradhan DS, Grober MS, White KJ; Idaho State University, Georgia State University	Onset and maintenance of male-typical parenting behavior during protogynous sex change
11:15 am	57-5	Gabor CR, Aspbury AS, Ujhegy N, Bókonyi V; Texas State University, Plant Protection Institute Centre for Agricultural Research	Environmental Variation From Land Use Conversion Affects Stress in Tadpoles
11:30 am	57-6	Forlano PM; CUNY Brooklyn College, CUNY Graduate Center	Evidence for Monoamines as Neurochemical Substrates Underlying Alternative Reproductive Tactics
11:45 am	57-7	Bonier F, Cox RM; Queen's University, University of Virginia	To each their own? Meta-analysis of evidence of optimality of endocrine phenotypes
12:00 pm	Lunch Break		

10:15 AM – 11:30 AM **Session 58** **Rooms 402-403**

Evo-devo

Chair: Arkhat Abzhanov

10:15 am	58-2	Tews VH, Barnett AA; DeSales University	Examining the Evolution of Epidermal Growth Factor (EGF) Pathway Ligands in Insects
10:30 am	58-3	Zakas C, Rockman M; North Carolina State University, New York University	How Maternal Genetic Effects Shape Developmental Evolution
10:45 am	58-4	Lopez Juarez J, Ventura D, Zhang L, Davidson BJ; Swarthmore College	Developmental systems drift in tunicate neural gene regulatory elements
11:00 am	58-5	Abzhanov A; Imperial College London, Natural History Museum	Phylogenetic Principles and Morphogenetic Mechanisms for Evolvability in Adaptive Radiations
11:15 am	58-6	Long JH, Aaron E, Livingston K, Hawthorne-Madell J; Vassar College, Colby College	Evo-Devo Biorobotics: Masquerading Genomes and the Mapping of Genotype to Phenotype in Embodied Agent Models
11:30 am	Lunch Break		

Sunday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:00 PM		Session 59	Lone Star A
Complementary to S1: New Frontiers in Antarctic Marine Biology			
<i>Chairs: Brad Seibel, Prashant P. Sharma</i>			
1:30 pm	59-2	Toh MWA, Lobert GT, Moran AL; <i>University of Hawai'i at Mānoa</i>	Thermal Sensitivity of Early Life History Stages of Antarctic Invertebrates
1:45 pm	59-4	Bierlich KC, Dale JD, Friedlaender AS, Goldbogen JA, Johnston DJ; <i>Duke University, University of California Santa Cruz, Stanford University</i>	Dwarf minke whales along the Antarctic Peninsula: Evidence of climate migration or historic misidentification?
2:00 pm	59-5	Tarrant AM, Berger C, Steinberg DK; <i>Woods Hole Oceanogr Inst, Virginia Inst Marine Sci</i>	Feast and Famine: Copepod metabolic condition during summer along the West Antarctic Peninsula
2:15 pm	59-6	Costa DP, Kienle SS, Trumble SS, Kanatous S, Goebel ME, Borras R, Crocker DE; <i>University of California at Santa Cruz, Baylor University, Colorado State University, National Marine Fisheries Service-NOAA, Chilean Antarctic Program, Sonoma State University</i>	Foraging Behavior and Movement Patterns of the Leopard Seal in the Antarctic Peninsula
2:30 pm	59-7	Rix AS, O'Brien KM; <i>University of Alaska Fairbanks, Institute of Arctic Biology</i>	Characterizing the Hypoxia-Inducible Factor-1 Pathway in Response to Acute Thermal Stress and Hypoxia in Antarctic Notothenioid Fishes
2:45 pm	59-8	Sharma PP, Arango CP, Ballesteros JA, Brenneis G, Dilly GF, Setton EVW, Wheeler WC; <i>University of Wisconsin-Madison, Queensland Museum, University of Greifswald, California State University-Channel Islands, American Museum of Natural History</i>	Phylogenomic resolution of sea spider relationships via integration of phylogenetic data classes
3:00 pm	.....	Coffee Break	 Grand Ballroom
1:30 PM – 3:30 PM		Session 60	Lone Star B
The Biology Underground			
<i>Chairs: Ben McInroe, Kory Evans</i>			
1:30 pm	60-1	McInroe BW, Bolas T, Ko I, Full RJ; <i>UC Berkeley</i>	Reconfigurable control modules enable rapid burrowing in a decapod crustacean
1:45 pm	60-2	Murray-Cooper M, Ozkan-Aydin Y, Aydin E, Naclerio N, McCaskey EN, Hawkes E, Goldman DI; <i>Georgia Tech, UC Santa Barbara</i>	Robophysical Investigation of Root Nutation through Heterogeneous Environments
2:00 pm	60-3	Katz HR, McCarthy NA, Fouke KE, Morgan JR; <i>Marine Biological Laboratory, Carthage College</i>	Functional Recovery of Burrowing Behavior in Sea Lampreys After Spinal Cord Injury
2:15 pm	60-4	Evans KM, Sperstad ZE, Westneat MW; <i>Brown University, University of Minnesota, University of Chicago</i>	Evolutionary Convergence and Constraints on the Skull Shape of Burrowing Wrasses
2:30 pm	60-5	Gurgis GP, Daza JD, Brennan IG, Hutchinson M, Bauer AM, Olori JC; <i>SUNY Oswego, Sam Houston State University, Australian National University, South Australian Museum, Villanova University</i>	Using your head! Finite Element Analysis of head-first burrowing Pygopodids (Gekkota)
2:45 pm	60-6	Carruthers Ferrero A, Ozkan-Aydin Y, Goldman DI; <i>Georgia Tech</i>	Lateral bending and buckling aids earthworm locomotion in confined environments
3:00 pm	60-7	Diaz K, Wang T, Chong B, Ding JL, Lu H, Sartoretti G, Choset H, Goldman DI; <i>Georgia Tech, Carnegie Mellon</i>	Steering Behaviors of <i>C. elegans</i> Locomotion in Heterogeneous Environments
3:15 pm	60-8	Scibelli AE, Trimmer BA; <i>Tufts University</i>	A bioinspired compressible soft robot for studying terrestrial crawling
3:30 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 2:45 PM Session 61 Lone Star C

Special Session: Digestive Physiology: A Session in Honor of Bill Karasov, Part II

Chairs: Kevin Kohl, Denise Dearing

1:30 pm	61-1	<i>Hammond KA, Dolan JE, Sawaya M; University of California Riverside</i>	Deer Mouse Lungs as Flexible Environmental Interfaces
1:45 pm	61-2	<i>Caviedes-Vidal E, Brun A, Magallanes ME, Barret-Wilt GA, Karasov WH; Consejo Nacional de Investigaciones Científicas y Técnicas, Universidad Nacional de San Luis, University of Wisconsin-Madison</i>	Dietary Adaptation to High Starch Involves Increased Abundance of α -Glucosidase and its mRNA
2:00 pm	61-3	<i>Carey HV, Regan MD, Chiang E, Suen G, Assadi-Porter F; University of Wisconsin-Madison</i>	Stable Isotope Assisted Labeling Reveals Seasonal Influence on Microbial Metabolite Incorporation in Ground Squirrels
2:15 pm	61-4	<i>McWhorter TJ; University of Adelaide</i>	The Karasov effect: functional studies of nutrient absorption in endotherms at the extreme
2:30 pm	61-5	<i>Dearing MD; University of Utah</i>	Mechanisms of detoxification in herbivorous mammals
2:45 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:15 PM Session 62 Lone Star E

Animals in Compliance: Structural Mechanics

Chairs: Ruijie Zhu, Janne Pfeiffenberger

1:30 pm	62-1	<i>Seth D, Lauder GV, Flammang BE, Tangorra JL; Villanova University, Harvard University, New Jersey Institute of Technology, Drexel University</i>	Fish Fin Compliance: A Perturbation Technique to Determine Compliance During Free Swimming
1:45 pm	62-2	<i>Zhu R, Matthews DG, Wang J, Lauder GV, Dong H, Bart-Smith H; University of Virginia, Harvard University</i>	Effects of Peduncle Stiffness on Propulsive Performance of Tuna-shaped Panel
2:00 pm	62-3	<i>Pfeiffenberger JA, Tytell ED; Tufts University</i>	Active muscular changes in the effective mechanical properties of fish bodies
2:15 pm	62-4	<i>Struble MK, Gardner J, Gibb AC; Northern Arizona University, Montana State University</i>	Grasping Behavior in Birds Drives Pedal Adaptations
2:30 pm	62-5	<i>Baliga VB, Szabo I, Altshuler DL; University of British Columbia</i>	Examining the evolution of range of motion helps resolve gaps between form and function in the avian wing
2:45 pm	62-6	<i>Munteanu VD, Diamond KM, Mayerl CJ, Blob RW; Clemson University, NEOMED</i>	Humeral Strains During Climbing in Green Iguanas: Testing Biomechanical Release as a Mechanism Promoting Morphological Transitions in Arboreal Vertebrates
3:00 pm	62-7	<i>Kawano SM, Blob RW; George Washington Univ, Clemson Univ</i>	Evaluating limb bone stresses of early tetrapods in the context of the evolutionary invasion of land
3:15 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:15 PM Session 63 Lone Star F

DAB Best Student Paper: Marlene Zuk Award

Chairs: Scott MacDougall-Shackleton, Erica Westerman

1:30 pm	63-1	<i>Yang Y, Richards-Zawacki CL; University of Pittsburgh</i>	Male Contest Limits Assortative Female Preference in a Color Polymorphic Poison Frog
1:45 pm	63-2	<i>Naisbett-Jones L, Tsai E, Lohmann C, Lohmann K; University of North Carolina, Chapel Hill</i>	Navigating the Ocean Floor: Magnetic Compass Orientation of a Marine Flatfish
2:00 pm	63-3	<i>Mitchem LM, Vilella-Pacheco Z, Formica VA, Brodie III ED; University of Virginia, University of Puerto Rico - Arecibo, Swarthmore College</i>	Females Prefer to Associate with the Chemical Cues of Aggressive, Winning Males After Competition
2:15 pm	63-4	<i>Goforth KM, Lohmann CMF, Lohmann KJ; University of North Carolina at Chapel Hill</i>	The Role of Magnetic Field Detection in Foraging Site Fidelity of Sea Turtles
2:30 pm	63-5	<i>Emberts Z, St. Mary CM, Forthman M, Miller CW; University of Florida</i>	The evolution of autotomy in leaf-footed bugs

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2:45 pm	63-6	<i>Dinh JP, Azza J, Patek SN; Duke University</i>	Assessing Your Opponent: Snapping Shrimp Use Indirect Cues to Settle Ritualized Contests
3:00 pm	63-7	<i>Brass KE, Herndon N, Gardner S, Grindstaff J, Campbell P; Oklahoma State University, University of California, Riverside</i>	Epigenetic effects of paternal perception of predation risk on offspring phenotypes
3:15 pm		Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM	Session 64	Lone Star G
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You Got the Touch (and Sight and Sound)

Chair: Simon Walker

1:30 pm	64-1	<i>Maeda M, Walker SM, Fabian JM, Lin HT, Bomphrey RJ; Royal Veterinary College, University of Leeds, Imperial College London</i>	Aerodynamic and Structural Modelling and Simulation of Dragonfly Wing: Towards the Understanding of "Fly-by-Feel"
1:45 pm	64-2	<i>Walker SM, Christen P, Taylor GK; University of Leeds, University of Applied Sciences and Arts Northwestern Switzerland, University of Oxford</i>	Haltere kinematic and dynamics measured using time-resolved microtomography
2:00 pm	64-3	<i>Sharma VP, Sponberg SN; Georgia Institute of Technology</i>	Context Dependent Sensing and Robust Integration of Visual and Mechanosensory Stimuli in Hover-Feeding Hawk Moths
2:15 pm	64-4	<i>Mekdara PJ, Nasimi F, Tytell ED; Tufts University</i>	Sensorimotor integration in the control of dorsal fin movements during swimming
2:30 pm	64-5	<i>Christensen BA, Schwaner MJ, Freymiller GA, Clark RW, McGowan CP; University of Idaho, San Diego State University</i>	Exploring Reaction Time in Desert Kangaroo Rats
2:45 pm	64-6	<i>Kemp AK; Duke University</i>	Effects of binocular field size on leaping performance in small bodied primates
3:00 pm	64-7	<i>Deleo DM, Bracken-Grissom HD; Florida International University</i>	The Largest Migration on Earth: Sensory Adaptations of a Bioluminescent Deep-sea Vertical Migrator
3:15 pm		Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM	Session 65	Rooms 301-302
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Education and External Partnerships

Chairs: Nicoline Chambers, Sebastian Echeverri

1:30 pm	65-1	<i>Echeverri SA, Wetzel DP, Brouwer NL; University of Pittsburgh</i>	De-Jargonizing SciComm: Does having to use simple words make students better at writing for most people?
1:45 pm	65-2	<i>Chambers NM, Williams CM; West High School, University of California, Berkeley</i>	The Beetle Project: Bringing Authentic Research Into High School Classrooms
2:00 pm	65-3	<i>Taylor LD, White LD; University of California, Berkeley</i>	Building Collaborations with Local Community Colleges to Increase Diverse Students' Access to STEM Fields
2:15 pm	65-4	<i>Hawkins RK, Stocker MR, Metzgar JS; Virginia Tech</i>	The Importance of Natural History Collection Clubs in Preserving and Using University Collections
2:30 pm	65-5	<i>Tran MV, Miller A, Odaka Y, Owen P, Wilson K; University of Cincinnati Blue Ash College</i>	Designing Multifaceted Research Experiences for Undergraduates in Integrative Biology
2:45 pm	65-6	<i>Woodley SK, Cascio M, Kolber BJ, Mihailescu MR, Tidgewell KJ; Duquesne University</i>	Community-engaged Learning in a Summer Undergraduate Research Program
3:00 pm	65-7	<i>Seth D; Villanova University</i>	Development of an Interactive Model of a Snake Jaw for Natural and Applied Science Education
3:15 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM Session 66 Room 205

Thermoregulation

Chairs: Victoria Dahlhoff, Michael Dillon

1:30 pm	66-1	Cooper C, Keeling E, Liwanag H; California Polytechnic State University	Feeling out your Food: A histological analysis of the vibrissal system in pinnipeds
1:45 pm	66-2	Dillon ME, Petranek C; University of Wyoming	Induced flow cools hovering bumble bees
2:00 pm	66-3	Talbot WA, Wolf BO; University of New Mexico	Sonoran desert bats show modest capacities for thermoregulation in the heat
2:15 pm	66-4	Franklin CE; University of Queensland	Unravelling the reptilian thermoregulatory paradigm
2:30 pm	66-5	Dahlhoff VC, Larkin B, Woods HA; University of Montana	Capturing behavioral thermoregulation in the western tent caterpillar <i>Malacosoma californicum pluviale</i> using thermal imaging
2:45 pm	66-6	Sun BJ, Huebner C, Treidel LA, Clark R, Roberts KT, Williams CM*; Chinese Academy of Sciences, University of California, Berkeley, Sienna College	Integrated behavioral and physiological strategies allow <i>Gryllus lineaticeps</i> crickets to fly on cool nights
3:00 pm	66-7	Crowell HL, Taylor EN; University of Michigan, California Polytechnic State University	Comparative Thermal Ecology of Coastal and Inland Populations of Pacific Rattlesnake <i>Crotalus oreganus</i>
3:15 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:00 PM Session 67 Rooms 201-202

Molecular Evolution

Chair: Sally Chang

1:30 pm	67-1	Chang ES, Gonzalez P, Schnitzler CE, Baxeavanis AD; NHGRI/NIH, U Florida	Diverse patterns of human disease gene emergence and loss across the Metazoa
1:45 pm	67-2	Weber AC, Guibinga Mickala A, Lighten J, Van Oosterhout C, Abernethy KA, Ntie S, Mickala P, Lehmann D, Anthony NM; University of New Orleans, Université des Science et Techniques de Masuku, University of Exeter, University of East Anglia, University of Stirling, Agence Nationale des Parcs Nationaux du Gabon	Characterizing the class II major histocompatibility complex in wild mandrills
2:00 pm	67-3	Tassia MG, David KT, Halanych KM; Auburn University	Innate immunity evolution in underrepresented metazoans and the implications when opting for similarity-metrics vs. hidden Markov models
2:15 pm	67-4	Jarman MJ, Hill EC, Butler MA; University of Hawaii, Honolulu	When You Need a Miracle: Amplifying and Sequencing Degraded DNA Through Touchdown and Nested PCR Techniques.
2:30 pm	67-5	Russell A, Borrelli S, Fontana R, Laricchiuta J, Pascari J, Becking T, Giraud I, Cordaux R, Chandler CH*; SUNY Oswego, Syracuse University, Université de Poitiers	A Transition to XY Sex Chromosomes Associated with Y-linked Duplication of a Male Hormone Gene in a Terrestrial Isopod
2:45 pm	67-7	Scepanovic J, Kolchenko S, Plessier F, Lowe C, Spitz F, Marlow H; University of Chicago, Pasteur Institute, École normale supérieure, Sorbonne Université, Stanford University	Modularity in Gene Regulation: Evolution of Combinatorial Cis-Regulatory Inputs
3:00 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:00 PM Session 68 Rooms 203-204

Beat it (the Heat) – Combating Stress in Coral Reefs, Part II

Chair: Rachel Wright

1:30 pm	68-1	Wright RM, Nuttall M, Davies SW; Smith College, Flower Garden Banks National Marine Sanctuary, Boston University	Gene Expression in Response to Experimental Low Dissolved Oxygen Supports the Hypothesis that Hypoxia Contributed to a Natural Coral Mortality Event
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1:45 pm	68-2	Poole AZ, Bailey GF; Berry College	GTPases of Immunity Associate Proteins (GIMAP) gene expression in response to induction of apoptosis and autophagy in the sea anemone <i>Exaiptasia pallida</i>
2:00 pm	68-3	Wall CB, Ritson-Williams R, Popp BN, Gates RD; University of Hawai'i at Mānoa, California Academy of Sciences, Hawai'i Institute of Marine Biology	Spatial variation in biochemical and isotopic composition of corals during bleaching and recovery
2:15 pm	68-5	Shore A, Sanders K, Conetta D, Correa AMS; Rice University	Hypoxia and coral microbiomes: Linking field and experimental data
2:30 pm	68-6	Bove CB, Davies SW, Ries JB, Umbanhowar J, McCoppin J, Farquhar E, Castillo KD; UNC-Chapel Hill, Boston University, Northeastern University	Physiological and transcriptomic responses of coral hosts and algal symbionts of four Caribbean corals under global change
2:45 pm	68-7	Drew JA, McKeon MG; State University of New York College of Environmental Science and Forestry, Columbia University	Shark-based tourism presents opportunities for facultative dietary shift in coral reef fish
3:00 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM **Session 69** **Brazos**

DCE Best Student Paper - Aubrey Gorbman Award

Chairs: Loren Buck, Kathleen Hunt

1:30 pm	69-1	Crain DD, Usenko S, Mansouri F, Winfield ZC, Zerbini AN, Gabriele C, Sabin R, Potter C, Trumble SJ; Baylor University, Marine Mammal Laboratory, Glacier Bay National Park and Preserve, Natural History Museum, Smithsonian Institution	A Different Kind of Wax Museum: Forecasting Population Trajectories of Baleen Whales Using Reproductive Parameters From Earplugs.
1:45 pm	69-2	Munley KM, Deyoe JE, Adaniya CH, Nowakowski AM, Ren CC, Murphy GV, Reinhart JM, Demas GE; Indiana University	Melatonin modulates seasonal changes in neurosteroid levels and territorial aggression in male Siberian hamsters (<i>Phodopus sungorus</i>)
2:00 pm	69-3	Gormally BMG, Estrada RS, McVey M, Romero LM; Tufts University	Expanding the acute stress phenotype: DNA damage rapidly increases in house sparrows
2:15 pm	69-4	Khalil S, Enbody ED, Welklin JF, Schwabl H, Webster MS, Karubian J; Tulane U, Uppsala U, Cornell U, WSU	Testosterone Regulates Gene Expression Associated with Carotenoid-Based Plumage Ornamentation in the Red-backed Fairywren
2:30 pm	69-5	Lane SJ, Emmerson MG, Vandiest IJ, Hucul C, Beck ML, Davies S, Gilbert ER, Sewall KB; Virginia Tech, Rivier University, Quinnipiac University	Urbanization lowers hippocampal glucocorticoid receptor expression but not clearance of glucocorticoids in male Song Sparrows.
2:45 pm	69-6	Giglio EM, Tripp JA, Phelps SM; University of Texas at Austin	The role of leptin in social signal decisionmaking in neotropical singing mice (<i>Scotinomys teguina</i>)
3:00 pm	69-7	Boersma J, Jones JA, Karubian J, Schwabl H; Washington State University, Tulane University	Sex-specific causes and consequences of variable testosterone circulation in a tropical songbird
3:15 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:15 PM **Session 70** **Rooms 402-403**

Sensory Biology & Neuroethology

Chair: Alex Kingston

1:30 pm	70-1	Wardill TJ, Feord RC, Sumner ME, Pusdekar S, Kalra L, Gonzalez-Bellido PT; University of Minnesota, University of Cambridge	Binocular stereopsis in cuttlefish improves prey targeting.
1:45 pm	70-2	Johnsen S, Caves EM; Duke Univ, Exeter Univ	How our perceptual and cognitive biases may influence our study of animal vision
2:00 pm	70-3	Palavalli-Nettimi R, Theobald JC; Florida International University	Light intensity and eye size dependent spatio-temporal visual abilities in <i>Drosophila melanogaster</i>
2:15 pm	70-4	Kingston ACN, Speiser DI; University of South Carolina	Snapping shrimp see through transparent armor

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2:30 pm	70-5	<i>Schweikert LE, Davis AL, Johnsen S, Bracken-Grissom HD; Florida International University, Duke University</i>	Vision and Bioluminescence in Deep-sea Shrimps: Implications for Conspecific Recognition
2:45 pm	70-6	<i>Heesy CP; Midwestern University</i>	On the Laws of Haller and Leuckart OR Does visual resolution scale with velocity and size in animals?
3:00 pm	70-7	<i>Brady PC, Garcia M, Hernandez T, Aalund M, Gruev V, Cummings ME; University of Texas at Austin, University of Illinois at Urbana Champaign</i>	Measurement of cephalopod polarization patterns with color video-polarimetry and computer vision techniques.
3:15 pm	.....	Coffee Break	 Grand Ballroom
7:00 PM – 8:00 PM		AMS Lecture	Rooms 301-302
AMS Lecture		<i>Lindsay SM; University of Maine</i>	The Art of Seeing: Using Microscopy to Power STEAM Learning in Biology
7:00 PM – 8:00 PM		BERN Lecture	Salons D-E
BERN Lecture		<i>Bentley GE; UC Berkeley</i>	A Bird's Eye View of Reproductive Endocrinology

Sunday POSTER SESSION P2

Grand Ballroom, 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

DIZ BSP: Alan Kohn Award

P2-1	Sidebottom RB, Martin GG; Occidental College	Is That a Basal Lamina Lining the Open Circulatory System of a Shrimp?
P2-2	Glover AR, Brannock PM; Rollins College	Genetic analysis of invasive <i>Pomacea</i> sp. in Florida
P2-3	Pierce ER, Geller JB; Moss Landing Marine Laboratories	Molluscan Waste is not a Load of Crap: Comparing Environmental DNA Accumulation and Degradation Rates from Mussels, Limpets, and Abalone
P2-4	Powers MM, Ellison C, Madrid M, Rodríguez L, Maslakova S; University of Iowa, University of Oregon, Smithsonian Tropical Research Institute	Nemertean diversity in Colón, Panama assessed by DNA-barcoding
P2-5	Lownds BI, Topping NE, Jost JA; Bradley University	The Effect of Clumping Behavior on the Survival, Growth, and Cellular Physiology of the Zebra Mussel (<i>Dreissena polymorpha</i>) in a Central Illinois Population
P2-6	Caine PB, Gibson JD; Bucknell University, Georgia Southern University	Colony Recognition and Aggression in Invasive Argentine Ants (<i>Linepithema humile</i>) of Georgia
P2-7	Johnson LE, Treible LM; Trinity University, Georgia Southern University	Synergistic Effects of UVA and UVB Radiation on Moon Jellyfish Proliferation and Potential Coping Mechanisms
P2-8	Topping NE, Jost JA; Bradley University Peoria II	Investigating the seasonal patterns of zebra mussel (<i>Dreissena polymorpha</i>) growth and physiology using field enclosures in central Illinois
P2-9	Peterson BN, Yeo AC, Allen JD; William & Mary	Attack of the Clones: Examining the Factors that Influence Cloning in Echinoderm
P2-10	Hannon MC, Hilliard J, Garbuglio De Oliveira A, Schulze A; Texas A&M University, University of São Paulo	Annelid Bioluminescence: The Search for Luciferases in Annelid Transcriptomes
P2-11	Breen CJ, Cahill AE; Albion College	Survivability and Reproduction in <i>Daphnia</i> , Copepods, and Ostracods Under Changing Salinities
P2-12	Yeo AC, Richardson EL, Deaker D, Garcia A, Byrne M, Allen JD; William and Mary, Monash University, University of Sydney, Université Libre de Bruxelles	Effects of gamete age on development in broadcast spawning marine invertebrates
P2-13	Ritmeester-Loy SA, Martin GG, Appy R; Occidental College	A Trypanorhynch Cestode in Shrimp and Skates: Morphology and Partial Life Cycle
P2-14	Varney RM, Kingston ACN, Kocot KM, Speiser DI; Univ of Alabama, Univ of S Carolina	Localized physiological changes regulate the biomineralization of magnetite in the radula of the chiton <i>Acanthopleura granulata</i>
P2-15	Urban-Gedamke E, Conkling M, Munroe S, McCarthy PJ, Wills PS, Pomponi SA; Florida Atlantic University	Evaluation of 3-D Cell Culture Methods for Marine Sponges
P2-17	Curtis MD, McClintock JB; University of Alabama at Birmingham	Potential impacts of near-future climate-induced ocean warming on the stomach microbiome of the common soft-bottom sea star <i>Luidia clathrata</i>
P2-18	Cline NW, Brothers CJ, Morrow CD, Curtis MD, Anderson SM, Amsler CD, Shilling AJ, McClintock JB; Walla Walla University, University of Alabama at Birmingham, University of South Florida	Characterizing the Digestive Microbiome of Antarctic Sea Stars
P2-19	Canaday EJ, Brothers CJ, Smith KE, Amsler MO, Aronson RB, Singh H, McClintock JB; Southern Adventist University, Walla Walla University, University of Exeter, University of Alabama at Birmingham, Florida Institute of Technology, Northeastern University	Underwater Islands: The Influence of Surrounding Sediment on Dropstone Ecology

P2-20 Porter NA, Jost JA; Bradley University

Seasonal Variation in Oxidative Stress for Zebra Mussels Exposed to an Acute Thermal Challenge

Species and Speciation

P2-21 Dohr SD, Hahn KH, Tuffield MS, Ward RS, Boyer SL; Macalester College

New species of New Zealand Mite Harvestmen in the Genus *Aoraki* (Arachnida, Opiliones, Cyphophthalmi, Pettalidae)

P2-22 McDonnell AJ, Wetreich H, Cantley JC, Jobson P, Martine CT*; Chicago Botanic Garden, Bucknell University, San Francisco State University, Northern Territory Herbarium

Solanum plastisexum, an enigmatic new bush tomato from the Australian Monsoon Tropics exhibiting breeding system fluidity.

P2-23 Spinelli JMC, Huynh AV, Rice AM; Lehigh University

Vocal Learning in Hybrids: How Does Hybridization Affect Call Learning and Learning Biases in Chickadees?

P2-24 Rice AM, Huynh AV, Spinelli JMC, Roth TC, Taylor SA; Lehigh University, Franklin & Marshall College, University of Colorado Boulder

Effects of hybridization on cognition in chickadees: A common garden approach

P2-25 Keogh SM, Sietman BE, Johnson NA, Smith CH, Randklev CR, Harris JL, Simons AM; University of Minnesota, MN Depart Nat Resources, US Geological Survey, Baylor University, Texas A&M, Arkansas State University

Species delimitation, phylogeography, and morphology of the North American Mapleleaf (*Quadrula*) freshwater mussels (Bivalvia: Unionidae)

P2-26 Cobb BA, Gibson JD, Botnaru L; Georgia Southern University

Exploring the lethality of genetic incompatibility in jewel wasp hybrids

Evolutionary Morphology

P2-27 Tunnell Wilson WT, Jackson K, Jacobs JL, Sekits N, Smith EN; Whitman College, University of Texas at Arlington

Insights into the Evolutionary History of Lamprophiid Snakes from Vertebral Morphology Using Computed Tomography

P2-28 Law CJ; American Museum of Natural History, UC Santa Cruz

Evolution of carnivoran body plans

P2-29 Watson SJ, Evans KM; New Mexico Institute of Mining and Technology, Brown University

Party in the Front, Business in the Back: Mosaic Evolution of Skull Asymmetry in Flatfishes

P2-30 Carson IR, Hall HR, Kahl AF, Johnson MA; Trinity University, University of Virginia, Stockholm University

Intraspecific Variation in Lizard Sperm and Testis Morphology

P2-31 Moore AJ; Stony Brook University

Empty Space & Morphospace: Vertebral Pneumatization is Correlated with Serial Variation in Vertebral Shape

P2-32 Scanlan LG, Hernandez AI, Schmitz L; Claremont McKenna, Scripps, and Pitzer Colleges

Eye Size Evolution in Mudskippers and Related Gobiid Fishes

P2-33 Watanabe J; University of Cambridge

Contingency in the Functional Convergence of the Musculoskeletal System in Wing-propelled Diving Birds

P2-33.5 Feo TJ, Matloff LY, Lentink D; Smithsonian Natural History Museum, Stanford University

The structure and function of feather microstructures related to silent flight in owls.

P2-34 Kim LN, Capano JG, Mayerl CJ, Blob RW, Wyneken J, Brainerd EL; Brown University, Northeast Ohio Medical University, Clemson University, Florida Atlantic University

XROMM analysis of pectoral girdle motions during locomotion and ventilation in the loggerhead sea turtle

P2-35 Crowe-Riddell JM, Pieterman L, Simoes BF, Nankivell JH, Ford M, Ludington A, Allen L, Sanders KL; University of Michigan, University of Adelaide, Venom Supplies

Ontogenetic change in hue and structure of caudal lure reflects dietary shift in Australian death adders (Elapidae)

P2-36 Picciani N, Musser JM, Oel AP, Garm AL, Arendt D, Oakley TH; University of California Santa Barbara, European Molecular Biology Laboratory, University of Copenhagen

Organ Complexity and Cell History: a Case of Eye Evolution in Cnidaria

P2-37 Garrick SR, Westneat MW, George AB; University of Chicago

Evolutionary Morphometrics of Body Form and Fin Shape in Sharks

P2-38 Farjo MN, George AB, Westneat MW; University of Chicago

Tail Wagging or Fin Flapping? Alternative Locomotor Strategies Drive Body and Fin Shape Evolution in the Surgeonfishes

P2-39 Early CM, Iwaniuk AN, Ridgely RC, Witmer LM; University of Florida, University of Lethbridge, Ohio University

A Quantitative Framework for Inferring Vision-related Neuroanatomy from the Endocasts of Extinct Birds

P2-41 Byrne MZ, Rosenbloom JE, Bhalodi JA, Gignac PM, Gidmark NJ; Knox College, Vanderbilt University, Oklahoma State University Center for Health Sciences

Reconciling Anatomical and Physiological Models of Feeding Biomechanics Through Evolution in Centrarchid Fishes

P2-42	Lawson AB, Echols MS, Hedrick BP, Schachner ER; Louisiana State University HSC, Echols Veterinary Services	Anatomy of the Respiratory System of the African Grey Parrot (<i>Psittacus erithacus erithacus</i>)
P2-43	Thompson ML, McEntire KD; Trinity University	Color Morph Distribution of Western Ribbon Snakes (<i>Thamnophis proximus</i>) in Texas
P2-44	Kramer L, Collins C, Gignac P, O'Brien H; Holland Hall High School, Sacramento State University, OSU Center for Health Sciences	Convergence can you hear me? A Phylogenetic Comparative Study of the Conductive Hearing Apparatus of Desert-Adapted Rodents
P2-46	Stiegler J, Moore AJ, Wang S, Leite JV, Scannella J, Xu X, Clark J; George Washington University, Stony Brook University, University of Southern California, Natural History Museum, Montana State University, Institute of Vertebrate Paleontology and Paleoanthropology	Homology of an Ossified Metacarpal V in Extant Birds and Mesozoic Theropod Dinosaurs
P2-47	Collar DC, Dipaolo E, Mehta RS; Christopher Newport University, University of Rhode Island, University of California Santa Cruz	Evolutionary transformation along orthogonal anatomical axes in blennioid fishes
P2-48	McHugh KA, Stevens DR, Baker JA, Foster SA; Clark University,	Stress, Asymmetry, and Evolutionary Change in a Population of Threespine Stickleback (<i>Gasterosteus aculeatus</i>) with Respect to a Novel Predator
P2-49	Schachner ER, Diaz RE, Hedrick BP; Louisiana State University Health Sciences Center, California State University Los Angeles	Anatomy of the crocodylian bronchial tree and implications for the ancestral archosaur lung
P2-50	Mason JN, Stevens II DR, Graham MA, Foster SA, Baker JA; Clark University	Predation Effects on the Evolutionary Trajectory of Brain Morphology in the Threespine Stickleback Fish
P2-51	Moore AG, Newbrey MG, Martín-Abad H, Boyd C, Hoganson J, Bair MA; Columbus State University, Universidad Autónoma de Madrid, North Dakota Geologic Survey, Emeritis Curator at North Dakota Heritage Center	Earliest known material of <i>Amia</i> , bowfin, from the Sentinel Butte Formation (Paleocene), Medora, North Dakota
P2-52	Beyl AR, Smaers JB, Gignac PM, Watanabe A, Wilberg EW, Turner AH; Stony Brook University, Oklahoma State University Center for Health Sciences, New York Institute of Technology College of Osteopathic Medicine	Evolutionary Regime Shifts in Crocodylian Neuroanatomy
P2-53	Jacobs JL, Hall AS, Smith EN; University of Texas at Arlington, Thermo Fisher Scientific	Learning to swim: evolutionary transition from terrestrial to aquatic life in South American coralsnakes
P2-54	Stapp C, Stankowich T, Paig-Tran M; CSU Long Beach, CSU Fullerton	Investigating How Ecological Traits Influence the Evolution and Diversity of Armadillo Armor
P2-55	Mesrop LM, Goodheart JG, Leung NL, Oakley TO; University of California Santa Barbara	Gut Feeling: Characterizing the Origin and Divergence of Cell Types in the Light Organ of Bioluminescent Ostracods.
P2-55.5	Lessner EJ, Holliday CM; University of Missouri	Diversity and evolution of trigeminal branching patterns in sauropsids

Complementary to S4: Reproduction: the female perspective from an integrative and comparative framework

P2-56	Fairbanks J, Demarais A; University of Puget Sound	Effects of Bisphenol-S and Estrogen on p53 Expression in Ovarian Tissue of Zebrafish (<i>Danio rerio</i>)
P2-57	Cook TO, Fargevieille A*, Warner DA; Auburn University	Dorsal pattern polymorphism in female Brown Anoles: testing the "male-mimicry hypothesis"
P2-58	Torres B, Jelken M, Omane H, Bellesia G, Hayssen V; Smith College	Linguistic Bias in Reproduction
P2-59	MacLeod PF, Renn SCP; Reed College	The operational sex ratio and reproductive state influence female aggression and competition in a conventional lek-like mating system
P2-60	Navara KJ, Graden K, Mendonça MT; University of Georgia, Auburn University	More is not always better: Yolk supplementation decreases rate of yolk deposition in Japanese quail, <i>Coturnix japonica</i>
P2-61	Dean CR, Mendonça MT, Navara KJ; University of Georgia, Auburn University	Influences of chronic testosterone treatment on follicle growth rates in laying hens
P2-62	De Bruijn R, Khoshaba E, Lopes PC*; Chapman Univ	HPA-axis Functioning and Parental Care in Japanese Quail
P2-63	Lewis AK; University of Florida	Understanding Sex and Gender as a Scientist: Why It Matters Now More Than Ever

- P2-64** Roncalli V, Cieslak MC, Hopcroft RR, Lenz PH; University of Barcelona, University of Hawai'i at Mānoa, University of Alaska
Capital Breeding In a Diapausing Copepod: a Transcriptomics Analysis
- P2-65** Karachiwalla Z, Decarvalho T, Burns M; UMBC
Three-dimensional Visualization of Harvestman Spermathecae using Confocal Microscopy
- P2-66** Baker JA, Heins DC, King RW, Foster SA; Clark University, Tulane University
The search for the Holy Grail: an explanation for the relationship between offspring size and maternal size

Comparative & Environmental Endocrinology

- P2-67** Wade K, Monceaux C, Close M, Grubb O, Strickland T, O'Brien S; Radford University
Trenbolone Half-life and Metabolism in *Gambusia*
- P2-68** Greives T, Eshleman M, Galante H, Deimel C, Hau M; North Dakota State University, Max Planck Institute for Ornithology
Testosterone peaks in the early evening and GnRH-induced testosterone is correlated with this peak
- P2-69** Abernathy AL, Klar EA, Jordan CH, Joshi MM, Newbrey MG; Columbus State University
Comparison of intersex severity between two types of histological sections using testes of Largemouth Bass (*Micropterus salmoides*) and Spotted Bass (*M. punctulatus*) from the Chattahoochee River, Georgia
- P2-70** Joshi MM, Klar EA, Abernathy AL, Sibley AL, Belt JM, Newbrey MG; Columbus State University
Background levels of intersex in Largemouth Bass (*Micropterus salmoides*) revealed through histological evaluation of gonadal tissue from three interconnected water bodies
- P2-71** Molina EM, Mendonça MT; Auburn University
Inhibition pattern of testicular steroidogenesis by dichlorodiphenyldichloroethylene (DDE) during chronic and acute exposure
- P2-72** Axlied EG, Minicozzi MR, Buck CL, Von Hippel FA; Northern Arizona University, Minnesota State University
Does Sodium Perchlorate Act as an Obesogen in Developing Zebrafish?
- P2-73** Clowser D, Wilson C, Petersen A, Postlethwait J; Oregon State University, University of Oregon
Is it an Androgen, Estrogen, Obesogen, or all of the above? Perchlorate Exposure Causes Different Pathologies in Different Fishes
- P2-74** Myre B, Guentzel N, Mackenzie DS; TAMU
A Novel Approach to an Old Question: Evaluation of Ecological Breeding Strategies in Sea Turtles
- P2-75** Zahra E, Griffin L, Minicozzi M, Mass M*; SUNY New Paltz, Minnesota State University
Endocrine disruption and planarian regeneration
- P2-76** Starkey JM, White KJ, Pradhan DS; Idaho State University
Androgen levels in sexually dimorphic musculature of a sex changing fish, *Lythrypnus dalli*
- P2-77** Feingold SR, Roark AM; Furman University
Skin Deep: The Estrogenicity of Sunscreens and Moisturizers
- P2-78** Scobell SK, Gibson BL, Gibbs S, Forlano PM, Wilson AB; St Edward's University, University of North Carolina, City University of New York
Comparative prolactin expression in the pituitary of the Northern pipefish and lined seahorse using immunofluorescent markers

Behavioral Development

- P2-79** Hope SF, Kennamer RA, Grimaudo A, Hallagan JJ, Hopkins WA; Virginia Tech, University of Georgia, Stockton University
Does Within-Nest Variation in Incubation Temperature Lead to Differences in Competitive Ability Within Avian Broods?
- P2-80** González K, Warkentin KM, Güell BA; Purdue University, Boston University, Smithsonian Tropical Research Institute, Boston University
Effects of hydration on the arboreal eggs of gliding treefrogs: even small reductions in humidity induce premature hatching, reduce hatchling size, and kill embryos
- P2-81** Guevara Molina SC, Ribeiro Gomes F, Warkentin KM*; University of São Paulo, Brazil, Boston University, Smithsonian Tropical Research Institute
The VTMax of embryos: interacting effects of warming and dehydration on hatching behavior in red-eyed treefrogs, *Agalychnis callidryas* (Anura: Phyllomedusidae)
- P2-82** Fletcher SJ, De-Jesus Soto MG, Rodriguez SD, Pretends Eagle TJ, Petanidou T, Tschulin T, Barthell J, Giray T, Abramson CI; Oklahoma State University, University of Puerto Rico, St Philip's College, North Dakota State University, University of the Aegean, University of Central Oklahoma
Memory of the cap pushing response in honey bees (*Apis mellifera* cecropia)
- P2-83** Fletcher SJ, De-Jesus Soto MG, Rodriguez SD, Pretends Eagle TJ, Petanidou T, Tschulin T, Barthell J, Giray T, Abramson CI; Oklahoma State University, University of Puerto Rico, St Philip's College, North Dakota State University, University of the Aegean, University of Central Oklahoma
Discriminate punishment of the cap pushing response in honey bees (*Apis mellifera* cecropia)

- P2-84** Serrano-Rojas S, Jung J, Warkentin KM; Glasgow University, Boston University, Smithsonian Tropical Research Institute Multimodal mechanosensing for escape-hatching decisions of red-eyed treefrogs
- P2-85** Sermersheim LO, Woodruff MJ, Rosvall KA; Indiana University Behavioral responses to acute and persistent heat stress in nestling tree swallows (*Tachycineta bicolor*)
- P2-86** Vinson A, Lattin C; Louisiana State University House Sparrows Show Wide and Repeatable Individual Variation in Behavioral Responses to Novel Objects and Foods
- P2-87** Rodriguez SD, De Jesus-Soto MG, Fletcher SJ, Pretends Eagle TJ, Pentanidou T, Tscheulin T, Barthell J, Giray T, Abramson CI; St Philip's College, University of Puerto Rico, SE Okla St Univ, North Dakota State University, University of the Aegean, University of Central Oklahoma Extended training and punishment reduced extraneous errors of the cap pushing response in honey bees (*Apis mellifera*)
- P2-88** Babb MH, Lohmann C; University of North Carolina at Chapel Hill A Comparison of Stereotypic and Anticipatory Behavior in Cougars (*Puma concolor*) and Lions (*Panthera leo*) from Zoo to Sanctuary

Foraging, Predators, and Prey

- P2-89** Burns MP, Saltz JB; Rice University Understanding the sources of variation that contribute to differences in decision making outcomes
- P2-90** Adams DR, Gifford M; Vilonia High School, University of Central Arkansas Lizards Modulate Foraging Behavior in Response to Environmental Variation
- P2-91** Harman AR, Sjoblom NP, Renn SCP; Reed College Behavioral Conditioning of *Astatotilapia burtoni* Without Overtraining
- P2-92** Carty T, Philson C, Davis J; Radford University Sex, Food, and Friends in Daily Life: Learning and Transmission of Knowledge in Captive Zebra Finches
- P2-93** Talal S, Youngblood J, Farington R, Cease AJ, Harrison JF; Arizona State University Outbreking Locusts (*Schistocerca cancellata*) in Paraguay are Carbohydrate Hungry which Increase their Performance
- P2-94** Wang SY, Zavalaga CB, Polito MJ; Louisiana State University, Universidad Científica del Sur Consistent Foraging Niche Partitioning Between Two Peruvian Seabirds Under Varying El Niño-La Niña Conditions
- P2-95** Fletcher SJ, De-Jesus Soto MG, Abramson CI, Barthell J, Petanidou T, Tscheulin T, Giray T; Oklahoma State University, University of Puerto Rico, University of Central Oklahoma, University of the Aegean Incentive Contrast vs Optimal Foraging in Honey Bee Decision Making
- P2-96** Gough WT, Cade DE, Potvin J, Kahane-Rapport SR, Goldbogen JA; Stanford University, University of California Santa Cruz, Saint Louis University Scaling of Lunge Feeding Kinematics in Baleen Whales
- P2-97** Plum F, Labonte D; Imperial College London Large-scale analysis of ant foraging dynamics enabled by Deep Convolutional Neural Networks
- P2-98** Webber RL, Hodgson ML, McGaw IJ, Wyeth RC; St Francis Xavier University, Memorial University Lobster Behavioral Responses to Different Prey and Bait Types
- P2-99** Bardjis C, Stevens DR, Graham M, Foster SA, Baker JA; Clark University The Role of Predation Threat in the Development of Antipredator Behavior
- P2-100** Hodgson ML, Webber RL, McGaw IJ, Wyeth RC; St Francis Xavier University, Memorial University Can problem-solving during natural foraging give insight into behavioural innovation by the American Lobster, *Homarus americanus*?
- P2-101** Owen P, Agyei D, Jilani C, Joshi D, Miller A, Odaka Y, Tran M, Wilson K; University of Cincinnati Food Choices of Rusty Crayfish (*Faxonius rusticus*) Maintained on Fiber-rich and Protein-rich Diets Relative to Changes in Their Gut Microbiomes
- P2-102** Pretends Eagle TJ, Rodriguez SD, Gonzalez V, Abramson CI; North Dakota State University, Saint Philip's College, University of Kansas, Oklahoma State University Ants Build Defensively Against Ant Traps in the Field
- P2-103** Pretends Eagle TJ, De Jesus-Soto MG, Rodriguez SD, Fletcher SJ, Pentanidou T, Tscheulin T, Barthell J, Giray T, Abramson CI; North Dakota State University, University of Puerto Rico, Saint Philips College, Oklahoma State University, University of the Aegean, University of Central Oklahoma The Effect Of Extended Training Cap Pushing Response, Extinction In Honey Bees (*Apis Mellifera*)
- P2-104** Armstrong TBK, Davis E, Dickerson H, Healy JE; Austin College Implication of Choice of Burrow Location in the Thirteen-Lined Ground Squirrel (*Ictidomys tridecemlineatus*)

- P2-105** Pendleton LP, Cornelius JM, Chapple TC, Wikelski M, Hahn TP, Hunt KE; Eastern Michigan University, University of Oregon, Max Planck Institute of Animal Behavior, University of California Davis, Northern Arizona University
Food Availability and Its Effects on Spatial Habitat Use in Breeding and Nonbreeding Red Crossbills (*Loxia curvirostra*)
- P2-106** Horvath T, Bergey L, Ritchie L, Semanchik P; Centenary University
Competitive interaction and foraging speed in the invasive shrimp, *Palaemon macrodactylus*, and three species of native *Palaemon* shrimp in New Jersey Waters.
- P2-107** Farr D, Dobkowski K; University of Southern California, Friday Harbor Labs, Bates College
Scrumptious *Sargassum*: Feeding Preferences of *Pugettia producta*
- P2-108** Khoja A, Kwitny M, Staples AE, Schürch R; Virginia Tech
Development of an Open Source Implementation of Automated Honey Bee Waggle Dance Decoding Using Particle Image Velocimetry
- P2-109** Brady PC, Garcia M, Hernandez T, Aalund M, Ellerd R, Gruev V, Cummings ME; University of Texas at Austin, University of Illinois at Urbana Champaign, Texas A&M University
A comparison of two distinct pelagic camouflage strategies in teleosts

Neuroethology

- P2-111** Caron DP, Scibelli AE, Trimmer BT; Tufts University
Nociceptive strike behavior in *Manduca sexta* is mediated by multimodal sensory neurons
- P2-112** Lozier NR, Sisneros JA; University of Washington
Changes in Sacculus Hair Cell Density During Ontogeny of the Plainfin Midshipman Fish
- P2-113** Naughton LF, Cannizzaro DN, Pask GM; Bucknell University
One Big, Smelly Family: Decoding the Olfactory Receptors in the Indian Jumping Ant
- P2-114** Zeng R, Brown A, Sisneros J; University of Washington
Age-related change in the auditory sensitivity of zebrafish (*Danio rerio*)
- P2-115** Lefauve MK, Hernandez LP; George Washington University
Early Ontogeny of Sensory Processing Regions in the Brain of the Grass Carp
- P2-116** Dang H, Martinez Acosta V; Univ of the Incarnate Word
Immunohistochemical Analysis of Synaptic Proteins During Regeneration
- P2-117** Johnston M, Finton C, Brass K, Ophir AG, Campbell P; Oklahoma State University, Cornell University, University of California Riverside
Central oxytocin and vasopressin receptor distributions in the house mouse, *Mus domesticus*, and non-commensal congeners, *M. spretus* and *M. spicilegus*
- P2-119** Stewart H, Hayes D, O'Brien S; Radford University
Exploring the Efficacy of Opiates on PTSD Through a Fish Model
- P2-120** Hardy AR, Hale ME; University of Chicago
A new sensory ending in the paired fins of damselfish
- P2-121** Dunton AD, Bautista NM, Crespel A, Burggren WW; University of North Texas
Transgenerational Neurological and Behavioral Effects of Combined Exposure to Crude Oil and Hypoxia
- P2-122** Woods CE, Padilla G, Todd K; Westminster College
Behavioral and Electrophysiological Response of Medicinal Leeches to UV Light
- P2-123** McConnell I, Schulz J, Medina K; Occidental College
Analysis of synthetic cone snail venom through a novel zebrafish spinal motility assay
- P2-124** Oberman W, Kondrashov P, Maisano J, Young BA; Kirksville College of Osteopathic Medicine, University of Texas at Austin
Meningeal Structure in Reptiles
- P2-125** Frazer RE, Currea JP, Theobald JC, Wasserman SM; Wellelsey College, Florida International University
Anatomical and behavioral differences in *Drosophila melanogaster* and *Drosophila mojavensis* suggest divergence of visual circuits

Neuroanatomy & Neurobiology

- P2-126** Cannizzaro D, Naughton L, Pask G; Bucknell University
Making Sense of Evolution: Deciphering the Rapid Expansion of Ant Pheromone Receptors
- P2-127** Ahmed MA, Deora T, Brunton BW, Daniel TL; University of Washington
Multi-modal feedback in insect flight control
- P2-128** Faber-Hammond JJ, Renn SCP; Reed College
Transcriptomics of *Haplochromis burtoni* parental and fasting behavior reveals extensive differentiation between stocks
- P2-129** Maier MA, Maruska KP; Louisiana State University
GnRH as a Neuromodulator in Midbrain Sensory Regions during the Female Cichlid Reproductive Cycle

P2-130	Hale ME, Menelaou E, Vasquez E; University of Chicago	Median fin innervation of the zebrafish, <i>Danio rerio</i> , and implications for function
P2-131	Dugan Z, Van Breugel F*; University of Nevada Reno	The Role of Temporal and Spatial Memory in Food Search in <i>Drosophila</i>
P2-132	Mbog RM, Williams J, Krajniak KG; Southern Illinois University Edwardsville	The effects of temperature on contraction of smooth muscle in the earthworm <i>Lumbricus terrestris</i> and its action in response to acetylcholine
P2-133	Gonzalez BD, Martinez Acosta VG; Univ of the Incarnate Word	Overexpression of Beta-catenin During Regeneration in <i>Lumbriculus variegatus</i>
P2-134	Barkan CL, Zornik E, Leininger EC*; Reed College, New College of Florida	Identifying neuronal properties underlying the evolution of divergent vocal behaviors
P2-135	Valadez J, Williams C, Beaudoin G; Trinity University	Red-light activated neuronal control with an optimized mammalian expression vector
P2-136	Han JW, Friesen CN, Young RL, Hofmann HA; UT Austin	Social Regulation of Neural Transcriptomes
P2-137	Lent DD, Mendoza A; CSU Fresno	Navigating in the face of change: Modeling how changes in the visual environment of ants disrupts navigation.
P2-138	Khawaja Y, Husak J; University of St Thomas	Effects of Triiodothyronine on Metabolism in Lizards
P2-139	Go M, Notar JC, Johnsen S; Duke University	Associative learning in the brittle star <i>Ophioderma brevispinum</i>
P2-140	Nourbakhsh-Rey M, Markham MR; University of Oklahoma	Metabolism Sensing Mechanisms in the Electric Organ Cells of a Weakly Electric Fish
P2-141	Havens LT, Lohmann KJ; University of North Carolina, Chapel Hill	A model for directional magnetic field processing in the Caribbean spiny lobster <i>Panulirus argus</i>
P2-142	Kazmi JS, Bukowski-Thall GL, Tsang RH, Miller AI, Christie AE, Dickinson PS; Bowdoin College, University of Hawaii Manoa	The role of behavioral diversity in determining the extent to which neural patterns are modulated
P2-143	Wong BH, Kaye RJ, Christie AE, Dickinson PS; Bowdoin College, University of Hawaii Manoa	Differential modulation of pattern generating networks by multiple members of a single neuropeptide family
P2-143.5	Brittain CB, Smith T, Still SE, Menon A, Cristol DA, Wada H; Auburn University, William & Mary	Effects of Dietary Methylmercury on Songbird Hippocampal Neuroanatomy

Molecular Mechanisms of Ecophysiology

P2-144	McCue MD, Lighton JRB; Sable Systems International	¹³ C-Glucose oxidation testing in laboratory mice: effects of dose, temperature, and nutritional state
P2-145	Duong P, Riley GF, Romero MF, Piermarini PM, Gillen CM*; Kenyon College, Mayo Clinic, Ohio State University	Immunohistochemical Localization of aeCCC2 in <i>Aedes aegypti</i> Larvae
P2-146	Parry HA, Yap KN, Gladden LB, Hill GE, Hood WR, Kavazis AN; Auburn University	MitoMobile Validation: Taking a Molecular Physiology Lab to the Field
P2-147	Glidden CA, Deakin JE, Desimone JG, Elowe CR, Groom DJE, Slezacek J, Gerson AR; University of Massachusetts Amherst, University of Western Ontario	Assessment of Novel Biomarkers of Kidney Function and Damage in Migratory Songbirds After Long-duration Flight
P2-148	Reardon KM, Husak JF; University of St Thomas	Effects of aerobic exercise training on mitochondrial function in lizards
P2-149	Ibarra JN, Whittemore KS, Naquin TE, Silva MA, Cho A, Teeple JB, Schenk HJ, Mocko K, Burnaford JL, Hoese WJ; California State University Fullerton	Salinity Responses of the Desert Shrubs <i>Isocoma acradenia</i> and <i>Larrea tridentata</i>
P2-150	Yamada KYH, Zikeli SL, Yap KN, Zhang Y, Kiaris H, Kavazis AN, Hood WR; Auburn University, University of South Carolina	The relationship between the unfolded protein response and mitochondrial performance in deer mice maintained in a natural context
P2-151	Harris JC, Rees BB; University of New Orleans	HIF-1α Protein Levels in Tissues of <i>Fundulus grandis</i> During Hypoxia

Thermobiology

P2-152	Hubert DL, Bentz EJ, Mason RT; Oregon State University	Transcriptional Response to Acute Thermal Stress in the Red-sided Garter Snake (<i>Thamnophis sirtalis parietalis</i>)
P2-153	Shah AA, Woods HA; University of Montana	Who can take the heat? Microclimates mediate heat tolerance in wasp-caterpillar interactions

- P2-154** Deery SW, Haro D, Gunderson A; Tulane University
Are Introduced Species More Plastic? A Comparison of the Heat-Hardening Capacity of Native and Non-Native *Anolis* Lizards
- P2-155** Marroquin-Flores RA, Mortimer NT, Paitz RT, Bowden RM; Illinois St U
Thermal fluctuations produce ecologically relevant expression profiles for temperature-responsive genes
- P2-156** Harter LN, Stahlschmidt ZR; U Pacific
Does reproductive investment trade off with hardening or cross-tolerance related to heat and desiccation?
- P2-157** Lima AS, Ferreira LF, Gomes FR, Titon SCM*; University of São Paulo, University Center Fundação Santo Andre
Thermal Sensitivity of Bullfrog's Immune Response Kept at Two Different Temperatures
- P2-158** Bilyk KT, Sformo T; Western Kentucky University, University of Alaska Fairbanks
Heat Tolerance of North Slope Fishes
- P2-159** Cochran JK, Orr SE, Buchwalter DB; North Carolina State University
Assessing the concept and thermal sensitivity of the Pcrit in the mayfly *N. triangulifer*
- P2-160** Shannon ES, Powers DR; George Fox University
Heat Dissipation by Hummingbirds during Perching Following a Hovering Bout
- P2-161** Lisondro AK, Mendez-Narvaez J; Universidad Autonoma de Chiriqui, Smithsonian Tropical Research Institute
Thermal Ecology in Two Neotropical Frogs with Different Degrees of Terrestriality
- P2-162** Clifton IT, Refsnider JM; University of Toledo
Characterizing the Thermal Ecology of a Montane Lizard Community
- P2-163** Unfried LN, Teets NM; University of Kentucky
Benefits of Rapid Cold Hardening at Sublethal Temperatures in *Drosophila melanogaster*
- P2-164** El-Shesheny IA, Matoo OB, DeLong JP, Montooth KL; University of Nebraska-Lincoln, Tanta University
Connecting thermal performance from mitochondrial physiology to population growth rate in an outbred insect population
- P2-165** Keaveny EC, Dillon ME; University of Wyoming
Brood Incubation May Provide Reciprocal Thermal Benefits for Worker Bumble Bees
- P2-166** Van Sant MJ, Oufiero CE; Cameron University, Towson University
Effects of Dehydration on Cutaneous Water Loss and Preferred Body Temperature in *Sceloporus consobrinus*
- P2-167** Ramsaran SK, Waters JS; Providence College
Heat shock physiology: measuring the metabolic impacts of thermal stress in *Drosophila melanogaster*
- P2-168** Turrell M, Leal M; University of Missouri
Microclimate Influences Variation in the Upper Thermal Tolerance of a Complex Lifecycle Amphibian
- P2-169** Cuevas-Sanchez AY, Moeser E, Buhl K, Dinh KV, Dowd WW; Washington State University, University of California Los Angeles
Interactive effects of oxygen and temperature on physiology and behavior of the splash pool copepod *Tigriopus californicus*
- P2-170** Pulley KL, Percival C, Tapsak ST, Tscheulin T, Pentanidou T, Gonzalez VH, Hranitz JM, Barthell JF; University of Texas at El Paso, Pomona College, Bloomsburg University of Pennsylvania, University of the Aegean, University of Kansas, University of Central Oklahoma
Differences in critical thermal maximum between crepuscular vs. diurnal species of *Xylocopa*
- P2-171** Percival C, Pulley K, Tapsak S, Tscheulin T, Pentanidou T, Gonzalez V, Abramson C, Hranitz J, Barthell J; Pomona College, University of Texas at El Paso, Bloomsburg University, University of the Aegean, University of Kansas, Oklahoma State University, University of Central Oklahoma
The effect of social context, acclimation, and feeding status on critical thermal maximum of honey bees
- P2-172** Skelton ZR, Wegner NC, Prinzing TS, Hastings PA; University of California San Diego, NOAA Fisheries, Simon Fraser University
Comparison of Temperature Preference and Q₁₀ Between Two Juvenile Shark Species

Energetics

- P2-173** Tituskin JR, Brady SP, Seetharaman K, McKeon AM, Raffel TR; Oakland University
Metabolic effects of temperature and food provisioning support a MTE/DEB model of thermal acclimation in axolotls
- P2-174** McNamara-Bordewick NK, Maas AE, Blanco-Bercial L, Tarrant AM; Barnard College, Bermuda Inst Ocean Sciences, Woods Hole Oceanogr Inst
Oceanic Copepods Fine-Tune Metabolic Activity During Diel Vertical Migration
- P2-175** D'Alessandro MN, Howey CAF; University of Scranton
Metabolic Rates of City Anoles

- P2-176** Marroquin CM, Munoz-Garcia A; Ohio State University
Energy Expenditure Among Different Roost Types and Colony Sizes Observed in Chiroptera
- P2-177** Cavey LT, Secor SM; University of Alabama
Larger Meals Generate a Disproportionate Greater Cost of Digestion
- P2-178** Gefen E, Raviv D; University of Haifa-Oranim
Post-feeding metabolic response and thermal preference in the scorpion *Hottentotta judaicus*
- P2-179** Quintanilla Ramirez GS, Treidel LA, Williams CM; Univ of California Berkeley
Aerobic Scope is increased to support flight in wing-polymorphic female crickets, *Gryllus firmus*
- P2-180** Groom DJE, Elowe CE, Slezacek J, Gerson AR; University of Massachusetts Amherst, University of Western Ontario
Whole-animal Metabolic Phenotype Before and After a Migratory Flight in the Yellow-rumped Warbler (*Setophaga coronata*)
- P2-181** Cornelius JM, Cameron R, Bradley D; Oregon State University, Eastern Michigan University
Activity drives investment in hematocrit recovery versus fat storage in food-restricted captive red crossbills *Loxia curvirostra*
- P2-182** Mineo PM, Parlin A, Do Amaral JPS, Schaeffer PJ; Elmhurst College, University of Cincinnati, Clermont College, Miami University
How does diet composition affect thermal preference and the aerobic scope of digestion?

Biomaterials - Adhesion

- P2-183** Pamfilie AM, Garner AM, Niewiarowski PH; University of Akron
Watch Your Step: A Comparison of Digital Morphology Across Ecomorphs in *Anolis* Lizards
- P2-184** Seleb B, Thatcher M, Lieb J, Noel A; Georgia Institute of Technology, Georgia Tech Research Institute
Sure-Footed in Slippery Situations: Underwater Grip with Otter Paws
- P2-185** Kaimaki DM, Attipoe AEL, Stoukidi MN, Labonte D; Imperial College London
Temperature-Induced Viscosity Changes of the Insect Pad Secretion
- P2-186** Falso MS, Gustafson KL, Marshall LV, Falso PG; Slippery Rock University
Investigation of Nuptial Pads in *Xenopus laevis* Exposed to the Pesticide Imidacloprid
- P2-187** Ringenwald BE, Bogacki EC, Stark AY; Villanova University
Crawl or Fall: The Effect of Variable Temperature and Humidity on Gecko Locomotion
- P2-188** Bogacki EC, Ringenwald BE, Stark AY; Villanova University
Stick and Run: Locomotor Behavior of Tokay Geckos on Wet and Dry Substrates
- P2-189** Satterlie RA, Hermans CO, Norekian TN; University of North Carolina Wilmington, Sonoma State University, Whitney Laboratory for Marine Bioscience
Ultrastructure of Adhesive Papillae on the Buccal Cones of the Pteropod Mollusc *Clione limacina*: Evidence for a Duo-Gland Adhesive System
- P2-190** Implicito CJ, Stark AY; Villanova University
The Effect of Surface Temperature on Adhesion of a Temperate Ant

Eco/evomorphology - Limbs, shells and tails

- P2-192** Lang KL, Gifford ME; University of Central Arkansas
Multivariate analyses of performance tradeoffs and phenotypic integration in the prairie lizard (*Sceloporus consobrinus*)
- P2-193** Chevalier-Horgan C, Pierce SE, Hutchinson JR, Diogo R, Molnar JL; NYITCOM, Harvard University, Royal Veterinary College, Howard University
Biomechanical modelling of tetrapods: the structural and functional adaptation from aquatic to terrestrial life
- P2-194** Robin H, Stayton CT; Bucknell University
Are there common patterns of ontogenetic shell shape changes between aquatic and terrestrial emydid turtles?
- P2-195** Young VKH, Starnes MK, Baeza JA, Blob RW; Saint Mary's College, Clemson University
Comparative Limb Bone Scaling and Shape in Emydid Turtles
- P2-196** Kubicek KM, Britz R, Conway KW; Texas A&M University, Natural History Museum
Ontogeny of the Pectoral-fin Radials in Catfishes
- P2-197** Woldt KM, Sustaita D; California State University San Marcos
Preliminary analysis of climbing morphology and performance of the salt marsh harvest mouse and co-occurring species in the Suisun Marsh, California
- P2-198** Rivera G, Neely CMD; Creighton University
Patterns of fluctuating asymmetry in the limbs of freshwater turtles

Morphology and mechanics - muscles and tendons

- P2-199** McCue MD, Klok JC, Lighton JRB, Hammond KA; Sable Systems International, University of California Riverside
Energetics of *Peromyscus* treadmill running at different speeds, inclines, and environmental temperatures
- P2-200** Stover KK, Roberts TJ, Azizi E; University of California Irvine, Brown University
The shape of things to come: Age-related restriction in muscle shape change during shortening
- P2-201** Huynh G, Duman A, Azizi E; University of California Irvine
Effects of Caffeine on Jump Performance in *Rhinella marina*
- P2-202** Asencio AM, Powers JD, Williams CD, Malingen SA, Daniel TL; University of Washington, University of California, Allen Institute of Cell Science
Predicting complex modulus of active muscle from models of elastically coupled molecular motors
- P2-203** Panessiti CE, Rickards G, Rull M, Konow N; UMass Lowell, Andover High
Does the contribution of elastic recoil vary with temperature and between strike and chewing behaviors in axolotl feeding?
- P2-204** Valencia MM, Ashzand BA, Bowens JL, Monroy JA, Horner JM; California State University San Bernardino, Claremont Colleges
The effects of different exercise regimes on tendon remodeling in mice (*Mus musculus*)
- P2-205** Glass JR, Harrison JF; Arizona State University
Testing the limits: Physiological responses of honeybees (*Apis mellifera*) during flight in variable-density gases
- P2-206** Delap SJC, Rimkus B, Shehaj A, Konow N; UMass Lowell
The effect of stimulation intensity on the range of optimal lengths of mouse hindlimb muscles
- P2-207** Mendoza E, Schwaner J, Freymiller G, McGowan C, Clark R, Azizi E; University of California Irvine, University of Idaho, San Diego State University
Kinematics of kangaroo rat foot-drumming
- P2-208** Hatcher M, Florendo J, Maia A; Rhode Island College, University of Rhode Island
Rising Ocean Temperatures Affect Red and White Muscle Recruitment in Fish Species
- P2-209** Cox SM, Deboef A, Salzano MQ, Katugam K, Piazza SJ, Rubenson J; Penn State, Georgia Tech
Elastic System Shows No Plasticity to Different Functional Demands During Growth
- P2-210** Hernandez LP, Prado MA*, Mendoza-Castillo JM; George Washington University
Histological diversification in the muscular anatomy of the palatal organ with Cypriniformes
- P2-211** Kimball D, Minicozzi M, Gibb A; Northern Arizona University, Minnesota State University
Bonytail, the Arizona tuna, convergence in muscle and tendon anatomy in scombrids and *Gila cypha*
- P2-212** Lin K, Feiler A, Chu W, Garcia N, Ilton M; Harvey Mudd College
Understanding the Elastic Efficiency of Biological Springs
- P2-213** Cook A, Ilton M; Harvey Mudd College
Computational Modeling of Latch-Spring Systems
- P2-213.5** Schulz AK, Rincon C, Hu DL; Georgia Institute of Technology
Elephant Trunks Behave like Telescoping Poles

Locomotion - Legs, joints and stability

- P2-214** Unsworth CK, Astley HC; University of Akron
Quantifying the compliance of the millipede body while traversing irregular terrain
- P2-216** McNamara A, Dunham NT, Young JW, Stanton DW, Wood J, Shapiro LJ; University of Texas Austin, Cleveland Metroparks Zoo, Northeast Ohio Medical University
Comparative platyrrhine walking kinematics across natural, discontinuous substrates
- P2-217** Iijima M, Munteanu VD, Diamond KM, Blob RW; Clemson University
Locomotor mechanics of juvenile alligators reveals ontogenetic changes in the roles of the fore- and hindlimbs
- P2-218** Mannava A, Schapker N, Lewis C, German R, Young JW; NEOMED
Effects of preterm birth on locomotor performance in infant pigs
- P2-219** Flores E, Duman A, Azizi E; University of California Irvine
The effects of extrinsic loading on the coordinated landings of *Rhinella marina*
- P2-220** Po T, Heydari S, Kansa E, McHenry MJ; UC Irvine
The neuromechanics of locomotion in sea stars (*Protoreaster nodosus*)
- P2-221** Saintsing AJ, Full RJ; University of California Berkeley
Running endurance after leg loss in cockroaches
- P2-223** Maisonneuve MC, Schiebel PE, Goldman DI; Georgia Institute of Technology
A robophysical snake with bio-inspired actuation to explore the role of passive mechanics in limbless locomotors.
- P2-224** Vick CP, Gifford ME; University of Central Arkansas
Climbing Performance as a Physical Cost of Reproduction in Prairie Lizards (*Sceloporus consobrinus*)

- P2-225** Madrid Galicia VS, Arias AA, Vega K, Eelsey RM, Azizi E, Owerkowicz T; Univ of California Irvine, CSU San Bernardino, Rockefeller Wildlife Refuge Effects of caudofemoralis longus tenotomy on 3D kinetics and kinematics in juvenile alligators
- P2-226** Bonnan MF, Moore CL*, Barton A, Dizinno J, Muller K, Smith J, Walker J; Stockton University, Red Bank Veterinary Hospital Hands down: Understanding elbow kinematics of the central bearded dragon (*Pogona vitticeps*)
- P2-227** Ozkan-Aydin Y, Liu B, Goldman DI, Hammond III FL; Georgia Institute of Technology Lateral Undulation Aids Soft Earthworm Robot Anchoring and Locomotion in Heterogeneous Environments
- P2-228** Wunderlich RE, Orlandi D, Tongen AL; James Madison University The effect of enclosure type on locomotion and energy expenditure in captive lemurs

Complementary to S5: Form, structure and function: How plants vs. animals solve physical problems

- P2-229** Reppe F, Huss JC, Fratzl P, Eder M; Max-Planck-Institute of Colloids and Interfaces *Banksia* seed pod opening - structure and mechanics of a long-term functional pericarp
- P2-230** Hansen AK, Lent DD, Müller UK*; California State University Fresno How bio-inspiration teaches us: Digital fabrication and modeling in STEM education and outreach
- P2-231** Miller FM, Geller JB, Kahn AS, Connolly TP; Moss Landing Marine Laboratories Impact of wave intensity on *Mytilus californianus* byssal thread strength
- P2-232** O'Leary NE, Stark AY; Villanova University Adhesive Performance of Tokay Geckos (*Gekko gecko*) as a Function of Variable Surface Temperature
- P2-233** McDuffee Altekruze A, Harley CM, Li J, Edon JA, Zemke D; Metropolitan State University More is not necessarily better: Physical therapy differentially influences crawl quality and quantity in *Hirudo verbana*
- P2-234** Singh K, Hidalgo F, Berg O, Law D, Müller UK; California State University, University of California Berkeley Building a mechanical model of a tiny suction feeder to explore its performance landscape
- P2-234.5** Peters K, Langdon TR, Lent D, Hansen AK; California State University Fresno Fabricating biomechanics activities to increase K-16 students' interest in STEM

Host-parasite interactions: an intimate dance

- P2-235** Wohlleben AW, Foster SA, Baker J; Clark University The infection of young-of-year threespine stickleback by a cestode parasite
- P2-236** Jane A, Frederich M, Byron CJ; University of New England Detection of the invasive parasite *Proctoeces maculatus* at blue mussel aquaculture sites
- P2-237** Alaasam VJ, Keehn JE, Durso AM, French SS, Feldman CR; University of Nevada, Oregon Department of Fish and Wildlife, Utah State University Gone with the wind: side-blotched lizards (*Uta stansburiana*) have fewer parasites and a reduction in reactive oxygen metabolites at wind farms.
- P2-238** Ortiz TE, Chandler C; SUNY Oswego Prevalence of Microsporidia and *Wolbachia* infection in the amphipod *Gammarus fasciatus*
- P2-239** Anderson HB, Hutchinson M, Corbin CE, Hranitz JM; Bloomsburg University of Pennsylvania, Pennsylvania Department of Agriculture Avian Host Diversity Detected in Blood Meal Analysis of Two Species of *Culex* Mosquitoes Collected from Urban Habitats in Pennsylvania

Epidemiology and pathology

- P2-240** Watson LAR, Musgrove CM, Hinds AD, Ambardar M, Carvalho CM; Fort Hays State University Investigating the dissemination of antibiotic resistant *Enterobacteriaceae* microorganisms via a migratory bird species
- P2-241** Koch RW, Reichard M; Oklahoma State University Using ecological niche modeling to predict the suitable habitat for *Trichinella* species in cougars (*Puma concolor*) from Colorado
- P2-242** Shannon RP, Naden L, Bolek MG; Oklahoma State University Distribution of Oocysts of Two Neogregarines (*Mattesia* sp. and *Ophryocystis elektroscirrha*), which Infect the Hypodermis of Fire Ants, Solenopsidini, and Milkweed Butterflies, Danaini
- P2-243** Mullins H, Davis J, Aronson N; Radford University, Uniformed Services University Jungle Pharmacy: Exploring the Antibacterial and Antitrypanosomal Properties of *Ficus insipida*

Coral reef biology in the Anthropocene

- P2-244** Dixon G, Matz MV; University of Texas at Austin Generalized Environmental Stress Response in *Acropora* corals

- P2-245** Rippe JP, Baumann JH, Bove CB, Aichelman HE, Davies SW, Castillo KD; University of Texas at Austin, University of North Carolina Chapel Hill, Boston University
Environmental drivers of coral growth across the western Caribbean Sea and Florida Keys
- P2-246** Aichelman HE, Wuitchik DM, Atherton KF, Kriefall NG, Davies SW; Boston University
Do Facultative Coral Hosts Buffer Their Symbionts in Response to Thermal Extremes?
- P2-247** Bedwell H, Bay L, Fuller Z, Przeworski M, Matz MV; University of Texas at Austin, Australian Institute of Marine Science, Columbia University
Mitochondrial introgression and its role in coral thermal tolerance
- P2-248** Cassavaugh CM, Lamont S, Szuch CP, Carfagno A, Gillevet PM, Bishop BM, Cook GM; New England College, George Mason University
Combatting Antibiotic Resistance: Bioprospecting for Antimicrobial Peptides in the Deep-Sea Coral *Lophelia pertusa*
- P2-249** Szuch CM, Kephart ML, Sevigny JL, Simpson S, Cassavaugh CM, Thomas WK, Cook GM; New England College, University of New Hampshire
Deep-sea Coral Reefs: Genomic Contributions to Bioprospecting in the Marine Environment
- P2-250** Hanes SD, Hubbuch J; Martin Methodist College
Descriptive analysis of cellular organization in the *Aiptasia-Symbiodinium* model system

Monday Schedule of Events

Events take place in the JW Marriott Austin, unless otherwise noted

EVENT

Poster Session 3 Set Up

Speaker Ready Room

Registration

Coffee Break AM

Exhibit Hall

Coffee Break PM

Poster Session 3 Even Numbers Authors Present

Poster Session 3 Odd Numbers Authors Present

Poster Session 3 Teardown

TIME

7:00 AM – 8:00 AM

7:00 AM – 5:00 PM

7:30 AM – 3:00 PM

9:30 AM – 10:30 AM

9:30 AM – 5:30 PM

3:30 PM – 4:30 PM

3:30 PM – 4:30 PM

4:30 PM – 5:30 PM

5:30 PM – 6:00 PM

LOCATION

Grand Ballroom

Room 405

Grand Ballroom Foyer

Grand Ballroom

Grand Ballroom

Grand Ballroom

Grand Ballroom

Grand Ballroom

Grand Ballroom

SYMPOSIUM ORAL PRESENTATIONS

S7: Building Bridges from Genome to Phenome:

Molecules, Methods and Models

Chair: Karen Burnett, Jonathon Stillman, Donald Mykles, David Durica

7:45 AM – 3:30 PM

Lone Star D

S8: Long Limbless Locomotors: The Mechanics and Biology of

Elongate, Limbless Vertebrate Locomotion

Chair: Henry Astley

7:45 AM – 3:30 PM

Lone Star H

S9: Applied Functional Biology: Linking Ecological Morphology
to Conservation and Management

Chair: Lance McBrayer, Eric McElroy, Diego Sustaita

7:45 AM – 3:30 PM

Brazos

CONTRIBUTED PAPER ORAL PRESENTATIONS

MORNING

Session 71: Communication Mechanisms

8:00 AM – 9:45 AM

Lone Star A

Session 72: Evolutionary Morphology

8:00 AM – 9:45 AM

Lone Star B

Session 73: Get in My Belly: Feeding on a Variety of Foods

8:00 AM – 9:45 AM

Lone Star C

Session 74: Chhchchanging Climate, Part I

8:00 AM – 9:45 AM

Lone Star E

Session 75: Building a Better Muscle

8:00 AM – 9:30 AM

Lone Star F

Session 76: The Way That I Walk

8:00 AM – 10:00 AM

Lone Star G

Session 77: Ecophysiology of Oxygen Delivery

8:00 AM – 10:00 AM

Rooms 301-302

Session 78: Complementary to S10: Melding Modeling and Morphology:

8:00 AM – 9:30 AM

Rooms 303-304

Integrating Approaches to Understand the Evolution of Form and Function, Part I

Session 79: Parental Care & Reproduction

8:00 AM – 9:45 AM

Room 205

Session 80: S.T.R.E.S.S. 1

8:00 AM – 9:45 AM

Rooms 201-202

Session 81: Where Do We Go From Here? Biogeography

8:00 AM – 9:45 AM

Rooms 203-204

Session 82: Bio-"Physical Fascination"-Biophysical Environment, Part I

8:00 AM – 10:00 AM

Rooms 402-403

Session 83: Complementary to S4: Reproduction: the Female Perspective
From an Integrative and Comparative Framework, Part I

10:15 AM – 11:45 AM

Lone Star A

Session 84: Awesome Adaptations

10:15 AM – 11:45 AM

Lone Star B

Session 85: Chew on This

10:15 AM – 11:45 AM

Lone Star C

Session 86: Chhchchanging Climate, Part II

10:30 AM – 12:00 PM

Lone Star E

Session 87: (Don't) Trip, Stumble and Fall

10:00 AM – 12:00 PM

Lone Star F

Session 88: Morphology of the Senses

10:30 AM – 12:00 PM

Lone Star G

Session 89: Host-pathogen Interactions

10:30 AM – 12:00 PM

Rooms 301-302

Session 90: Complementary to S10: Melding Modeling and Morphology:
Integrating Approaches to Understand the Evolution of Form and Function, Part II

10:15 AM – 12:00 PM

Rooms 303-304

Session 91: Sensory Basis of Organismal Interactions

10:15 AM – 12:00 PM

Room 205

Session 92: S.T.R.E.S.S. 2

10:15 AM – 11:45 AM

Rooms 201-202

Session 93: Migration and Navigation

10:30 AM – 12:00 PM

Rooms 203-204

Session 94: Bio-"Physical Fascination"-Biophysical Environment, Part II

10:30 AM – 11:30 AM

Rooms 402-403

AFTERNOON

Session 95: Complementary to S4: Reproduction: the Female Perspective from an Integrative and Comparative Framework, Part II	1:30 PM – 3:30 PM	Lone Star A
Session 96: Complementary to S5: Form, Structure and Function: How Plants vs. Animals Solve Physical Problems	1:30 PM – 3:30 PM	Lone Star B
Session 97: Everything Sucks	1:30 PM – 3:15 PM	Lone Star C
Session 98: Population Genetics	1:30 PM – 3:30 PM	Lonestar E
Session 99: Pulling and Tugging: Musculo-Skeletal Architecture	1:30 PM – 3:15 PM	Lone Star F
Session 100: Physiology Through the Seasons	1:30 PM – 3:30 PM	Lone Star G
Session 101: Two to tango: Host-parasite interactions	1:30 PM – 3:30 PM	Rooms 301-302
Session 102: Ecophysiology of Diet	1:30 PM – 3:30 PM	Rooms 303-304
Session 103: Sensing and Navigation	1:30 PM – 3:15 PM	Room 205
Session 104: Comparative Endocrinology	1:30 PM – 3:00 PM	Rooms 201-202
Session 105: The Evolution of Morphology	1:30 PM – 3:30 PM	Rooms 203-204
Session 106: The Evolution of Physiology	1:30 PM – 3:30 PM	Rooms 402-403

COMMITTEE AND BOARD MEETINGS

Student/Postdoc Affairs Committee	12:00 PM – 1:30 PM	Room 406
SICB Division Secretaries	12:00 PM – 1:30 PM	Room 401
POs, ICB editor and Symposium Organizers for Washington DC Meeting	12:00 PM – 1:30 PM	Room 409
Development Committee	12:00 PM – 1:30 PM	OP Italian Restaurant, Hotel

BUSINESS MEETINGS

SICB Society Meeting & Awards Presentation	5:30 PM – 6:30 PM	Lone Star D
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WORKSHOPS AND PROGRAMS

Student Postdoctoral Affairs Committee: “How-To?” Daily Booth	9:15 AM – 5:00 PM	Grand Ballroom
NSF Program Officers: Funding Opportunities, Integrative Research and Education, and Q&A	12:00 PM – 1:30 PM	Lone Star C
Round-table discussion: Overcoming Challenges for Testing Gene Function in Post-Embryonic Life Stages	12:00 PM – 1:30 PM	Rooms 211-212
Student Support Committee Brown Bag Workshop for Graduate Students: Writing a competitive GIAR/FGST grant proposal	12:00 PM – 1:30 PM	Room 404
Workshop: Parenting Through Academia	12:00 PM – 1:30 PM	Rooms 402-403
Podcast: Live Recording of Big Biology with Dr. Molly Cummings	3:30 PM – 4:30 PM	Room 407
DPCB Ask-An-Expert: Get Phylogenetic and Comparative Methods Support with an Expert	3:30 PM – 5:30 PM	Grand Ballroom

SOCIAL EVENTS

Morning Run	6:00 AM	JW Marriott Lobby
Broadening Participation Social	7:00 PM – 9:00 PM	Room 401
DVM/DCB Social	9:00 PM – 12:00 AM	South-East Lobbies

Monday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM Symposium S7 Lone Star D

Building Bridges from Genome to Phenome: Molecules, Methods and Models

Chairs: Karen Burnett, Jonathon Stillman, Donald Mykles, David Durica

7:45 am	S7-1	Burnett KG, Durica DS, Mykles DL, Stillman JH; College of Charleston, University of Oklahoma, Colorado State University, San Francisco State University	SICB Wide Symposium: Building Bridges from Genome to Phenome: Molecules, Methods and Models
8:00 am	S7-2	Mauro AA, Ghahambar CK; Colorado State University	The transcriptomic basis of a trade-off between salinity tolerance and competitive ability in the Trinidadian guppy
8:30 am	S7-3	Lyko F; German Cancer Research Center (DKFZ)	Epigenetic adaptation in a clonal invasive crayfish
9:00 am	S7-4	Li J, Levitan BB, Kültz D; University of California Davis	Quantitation and comprehension of context-dependent changes of dynamic proteomes
9:30 am	Coffee Break		
10:00 am	S7-5	Havird JC; University of Texas Austin	Building Bridges from the Mitogenome to the Mitophenome to the Organismal Phenome
10:30 am	S7-6	Sharbrough J, Montooth K, Neiman M; Colorado State University, University of Nebraska, University of Iowa	Phenotypic Variation in Mitochondrial Function across New Zealand Snail Populations
11:00 am	S7-7	Santos SR, Hoffman SK, Seitz KW, Havird JC, Weese DA; Auburn University, Green River College, University of Texas at Austin, Georgia College and State University	Phenotypic Comparability Arising from Genotypic Variability amongst Physically Structured Microbial Consortia
11:30 am	S7-8	Milligan-Myhre KCA; University of Alaska Anchorage	Using an evolutionary model organism to reveal host genetic influence on host-microbe interactions
12:00 pm	Lunch Break		
1:30 pm	S7-9	Schaefer RJ, Baxter I, McCue ME; University of Minnesota, Donald Danforth Plant Science Center	Using Camoco to integrate genome-wide association studies with context specific co-expression networks in corn and horses
2:00 pm	S7-10	Gust KA; US Army	Omics in Non-Model Species: Closing the Loop Among Genes, Molecular Systems, and Phenotypes to predict Adverse Outcomes to Environmental Stress
2:30 pm	S7-11	Hahn DA; University of Florida	Combining 'omics Approaches to Pick Apart the Genetic and Physiological Architectures of Seasonal Adaptation
3:00 pm	S7-12	Garrett AD, Brennan RS, Steinhart A, Pelletier A, Pespeni MH*; University of Vermont	Linking Genome to Phenome for Complex Traits: Studies of Global Change Adaptive Variation in Marine Invertebrates
3:30 pm	Coffee Break		

7:45 AM – 3:30 PM Symposium S8 Lone Star H

Long Limbless Locomotors: The Mechanics and Biology of Elongate, Limbless Vertebrate Locomotion

Chair: Henry Astley

7:45 am	S8-1	Astley HC; University of Akron	Symposium Introduction - Long Limbless Locomotors Over Land: The mechanics and biology of elongate, limbless vertebrate locomotion
8:00 am	S8-2	Astley HC; University of Akron	Mechanics of Multi-articular Muscles Minimize Moments
8:30 am	S8-3	Jayne BC; University of Cincinnati	What Defines Different Modes of Snake Locomotion?

Monday 6 January 2020

9:00 am	S8-4	<i>Fu Q, Gart SW, Mitchel TW, Kim JS, Chirikjian GS, Li C*; Johns Hopkins University</i>	Body lateral deformation and compliance help snakes and snake robots stably traverse large steps
9:30 am	Coffee Break		
10:00 am	S8-5	<i>Ward AB, Redmann E, Alqahtani A, Sheikh A, Mehta RS; Adelphi Univ, UC Santa Cruz</i>	East Coast Travel Is An Uphill Battle: Terrestrial locomotion in American Eels
10:30 am	S8-6	<i>Bergmann PJ, Mann SDW, Morinaga G, Freitas ES, Siler CD; Clark University, Oklahoma State University, University of Oklahoma</i>	Convergent evolution of vertebral morphology and locomotion in snake-like lizards
11:00 am	S8-7	<i>Tingle JL; University of California Riverside</i>	Prevalence of Facultative Sidewinding Locomotion in Non-specialist Snake Species
11:30 am	S8-8	<i>Capano JG, Brainerd EL; Brown University</i>	Reaction Forces and Rib Function During Locomotion in Snakes
12:00 pm	Lunch Break		
1:30 pm	S8-9	<i>Zamore SA, Araujo N, Socha JJ; University of Colorado Boulder, Virginia Tech</i>	Visual behavior in flying snakes: measurement and exploration with virtual reality
2:00 pm	S8-10	<i>Schiebel PE, Lin B, Hubbard AM, Chen L, Blekherman G, Goldman DI; Georgia Institute of Technology</i>	Specialization of control strategies in terrestrial slithering snakes.
2:30 pm	S8-11	<i>Choset HM; Carnegie Mellon University</i>	Geometric Methods for Locomotion in Limbless and Legged Systems
3:00 pm	S8-12	<i>Kano T, Ishiguro A; Tohoku University</i>	Decoding Decentralized Control Mechanism Underlying Adaptive and Versatile Locomotion of Snakes
3:30 pm	Coffee Break		

Grand Ballroom

Grand Ballroom

7:45 AM – 3:30 PM	Symposium S9	Brazos
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Applied Functional Biology: Linking Ecological Morphology to Conservation and Management

Chair: Lance McBrayer, Eric McElroy, Diego Sustaita

7:45 am	S9-1	<i>McBrayer L, McElroy E*, Sustaita D; Georgia Southern University, College of Charleston, University of California at San Marcos</i>	Introduction: Applied Functional Biology: linking ecological morphology to conservation and management
8:00 am	S9-2	<i>Thompson CL, Williams SH, Glander KE, Teaford MF, Vinyard CJ; Grand Valley State University, Ohio University, Duke University, Touro University, Northeast Ohio Medical University</i>	Getting Humans Off Monkeys' Backs: Can Ecophysiological Research Inform Primate Conservation and Habitat Management Efforts?
8:30 am	S9-3	<i>Kienle SS, Powers J, Cacanadin A, Kendall T, Richter B, Costa DP, Mehta RS; UCSC</i>	Linking Functional Morphology, Behavior, and Ecology to Understand Foraging Strategies in an Endangered Marine Mammal
9:00 am	S9-4	<i>Wilson RS, Pavlic T, Wheatley R, Cameron SF; University of Queensland, Arizona State University</i>	Using performance to predict the survival of threatened mammals
9:30 am	Coffee Break		
10:00 am	S9-5	<i>Wyneken J, Salmon M; Florida Atlantic Univ</i>	Science, Sea Turtles, and Links to Conservation Management
10:30 am	S9-6	<i>Herrel A, Araspin L, Padilla P, Courant J, Serra Martinez A, Rebelo R, Ihlow F, Backeljau T, Mokhatla M, Ginal P, Rödder D, Measey J; CNRS/MNHN, University of Lisbon, ZFMK, RBINS, Stellenbosch University J</i>	Rapid Local Adaptations in an Invasive Frog (<i>Xenopus laevis</i>): the Importance of Functional Trait Measurements to Predict Future Invasions.
11:00 am	S9-7	<i>McBrayer LD, Orton RW, Neel LK, Kaunert MD, Tucker DB, Williams SC; Georgia Southern University, University of Texas Arlington, Arizona State University, Ohio University</i>	Integrating Studies of Function and Ecology to Inform Conservation and Management

Grand Ballroom

Monday 6 January 2020

11:30 am	S9-8	<i>Mendelson III JR; Zoo Atlanta & Georgia Institute of Technology</i>	The Interface of Taxonomy, Systematics, Genetics, and Conservation
12:00 pm	Lunch Break		
1:30 pm	S9-9	<i>De Meyer J, Verhelst P, Adriaens D; University of Ghent</i>	The role of understanding the eel's morphology in stopping its decline
2:00 pm	S9-10	<i>Ryerson WG; Saint Anselm College</i>	Captive breeding alters head morphology and behavior in reptiles: implications for headstarting and reintroduction programs
2:30 pm	S9-11	<i>Mehta RS, Dale KE; University of California Santa Cruz</i>	Linking Fitness and Functional Roles Inside and Outside a Marine Protected Area Around Catalina Island
3:00 pm	S9-12	<i>Moran CJ, Gibb AC, Ward DL; Citadel, Northern Arizona University, United States Geological Survey</i>	Integrating studies of anatomy, physiology and behavior into conservation of imperiled cyprinid fishes of the Southwestern United States
3:30 pm	Coffee Break		

Grand Ballroom

Monday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:45 AM **Session 71** **Lone Star A**

Communication Mechanisms

Chair: Fadeke Adeola

8:00 am	71-1	<i>Adeola FI, Lailvaux SP; University of New Orleans</i>	The Influence of Dampened Locomotor Function on Calling Structure in the house cricket <i>Acheta domesticus</i>
8:15 am	71-2	<i>Provini P; Centre for Research and Interdisciplinarity</i>	Birdsong for human(e) voices: Building efficient voice prostheses inspired from bird vocal system
8:30 am	71-3	<i>Burkhard TT, Phelps SM; University of Texas at Austin</i>	Evidence for heritable variation in the songs of Alston's singing mouse
8:45 am	71-4	<i>Rodriguez-Saltos CA, Ramsay G, Maney DL; Emory University, Children's Healthcare of Atlanta</i>	An R package to measure the similarity of natural sounds via mutual information
9:00 am	71-5	<i>Steele TJ, Barkan CL, Baas-Thomas N, Zornik E; Reed College</i>	Investigating the neuronal basis of sex-specific vocal behavior
9:15 am	71-6	<i>Fialko KY, Price TP; University of Chicago</i>	Comparative kinematics of <i>Phylloscopus</i> warbler territorial display behaviors
9:30 am	71-7	<i>Bloomston NA, Prather JF; University of Wyoming</i>	Neural Circuits Underlying Decision Making
9:45 am	Coffee Break		

Grand Ballroom

8:00 AM – 9:45 AM **Session 72** **Lone Star B**

Evolutionary Morphology

Chairs: Edward Burress, Stephanie Baumgart

8:00 am	72-1	<i>Burress ED, Wainwright PC; University of California, Davis</i>	Are Oral and Pharyngeal Jaw Diversification Rates Correlated in Cichlid Fishes?
8:15 am	72-2	<i>Camarillo H, Muñoz MM; Yale University</i>	Macroevolutionary patterns of morphological diversification in wrasses
8:30 am	72-3	<i>Ford KL, Albert JS; University of Louisiana at Lafayette</i>	Convergent evolution of craniofacial morphologies in apteronotid and mormyrid electric fishes
8:45 am	72-4	<i>Godoy PL; Stony Brook University</i>	Cranial shape variation in Crocodylomorpha and the influence of ecological transitions during its evolutionary history

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9:00 am	72-5	<i>Hedrick BP, Brocklehurst N, Mitchell JS, Benson RBJ; Louisiana State University Health Sciences Center, University of Oxford, West Virginia University</i>	Functional Constraints and Disparity in Bird Limb Proportion Evolution
9:15 am	72-6	<i>Baumgart SL, Claessens LPA; University of Chicago, Maastricht University</i>	Avian sternum disparity and ecomorphological implications
9:30 am	72-7	<i>Anderson CV, Reiter PA, Roberts TJ; Univ South Dakota, Brown University</i>	Examining the early stages of adaptive radiation in <i>Anolis roquet</i> from Martinique
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:45 AM **Session 73** **Lone Star C**

Get in My Belly: Feeding on a Variety of Foods

Chairs: Ashley Peterson, Dylan Wainwright

8:00 am	73-1	<i>Kolmann MA, Hughes LC, Evans K, Huie JM, Orti G, Hernandez LP; George Washington University, Brown University, University of Washington</i>	Carnivorous grazers? How to build scale-feeding and fin-feeding fishes from less egregious relatives
8:15 am	73-2	<i>Navon D, Rogers SM, Higham TE; University of California Riverside, University of Calgary</i>	Behavioral Variation in Feeding Strikes across Five Populations of Threespine Stickleback (<i>Gasterosteus aculeatus</i>)
8:30 am	73-3	<i>Peterson AN, McHenry MJ; Univ of California, Irvine</i>	Slow and steady wins the prey: The persistent predation strategy of the red lionfish (<i>Pterois volitans</i>)
8:45 am	73-4	<i>Perevolotsky T, Genin A, Holzman R; Tel Aviv University, Hebrew University of Jerusalem</i>	Work That Body: Thrust generated by the fins and body contributes to the feeding success of herbivorous reef fish
9:00 am	73-5	<i>Cooper WJ, Kniahnitskaya K, Nixon A, Devers M, Ringo D, Barber E; Washington State University</i>	Using genetically modified zebrafish to investigate the evolution and development of feeding in other minnows
9:15 am	73-6	<i>Marshall CD, Raley LN, Peredo CM, Pyenson ND; Texas A&M University, Portland State University, University of Michigan, Smithsonian Institution</i>	Implications for The Antiquity of Raptorial Biting in Pinnipedimorphs: Exploring Mandible Morphology in the <i>Callorhinus</i> Lineage
9:30 am	73-7	<i>Wainwright DK, Summers D; Yale University, Harvard University</i>	Crushing prey in the open ocean: the pharyngeal jaws of lanternfishes
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:45 AM **Session 74** **Lone Star E**

Chchchanging Climate, Part I

Chair: Robert Srygley

8:00 am	74-2	<i>Lenard A, Diamond S; Case Western Reserve University</i>	Butterfly Traits Resolve Variation in Range Shift Responses to Recent Climate Change
8:15 am	74-3	<i>Srygley RB; USDA-Agricultural Research Service</i>	Diapause plasticity allows insects to cope with drought at high and low elevations
8:30 am	74-4	<i>Riddell EA, Iknayan KJ, Wolf BO, Beissinger SR; University of California Berkeley, University of New Mexico</i>	Thermoregulatory costs drive responses of mammal and bird communities to climate change in the Mojave Desert
8:45 am	74-5	<i>Anderson RA; Western Washington University</i>	Using among-year climate conditions and climate indices to predict consequences for multiple trophic levels: plants, insects and lizards
9:00 am	74-6	<i>Breitenbach AT, Paitz RT, Bowden RM; Illinois State University</i>	Let's Do the Time-lag Again: Ecologically Relevant Incubation Temperatures Delay the Response of Sex-determining Genes in a Turtle with TSD
9:15 am	74-7	<i>Carter AW, Sheldon KS; University of Tennessee</i>	The Climate Variability Hypothesis Predicts Thermal Plasticity Across Life Stages of <i>Onthophagus taurus</i> Dung Beetles
9:30 am	74-8	<i>Bovo RP, Simon MN, Provete DB, Navas CA, Andrade DV; University of Sao Paulo, University of California Santa Cruz, Federal University of Mato Grosso do Sul</i>	Intraspecific Variation in Thermal Tolerance and Water Balance of Amphibians Across Subtropical Elevational Gradients
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:30 AM Session 75**Lone Star F****Building a Better Muscle***Chairs: Alexis Noel, Stephanie Ross*

8:00 am	75-1	Nguyen KD, Venkadesan M; Yale University	Construction and Deconstruction of Muscle Work Loops
8:15 am	75-2	Cooper AN, Martin JC, McDermott WJ, Dulaney SO, Carrier DR; University of Utah, Orthopedic Specialty Hospital	The Role of Muscle Fascicle Length in the Power <i>versus</i> Economy Performance Trade-off
8:30 am	75-3	Wold ES, Roberts TJ, Sleboda DA; Brown University	Osmotic engine drives shortening in passive skeletal muscle
8:45 am	75-4	Ross SA, Rimkus B, Konow N, Biewener AA, Wakeling JM; Simon Fraser University, University of Massachusetts Lowell, Harvard University	The Effects of Muscle Internal Mass on the Contractile Behaviour of <i>In Situ</i> Rat Plantaris Muscle
9:00 am	75-5	Arias AA, Ball AM, Azizi E; University of California, Irvine	Passive mechanical properties of crocodilian limb muscles correlate with <i>in vivo</i> function
9:15 am	75-6	Noel A, Nadler J; Georgia Tech Research Institute	Mimicking the load-holding capabilities of muscle using electrostatic layer jamming
9:30 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 76**Lone Star G****The Way That I Walk***Chairs: Rob Siddall, Christine Vega*

8:00 am	76-1	Wang Y, Othayoth R, Li C; Johns Hopkins University	Cockroaches bend head and use legs differentially to traverse grass-like beam obstacles
8:15 am	76-2	Zhong B, Schiebel P, Ozkan-Aydin Y, Brown M, Carruthers A, Rieser J, Sponberg S, Goldman D; Georgia Tech	Coordination of body undulation and leg wave during centipede locomotion, in a geometric perspective
8:30 am	76-3	Vega CM, Ashley-Ross MA; Wake Forest University	Turtling the salamander: the role of lateral undulation in sprawling limb kinematics
8:45 am	76-4	Turner ML, Gatesy SM; Brown University	Looking inside the sole: intermetatarsal mobility in the American alligator
9:00 am	76-5	Michel KB, Bishop PJ, Cuff AC, Allen V, Hutchinson JR; Royal Vet College UK	Skeletal kinematics and muscle function during locomotion in tinamou, <i>Eudromia elegans</i>
9:15 am	76-6	Siddall RJD, Jusufi A; Max Planck Institute for Intelligent Systems	Modulation of Cranio-Caudal mass distribution facilitates obstacle traversal in a cursorial biorobotic model
9:30 am	76-7	Kikel M, Gecelter R, Thompson NE; NYIT College of Osteopathic Medicine	Evolutionary origins of human pelvic list, hip adduction, and step width
9:45 am	76-8	Gecelter R, Kikel M, Thompson NE; NYIT College of Osteopathic Medicine	Hip Moments and Muscle Activity During Compensatory Osteoarthritis Gaits
10:00 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 77**Rooms 301-302****Ecophysiology of Oxygen Delivery***Chair: Heather Liwanag*

8:00 am	77-1	Herndon CJ, Fenton FH; Georgia Institute of Technology	Corazon espinado: microelectrode closed-loop control in cardiac tissue
8:15 am	77-2	Weitzner EL, Pearson LE, Whoriskey S, Harris HS, Whitmer E, Brodie E, Tomanek L, Johnson S, Liwanag HEM*; Cal Poly San Luis Obispo, Marine Mammal Center, National Marine Mammal Foundation	Development of Diving Capability in Weddell Seal Pups
8:30 am	77-3	Negrete Jr B, Ackerly KL, Esbaugh AJ; University of Texas Austin Marine Science Institute	The effect of hypoxia induced hemoglobin switching on aerobic performance in red drum, <i>Sciaenops ocellatus</i>
8:45 am	77-4	Martin LM, Esbaugh AJ; University of Texas at Austin, Marine Science Institute	Recovery from catch-and-release angling in Gulf of Mexico fishes

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9:00 am	77-5	<i>Dichiera AM, Esbaugh AJ; University of Texas at Austin, Marine Science Institute</i>	Red blood cell carbonic anhydrase dictates oxygen delivery rate in red drum (<i>Sciaenops ocellatus</i>)
9:30 am	77-7	<i>Harrison JF, Aivazian V, Weed M, Munoz E, Vandenbrooks JM; Arizona State University, Midwestern University</i>	Hypermetric scaling of the leg tracheal system in cockroaches
9:45 am	77-8	<i>King EE, Stillman JH, Williams CW; University of California, Berkeley, San Francisco State University</i>	New Zealand Mud Snails Continue Respiring During Severe Oxygen Limitation at Warm Temperatures
10:00 am	Coffee Break		Grand Ballroom

8:00 AM – 9:30 AM **Session 78** **Rooms 303-304**

Complementary to S10: Melding Modeling and Morphology: Integrating Approaches to Understand the Evolution of Form and Function, Part I

Chairs: Alexander Hoover, Julien Clavel

8:00 am	78-1	<i>Hoover AP, Katija K; University of Akron, Monterey Bay Aquarium Research Institute</i>	Manse and Tail: Flow structure and morphological constraints of the filtration feeding mechanisms by giant larvaceans
8:15 am	78-2	<i>Clavel J, Morlon H; Natural History Museum, École Normale Supérieure</i>	Phylogenetic Signal and Linear Model for High-Dimensional Multivariate Comparative Data: a case study with the MANOVA
8:30 am	78-3	<i>Koehl MAR, Nguyen H, Fauci L; University of California, Berkeley, Trinity University, Tulane University</i>	Effects of Cell Morphology, Attachment to a Surface, and Colony Formation on the Hydrodynamic Performance of Choanoflagellates
8:45 am	78-4	<i>Darcy HE, Anderson PSL; University of Illinois Urbana-Champaign</i>	Do aquatic paedomorphs converge in both morphology and performance across phylogeny in Spelerpini Salamanders?
9:00 am	78-6	<i>Weihs D; Technion-Israel Institute of Technology</i>	Single Layer Fish Schools- for Hunting and Energy Saving
9:15 am	78-7	<i>Naylor ER, Higham TE; University of California, Riverside</i>	Toes for any occasion: morphological covariation and ecological signal within the gecko attachment system
9:30 am	Coffee Break		Grand Ballroom

8:00 AM – 9:45 AM **Session 79** **Room 205**

Parental Care & Reproduction

Chair: Rayna Harris

8:00 am	79-1	<i>Harris RM, Austin SH, Langcalisi A, MacManes M, Calisi RM; NPB, UC Davis, MCB, UNH</i>	Peaks and valleys of prolactin-related gene expression during the pigeon parental care stage
8:15 am	79-2	<i>Alonge MM, Daniels DT, Schobel T, Bentley GE; University of California, Berkeley</i>	Flexible Expression of Sickness Behavior and Parental Care Across Stages of Avian Reproduction
8:30 am	79-3	<i>Perez JH, Tolla E, Dunn IC, Meddle SL, Stevenson TJ; University of Glasgow, Roslin Institute, University of Edinburgh</i>	Neurospine and VA-opsin both facilitate photoinduction of avian seasonal breeding
8:45 am	79-4	<i>Vernasco BJ, Dakin R, Sisson Z, Haussmann MF, Ryder TB, Moore IT; Washington State University, Carleton University, Bucknell University, Smithsonian Migratory Bird Center, Virginia Tech</i>	Using Telomeres to Assess Patterns of Biological Aging in a Cooperative Lek-breeding Passerine, the Wire-Tailed Manakin (<i>Pipra filicauda</i>)
9:00 am	79-5	<i>Sayavong N, Estrada M, Salas H, Gunderson AR, Stillman JH, Tsukimura B; California State University, Fresno, Tulane University, San Francisco State University</i>	Effects of preferred temperature, interspecific interactions, and increased population density on vitellogenesis on intertidal crabs <i>Petrolisthes cinctipes</i> and <i>Petrolisthes manimaculus</i>
9:15 am	79-6	<i>Lasala JA, Hughes C, Wyneken J; Florida Atlantic University</i>	Leatherback Turtle Breeding Sex Ratios are 1:1
9:30 am	79-7	<i>Sasson D, Johnson T, Scott E, Fowler-Finn K; Saint Louis University</i>	Water deprivation affects mating behaviors and outcomes in the harvestman, <i>Leiobunum vittatum</i>
9:45 am	Coffee Break		Grand Ballroom

8:00 AM – 9:45 AM Session 80**Rooms 201-202****S.T.R.E.S.S. 1***Chairs: Sarah Guindre-Parker, Mike Butler*

8:00 am	80-1	<i>Lattin CR, Kelly TR; Louisiana State University</i>	Method matters: Considerations for calculating glucocorticoid negative feedback
8:15 am	80-2	<i>Hodinka BL, Ashley NT; Simon Fraser University, Western Kentucky University</i>	Effect of sleep loss on executive function and baseline corticosterone levels in an arctic-breeding songbird, the Lapland longspur (<i>Calcarius lapponicus</i>)
8:30 am	80-3	<i>Krause JS, Reid AMA, Perez JH, Bishop V, Ramenofsky M, Wingfield JC, Meddle SL; UN Reno, UC Davis, U Edinburgh, Roslin Institute</i>	The reduction in negative feedback sensitivity underlies seasonal changes in corticosterone in free-living migrant white-crowned sparrows
8:45 am	80-4	<i>Dantzer B, Van Kesteren F, Palme R, Boutin S, McAdam AG, Lane JE; University of Michigan, University of Veterinary Medicine Vienna, University of Alberta, University of Guelph, University of Saskatchewan</i>	Disentangling how multiple ecological factors impact glucocorticoids in red squirrels
9:00 am	80-5	<i>Jimeno B, Landry D, Stager M, Wolf C, Prichard M, Cheviron Z, Breuner C; University of Montana</i>	Metabolic traits, but not corticosterone concentrations, are associated with reproductive investment in tree swallows
9:15 am	80-6	<i>Guindre-Parker S; Kennesaw State University</i>	Revisiting glucocorticoid plasticity
9:30 am	80-7	<i>Butler MW, Armour EM, Minnick JA, Rossi ML, Schock SF, Berger SE, Hines JK; Lafayette College</i>	Both Circulating Corticosterone Levels and Heme Oxygenase Expression Are Correlated With Circulating Triglyceride Levels in House Sparrows
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 9:45 AM Session 81**Rooms 203-204****Where Do We Go From Here? Biogeography***Chair: Daniel Spence*

8:00 am	81-1	<i>David KT, Fan Z, Halanych CN, Halanych KM; Auburn University</i>	Are Two Genomes Better Than One? Ploidy Correlates Species' Distributions in South American Frogs
8:15 am	81-2	<i>Costa DP, Huckstadt LA; University of California at Santa Cruz</i>	Incorporating the movement of Marine Megafauna is critical to developing appropriate marine protected areas
8:30 am	81-3	<i>Firreno TJ, O'Neill JR, Portik DM, Emery AH, Townsend JH, Fujita MK; University of Texas at Arlington, Indiana University of Pennsylvania, University of Arizona</i>	Mitochondrial discordance Reveals Cryptic Genetic Diversity, Gene Flow, and a Complex Demographic History in a Problematic Complex of Mesoamerican Toads
8:45 am	81-4	<i>Ceja AY, Way MJ, Kane SR; University of California, Riverside, NASA Goddard Institute for Space Studies</i>	PEACH: The Physiology Exoplanet Astroecology model for Characterizing Habitability
9:00 am	81-5	<i>Feilich KL, Nitta JH, Friedman M; University of Michigan Ann Arbor, Smithsonian Institution</i>	Distribution of morphological diversity, phylogenetic diversity, and speciation rate of freshwater fishes of the United States
9:15 am	81-7	<i>Kemp ME; University of Texas at Austin</i>	Extinction, persistence, and resiliency in the Caribbean fossil record
9:30 am	81-8	<i>Ellison CI, Maslakova SA; University of Oregon</i>	Diversity of Benthic Nemertean of the Caribbean
9:45 am	.....	Coffee Break	 Grand Ballroom

8:00 AM – 10:00 AM Session 82**Rooms 402-403****Bio-"Physical Fascination"-Biophysical Environment, Part I***Chair: Micheal Sears*

8:00 am	82-1	<i>Howey CAF; University of Scranton, Pennsylvania State University</i>	Thermoregulation and Foraging Behavior of Timber Rattlesnakes (<i>Crotalus horridus</i>) in a Disturbed Landscape
8:15 am	82-2	<i>Steele Cabrera S, Hunt TS, Haddad NM, Lucky A, Daniels JC; University of Florida, Michigan State University</i>	Measuring the Outcome of Reintroduction Efforts for an Endangered Butterfly

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8:30 am	82-3	<i>Lolavar A, Wyneken J; Florida Atlantic University</i>	The impact of sand moisture on the temperature-sex ratio responses of developing loggerhead (<i>Caretta caretta</i>) sea turtles
8:45 am	82-4	<i>Farallo VR, Muñoz MM; Yale University</i>	Out of time and out of room: Are montane salamanders vulnerable to extinction due to climate change?
9:00 am	82-5	<i>Lark R, Sharabi L, Levy O*; Tel Aviv University, Israel</i>	The use of remote sensing and models to understand behavioral thermoregulation in dogs
9:15 am	82-6	<i>Powers DR, Lapsansky AB, Shannon ES, Tobalske BW; George Fox University, University of Montana</i>	Body-Temperature Management by Hovering and Perching Hummingbirds in Cold and Warm Temperatures
9:30 am	82-7	<i>Sears MW, Nussear KE, Simandle ET; Clemson University, University of Nevada, Reno</i>	Biophysical ecology and the evolution of methods: are they deleterious mutations?
9:45 am	82-8	<i>Morales OJ, Walker N, Warne RW, Boyles JG; Southern Illinois University - Carbondale</i>	Consequences of pharmacologically induced corticosterone hormone on body temperature and body condition in the banner-tailed kangaroo rat.
10:00 am	Coffee Break		Grand Ballroom

10:15 AM – 11:45 AM **Session 83** **Lone Star A**

Complementary to S4: Reproduction: The Female Perspective From an Integrative and Comparative Framework, Part I

Chairs: Nicole Danos, Daniel J. Stadtmauer

10:15 am	83-1	<i>Bilotta F, Lee M, Danos N; University of San Diego</i>	Pregnancy-induced changes to muscle-tendon morphology and function
10:30 am	83-2	<i>Andreasen VA, Yap KN, Yamada K, Williams A, Zikeli S, Kavazis AN, Hood WR; Auburn University</i>	The impact of maternal corticosterone on offspring morphology and mitochondrial physiology
10:45 am	83-3	<i>Stadtmauer DJ, Chavan AR, Wagner GP; Yale University</i>	Baby Light My Fire: “Cooperative Inflammation” in Marsupial Pregnancy
11:00 am	83-4	<i>Million KM, Proffitt MR, Reese SJ; Indiana University, Bloomington, Howard University</i>	MHC-based Olfactory Signals and Mate Choice in Darters (<i>Etheostoma</i>)
11:15 am	83-5	<i>Reese SJ, Million KM, Proffitt MR; Howard University, Indiana University</i>	Response to Visual and Olfactory Stimuli in Darters (<i>Etheostoma</i>) during Mate Choice Trials
11:30 am	83-6	<i>Stiller AB, Staub NL; Whitman College, Gonzaga University</i>	Not a surprise: Female salamanders (plethodontid species <i>Aneides ferreus</i>) communicate to males during courtship as evidenced by courtship-like glands on their dorsum
11:45 am	Lunch Break		

10:15 AM – 11:45 AM **Session 84** **Lone Star B**

Awesome Adaptations

Chairs: Anthony Lapsansky, Dana Orbach

10:15 am	84-1	<i>Sombke A, Mueller CHG; University of Vienna, University of Greifswald</i>	Evolutionary transformations of centipede ultimate legs
10:30 am	84-2	<i>Weller HI, López-Fernández H, McMahan CD, Brainerd EL; Brown University, University of Michigan, Field Museum of Natural History</i>	The spandrels of Satan's perches: evidence for the co-optation of feeding traits in the convergent evolution of mouthbrooding in Neotropical cichlids
10:45 am	84-3	<i>Freymler GA, Schwaner MJ, Whitford MD, McGowan CP, Higham TE, Clark RW; San Diego State University, University of Idaho, University of California, Riverside</i>	Determining the functional significance of bipedalism in heteromyid rodents through comparisons of morphology and performance
11:00 am	84-4	<i>Smith SM, Angielczyk KD, Kerbis Peterhans JC; Field Museum of Natural History</i>	Vertebral number and spinal regionalization in large shrews (Soricidae)
11:15 am	84-5	<i>Orbach DN, Brennan PLR, Hedrick BP, Keener W, Webber M, Mesnick SL; Texas A&M University, Mount Holyoke College, University of Oxford, Golden Gate Cetacean Research, Southwest Fisheries Science Center</i>	Unique Coevolution of Genital Asymmetry and Lateralized Mating Behavior in A Mammal
11:30 am	84-6	<i>Lapsansky AB, Tobalske BW; University of Montana</i>	The biomechanics of multi-functional wings in diving birds
11:45 am	Lunch Break		

Chew on This

Chairs: Francois Gould, Nicolai Konow

10:15 am	85-1	Konow N, Panessiti C, Schwarz D, Bouvier C, Marbelt-Rodriguez C, Heiss E, Ross CF, Rull M; UMass Lowell, U Jena, U Chicago	Food processing across the fish-tetrapod split
10:30 am	85-2	Lomax JJ, Brainerd EL; Brown University	Comparative Skeletal Kinematics of Overbite-Shearing and Compressive Chewing Cycles in a Pacu Fish, <i>Piaractus brachypomus</i>
10:45 am	85-3	Beery SM, Olson RA, Montuelle SJ, Williams SH; Ohio University	Effect of food properties on molar occlusion during chewing in pigs
11:00 am	85-4	Olson RA, Curtis HE, Williams SH; Ohio University	To chew or not to chew: a comparison of the 3D kinematics of feeding and drinking in pigs
11:15 am	85-5	Laurence-Chasen JD, Junod RM, Hatsopoulos NG, Arce-McShane F, Ross CF; University of Chicago	Geometric morphometric analysis of tongue shape dynamics during feeding in <i>Macaca mulatta</i>
11:30 am	85-6	Gould FDH, Lammers A, Mayerl CJ, German RZ; Rowan University, Cleveland State University, Northeast Ohio Medical University	Differential Effect of Superior and Recurrent Laryngeal Nerve Lesion on Kinematics and Performance in Mammalian Swallowing
11:45 am	.....	Lunch Break	.....

Chhchchanging Climate, Part II

Chair: Sara ElShafie

10:30 am	86-1	Rahman MS, Rahman MS; University of Texas Rio Grande Valley	Effects of Heat Exposure on Antioxidant Expression and Redox Status in the American Oyster: A Laboratory Study
10:45 am	86-2	Mikucki E, Buchanan J, Julick C, Montooth K, Lockwood B; University of Vermont, Vanderbilt University, University of Nebraska - Lincoln	The Effects of Winter Warming Stress on Metabolic Activity in Diapausing <i>Pieris rapae</i> Butterflies
11:00 am	86-3	Fleming JML, Carter AW, Sheldon KS; University of Tennessee	Beetle Pupae Show Tradeoff Between Metabolic Depression and Body Size in Response to Increased Temperature Mean and Variance
11:15 am	86-4	Lee MA, Densmore III LD; Texas Tech University	Past, Present, and Future Distributions of <i>Agkistrodon contortrix</i>
11:30 am	86-5	Lyons MP, Von Holle B, Weishampel JF; University of Central Florida, National Science Foundation	Impacts of Climate and Flooding on Current and Future Sea Turtle Nest Survival in the Eastern United States
11:45 am	86-6	Elshafie SJ; University of California, Berkeley	Body Size Changes Across Lizards and Crocodylians Correspond to Climatic Changes Through Deep Time
12:00 pm	.....	Lunch Break	.....

(Don't) Trip, Stumble and Fall

Chair: Cinammon Pace

10:00 am	87-1	Vazquez S, Phan A, Joseph M, Pace CM*; Le Moyne College	The aerial righting ability of the brown marmorated stink bug, <i>Halyomorpha halys</i> .
10:15 am	87-2	Su GT, Dudley R, Pan TY, Zheng MZ, Peng LS, Li QS; Beihang University, University of California, Berkeley, Xihua University	Maximum Aerodynamic Force Production by the Wandering Glider Dragonfly (<i>Pantala Flavescens</i> , Libellulidae)
10:30 am	87-3	Gemilere R, Lds-Vip, Gau JF, Sponberg S; Georgia Tech	Wingbeat frequency modulation to large lateral perturbations in hawkmoths
10:45 am	87-4	Xuan Q, Li C; Johns Hopkins University	Template model reveals mechanism of wing and leg coordination during self-righting of a cockroach-inspired robot
11:00 am	87-5	Ortega-Jimenez VM, Sanford CP; Kennesaw State University	Beyond the Kármán Gait: Knifefish swimming responses to complex wakes shed by a free oscillating cylinder

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11:15 am	87-6	<i>Fath M, Nasimi F, Tytell E; Tufts University</i>	Kinematic responses to rolling perturbations during swimming in the bluegill sunfish
11:30 am	87-7	<i>Stinson HM, Mukherjee R, Tytell ED, Schwalbe MAB; Lake Forest College, Tufts University</i>	Lateral line and visual systems in bluegill sunfish (<i>Lepomis macrochirus</i>) contribute to regaining stability in horizontal vortices
11:45 am	87-8	<i>Stevenson JPJ, Cheney JA, Durston NE, Usherwood JR, Windsor SP, Bompfrey RJ; University of Bristol, Royal Veterinary College</i>	Avian wing suspension for gust rejection
12:00 pm	Lunch Break		

10:30 AM – 12:00 PM Session 88 Lone Star G

Morphology of the Senses

Chairs: Kelsi Rutledge, Katie Thomas

10:30 am	88-1	<i>Uhrhan MJ, Fabian JM, Siwanowicz I, Lin HT; Imperial College London, HHMI Janelia Research Campus</i>	Mechanosensors on Dragonfly Wings for sensing Aeroelasticity
10:45 am	88-2	<i>Mikel-Stites MR, Staples AE, Marek P; Virginia Tech</i>	Hearing Better When Lopsided: Tympanal Asymmetry May Enhance Hearing in the Parasitoid Fly <i>Ormia ochracea</i>
11:00 am	88-3	<i>Rutledge KM; University of California Los Angeles</i>	Sniffing out batoid nasal morphology: a model for classification with functional implications
11:15 am	88-4	<i>Thomas KN, Gower DJ, Bell RC, Fujita MK, Schott RK, Streicher JW; Natural History Museum, Smithsonian National Museum of Natural History, University of Texas at Arlington</i>	Ecological Correlates of Eye Size in Frogs and Toads
11:30 am	88-5	<i>Hall RP, Mutumi GL, Hedrick BP, Yohe LR, Sadier A, Davies KTJ, Dávalos LM, Rossiter SJ, Sears K, Dumont ER; University of California Merced, Louisiana State University, Yale University, University of California Los Angeles, Queen Mary University of London, Stony Brook University</i>	Ancestral Generalization as a Potential Gateway to Rapid Dietary Divergence in Neotropical Leaf-Nosed Bats
11:45 am	88-6	<i>Murphy CT, Lyons KM, Haddock WA, Martin WN, Hellum AM, Breuer KS, Franck JA; US Navy, University of Wisconsin-Madison, Brown University</i>	Feature Variations in Seal Whisker Geometries and the Effect on Vortex Structure
12:00 pm	Lunch Break		

10:30 AM – 12:00 PM Session 89 Rooms 301-302

Host-pathogen Interactions

Chairs: Karie Altman, Amberleigh Henschen

10:30 am	89-1	<i>Saenz V, Richards Zawacki C; University of Pittsburgh</i>	What role do ephemeral ponds play in the amphibian disease landscape?
10:45 am	89-2	<i>Richardson CS, Looney C, Ineson K, Foster J, Sillah A, Eiseman H; Lesley University, Northeastern University, University of New Hampshire, University of Massachusetts-Amherst, Tufts University</i>	Understanding the Role of Intrinsic Physiological Factors in the Population Recovery of <i>Myotis lucifugus</i> (little brown myotis) from White-nose Syndrome
11:00 am	89-3	<i>Billah MM, Rahman MS; University of Texas Rio Grande Valley</i>	Detection and Enumeration of Bacterial Pathogens in the American Oyster, <i>Crassostrea virginica</i>
11:15 am	89-4	<i>Kollath DR, Teixeira MM, Miller KJ, Bridget BM, Funke A; Northern Arizona University, University of Brasília Campus Universitário Darcy Ribeiro</i>	Investigating the Role of Animal Burrows on the Ecology and Distribution of Coccidioides spp. in Arizona Soils.
11:30 am	89-5	<i>Altman KA, Hall EM, Rollins-Smith LA, Ohmer MEB, Richards-Zawacki CL; University of Pittsburgh, Vanderbilt University</i>	Effects of pond drying on northern leopard frog development, growth, immune function, and susceptibility to <i>Batrachochytrium dendrobatidis</i>
11:45 am	89-6	<i>Henschen AE, Hawley DM, Adelman JS; University of Memphis, Virginia Tech</i>	Oxidative damage resistance as a potential mechanism of disease tolerance in a wild host
12:00 pm	Lunch Break		

Complementary to S10: Melding Modeling and Morphology: Integrating Approaches to Understand the Evolution of Form and Function, Part II

Chairs: Stacy Farina , Micheal Granatosky

10:15 am	90-1	Clark EG, Hutchinson JR, Bishop PJ, Briggs DEG; Yale University, Royal Veterinary College	Investigating the Locomotion of an Early Deuterostome through 3D Imaging and Digital Modeling
10:30 am	90-2	Granatosky MC, Laurence-Chasen JD, Gartner SM, Whitlow KR, Westneat MW, Nyakatura JA; New York Institute of Technology, University of Chicago, Humboldt-Universität zu Berlin	An XROMM and kinetic analysis of underwater walking in the West African lungfish (<i>Protopterus annectens</i>) with implications for the role of quadrupedal gaits during the fin-to-limb transition
10:45 am	90-3	Schuech R, Tor Nielsen L, Humphries S, Smith D, Kjørboe T; University of Lincoln, Technical University of Denmark, University of Birmingham	Hydrodynamics Shed Light on Dinoflagellate Evolution
11:00 am	90-4	Chan KYK, Wong E, Wong JY, Xu K, Koehl MAR; Swarthmore College, Hong Kong University of Science and Technology, Academia Sinica, University of California, Berkeley	Hydrodynamics of barnacle nauplii shape evolution of body form
11:15 am	90-5	Farina SC, Amacker K, Chennault M, Gibb AC; Howard University, Northern Arizona University	Kinematic integration of gill chamber pumping with body movements during burial in two morphologically disparate fish species
11:30 am	90-6	Wood H; Smithsonian Institution	Reverse engineering the “trap-jaw” mechanism in spiders (Araneae, Mecysmauchenidae)
11:45 am	90-7	Storch JD, Hernandez LP; George Washington University	Constraining the Power Stroke of Premaxillary Protrusion: The Evolution of Diverse Cranial Musculature in Cypriniform Fishes
12:00 pm	.....	Lunch Break	.....

Sensory Basis of Organismal Interactions

Chair: Rulon Clark

10:15 am	91-1	Jiao Y, Colvert B, Man Y, McHenry M, Kanso E; University of Southern California, University of California Irvine	Evaluating Evasion Strategies in Zebrafish Larvae
10:30 am	91-2	Wood TC, Moore PA; Bowling Green State University, University of Michigan Biological Station	Chemical Landscapes of Fear: Crayfish can Determine the Degree of Predatory Threat by Olfaction Alone
10:45 am	91-3	Friesen CN, Han J, Young RL, Hofmann HA; UT Austin	Using correlated patterns of behavioral and molecular variation to understand individual variation
11:00 am	91-4	Otter K, Katz PS; University of Massachusetts Amherst	Hunger state modulates the decision of a nudibranch to pursue or evade hazardous prey
11:15 am	91-5	Olenski MS, Bilbrey C, Dirienzo N, Dornhaus A; University of Arizona	The Effect of Neurotransmitters on Life History Strategy: How do Increased Dopamine Levels Influence Aggression in Black Widow Spiders?
11:30 am	91-6	Harris BN, Prater CM, Lockwood R, Kennedy A, Carr JA; Texas Tech University	Now You See It, Now You Don't: Role of Tectal CRF Administration on Visually Guided Feeding Behavior
11:45 am	91-7	Robinson KE, Holding ML, Clark RW*; San Diego State University, Florida State University	Biochemical Warfare: The Coevolution of Rattlesnake Venom and Venom Resistance in Prey Species
12:00 pm	.....	Lunch Break	.....

10:15 AM – 11:45 AM Session 92**Rooms 201-202****S.T.R.E.S.S. 2***Chairs: Mauren Vitousek, Blake Jones*

10:15 am	92-1	<i>Ensminger DC, Pritchard C, Gingery T, Langkilde T; University of California Berkeley, Pennsylvania State University</i>	The influence of hunting pressure and ecological factors on fecal glucocorticoid metabolites in wild elk
10:30 am	92-2	<i>Kimball MG, Grant AR, Chrisler A, Johnson E, Malisch JL; Louisiana State University, University of Nevada, St Mary's College of Maryland</i>	Acute Stress Mobilizes Glucose and Free Fatty Acids in Mountain Dark-eyed Juncos (<i>Junco hyemalis</i>)
10:45 am	92-3	<i>Wolf SE, Beltran SE, Sanders TL, Rosvall KA; Indiana University, Dominican University, Oklahoma State University</i>	Telomere protection mechanisms and adaptive organismal responses to early postnatal stress
11:00 am	92-4	<i>Choi W, Wada H; Auburn University</i>	Eggshell Pore Density as an Important Determinant for Avian Embryonic Development
11:15 am	92-5	<i>Da Silva DP, Gomes FR; University of Sao Paulo</i>	Interplay between personality, physiology, and temperature in American bullfrogs
11:30 am	92-6	<i>Jones BC, Duval EH; Florida State University</i>	Development of the glucocorticoid stress response and its effects on growth in a tropical passerine
11:45 am	Lunch Break		

10:30 AM – 12:00 PM Session 93**Rooms 203-204****Migration and Navigation***Chair: Jessica Malisch*

10:30 am	93-1	<i>Taylor LD, Finnegan S, O'Dea A, Bralower TJ; University of California Berkeley, Smithsonian Tropical Research Institute, Pennsylvania State University</i>	Isotopic Analysis of Fossil Coronulid Barnacles as a Means of Understanding Prehistoric Whale Migration
10:45 am	93-2	<i>Malisch JL, Hahn TP, Breuner CW; St Mary's College of Maryland, University of California Davis, University of Montana</i>	Should I Stay Or Should I Go Now? Predictors of Facultative Altitudinal Migration in Mountain White-crowned Sparrows (<i>Zonotrichia leucophrys oriantha</i>)
11:00 am	93-3	<i>Ramenofsky M, Pradhan D, Austin SH, Soma K, Schlinger B; University of California Davis, Idaho State University, Oregon State University, University of British Columbia, University of California Los Angeles</i>	Phenotypic Flexibility of Glucocorticoid Signaling in Skeletal Muscles of White-crowned Sparrows Preparing to Migrate
11:15 am	93-4	<i>Bowers ME, Kajiura SM*; Florida Atlantic University</i>	There and back again; a blacktip's tale
11:30 am	93-5	<i>Desimone JG, Tobalske BW, Breuner CW; University of Montana Missoula</i>	Prepare or Escape?: The Behavioral, Physiological, and Hormonal Responses of a Facultative Migrant to Declining Food Availability
11:45 am	93-6	<i>Buo C, Taylor E, Bartles J, Christman K, Dayal P, Londraville RL; University of Akron</i>	Spatial mapping and visual cues influence navigation in <i>Entomacrodus striatus</i>
12:00 pm	Lunch Break		

10:30 AM – 11:30 AM Session 94**Rooms 402-403****Bio-"Physical Fascination"-Biophysical Environment, Part II***Chair: George Bakken*

10:30 am	94-1	<i>Tilman FE, Bakken GS*, O'Keefe JM; Indiana State University</i>	Assessing the Thermal Quality of Artificial Roosts for Conservation of Gregarious Bat Species
10:45 am	94-2	<i>Busby MK, Davidowitz G, Bronstein JL; University of Arizona</i>	Thermolimit Respirometry Determines Relative CTmax Among Carpenter Bee Life Stages
11:00 am	94-3	<i>Short RA, Lawing AM; Texas A&M University</i>	Locomotor morphology of ungulate communities as an environmental predictor
11:15 am	94-4	<i>Forsburg ZR; Texas State University</i>	Effects of artificial light at night and predator presence on the development, growth, and physiology of <i>Rana berlandieri</i>
11:30 am	Lunch Break		

Monday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

1:30 PM – 3:30 PM		Session 95	Lone Star A
Complementary to S4: Reproduction: the Female Perspective from an Integrative and Comparative Framework, Part II			
<i>Chairs: Ned J. Place, Kristen J. Navara</i>			
1:30 pm	95-1	Plakke MS, Meslin C, Arikawa K, Clark NL, Morehouse NI; University of Kansas, INRA, SOKENDAI, University of Utah, University of Cincinnati	A recent, lineage-specific, co-option event within the female reproductive tract of the Cabbage White butterfly, <i>Pieris rapae</i> L.
1:45 pm	95-2	Levell ST, Reznick DN; University of California, Riverside	Can Mothers Differentially Allocate Resources to Offspring Sired by Different Males?
2:00 pm	95-3	Rosvall KA, Lipshutz SE; Indiana University, Bloomington	Obligate cavity-nesting shapes the evolution of territorial aggression, but not testosterone, in both female and male birds
2:15 pm	95-4	George EM, Rosvall KA; Indiana University Bloomington	How social challenges modulate steroid signaling in the female brain
2:30 pm	95-5	McEntee M, Krzyszczyk E, Foroughirad V, Frère C, Mann J; Georgetown University, University of the Sunshine Coast	Fitness and mortality costs to females in a system with allied sexual coercion
2:45 pm	95-6	Crosier AE, Bapodra P, Santiestevan J, Comizzoli P, Place NJ*; Smithsonian Conservation Biology Institute, Columbus Zoo and Aquarium, Cornell University	Anti-Müllerian hormone as a predictor of responses to ovarian stimulation in cheetahs, <i>Acinonyx jubatus</i>
3:00 pm	95-7	McDonough CE, Pitnick S, Dorus S; Syracuse University	Molecular evolution and sex-biased expression of <i>Drosophila melanogaster</i> female reproductive tract tissues
3:15 pm	95-8	Navara KJ, Wrobel ER, Bentz AB, Lorenz WW, Gardner S, Mendonça MT; University of Georgia, Indiana University, Bloomington, Auburn University	Corticosterone treatment influences expression of gene pathways linked to meiotic segregation in preovulatory follicles of the domestic hen
3:30 pm	.....	Coffee Break	 Grand Ballroom
1:30 PM – 3:30 PM		Session 96	Lone Star B
Complementary to S5: Form, Structure and Function: How Plants vs. Animals Solve Physical Problems			
<i>Chairs: James C Liao, Saad Bhamla</i>			
1:30 pm	96-1	Matthews M, Crowley CJ, Aiello BR, Sikandar UB, Sponberg S; Georgia Tech	The Answer is Blowing in the Wind: Flower Wake Downwash Can Reduce Aerodynamic Forces in Insect Flight
1:45 pm	96-2	Liao JC, Akanyeti O; University of Florida, Aberystwyth University	How fishes use body wave interference to accelerate
2:00 pm	96-3	Lenz AS; University of Bristol	Structural Adaptations of <i>Nepenthes gracilis</i> Pitcher Lids to Capture Insects Using Drop Impacts
2:15 pm	96-4	Alexander SLM, Bhamla MS*; Georgia Institute of Technology	Ultrafast and underdamped: Slingshot spiders design conical webs for ambush predation and self-survival
2:30 pm	96-5	Golos MR, Bauer U; University of Bristol	Wettability of Pitcher Plant Trapping Surfaces
2:45 pm	96-6	McCaskey EN, Lehner K, Taylor I, Benfey PN, Goldman DI; Georgia Tech, Duke University	Rice Root Tip Circumnutation Facilitates Exploratory Behavior
3:00 pm	96-7	Wan KY; University of Exeter	Gait Rhythmogenesis and Spatiotemporal Ordering in Self-propelling Unicellular Microorganisms
3:15 pm	96-8	Ozkan-Aydin Y, Goldman DI, Bhamla MS; Georgia Institute of Technology	Collective Behavior of Worm Blobs
3:30 pm	.....	Coffee Break	 Grand Ballroom

Everything Sucks

Chairs: Aaron Olsen, Roi Holzman

1:30 pm	97-1	Hernandez LP, Olsen AM, Brainerd EL; George Washington University, Brown University	Convergent means of breaking constraint: How alternative means of premaxillary protrusion have allowed fishes to break functional constraints
2:00 pm	97-3	Olsen AM, Hernández LP, Brainerd EL; Brown University, George Washington University	A 13-bar linkage model of the channel catfish skull and the degrees of freedom needed to suction feed
2:15 pm	97-4	Whitlow KR, Ross CF, Westneat MW; University of Chicago	Strike biomechanics in <i>Polypterus bichir</i> described with XROMM: implications for actinopterygian feeding evolution
2:30 pm	97-5	Gartner SM, Whitlow KR, Laurence-Chasen JD, Granatosky MC, Ross RC, Westneat MW; University of Chicago, New York Institute of Technology	Suction feeding of the African Lungfish, <i>Protopterus annectens</i> ; XROMM analysis of jaw mechanics, cranial kinesis, and hyoid mobility in a novel feeding mechanism.
2:45 pm	97-6	Kane EA, Higham TE; Georgia Southern University, UC Riverside	Apparent modulation of integration with prey type in bluegill is driven by individual differences in performance and its integration
3:00 pm	97-7	Holzman R, Eyal M, Malul D, Jacobs C; Tel Aviv University, Technion	You suck, We suck, Everyone sucks: <i>Homo sapiens</i> display poor suction feeding performance
3:15 pm	.....	Coffee Break	Grand Ballroom

Population Genetics

Chair: Christopher Martine

1:30 pm	98-1	Frolova AD, Miglietta MP; Texas A&M University at Galveston	Environmental tolerance ranges and limits suggest differences in habitat preference and resilience to climate change among jellyfish (Class Scyphozoa) congeners in the Gulf of Mexico
1:45 pm	98-2	Halsey MK, Stuhler JD, Bradley RD, Stevens RD, Ray DA; Texas Tech University, Museum of Texas Tech	Temporal and Spatial Genetic Assessment of a Natural Metapopulation
2:00 pm	98-3	McDonnell AJ, Moore CL, Schuette S, Martine CT*; Chicago Botanic Garden, Bucknell University, Western Pennsylvania Conservancy	A harbinger of good things to come in academic/non-academic partnerships: Population genomics and conservation of <i>Erigenia bulbosa</i> (Apiaceae) in Pennsylvania.
2:15 pm	98-4	Hale HJ, Pokorny L, Gardner EM, Slimp M, Johnson MG; Texas Tech University, Center for Biotechnology and Genomics, Case Western University	Developing a cost-effective workflow for high-throughput targeted sequencing of herbarium specimens using Angiosperms353
2:30 pm	98-5	Whelan NV, Williams AS, Redak CA, Wright AA, Garrison NL, Halanych KM, Johnson PD, Garner JT; US Fish and Wildlife Service, Auburn University, Tuskegee University, Alabama Department of Conservation and Natural Resources	Habitat Preference and Impoundments Influence Population Genetic Patterns of Freshwater Gastropods
2:45 pm	98-6	Resh CA, Benesh KC, Mahon AR; Central Michigan University	Sourcing Invaders: A Northern Snakehead Story
3:00 pm	98-7	Orton RW, Schield DR, Nikolakis ZL, Perry BW, Demuth JP, Mackessy SP, Smith CF, Meik JM, Castoe TA; University of Texas at Arlington, University of Northern Colorado, Tarleton State University	The landscape of diversity and divergence across genomes highlights links between genome structure and evolution in the formation of genomic islands
3:15 pm	98-8	Johnson KM, Sirovy KA, Kelly MW; Louisiana State University	Variation in DNA Methylation and Gene Expression Between and Within Families of the Eastern Oyster <i>Crassostrea virginica</i>
3:30 pm		Coffee Break	Grand Ballroom

1:30 PM – 3:15 PM	Session 99	Lone Star F
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Pulling and Tugging: Musculo-Skeletal Architecture

Chairs: Audrey Biondi, David Ryan

1:30 pm	99-1	Osgood AC, Sutton G, St. Pierre R, Cox SM*; Mount Holyoke College, University of Bristol, Carnegie Mellon University, Penn State	More evidence against a force-velocity trade-off in dynamic lever systems
1:45 pm	99-2	Ryan DS, Dominguez S, Nigam N, Wakeling JM; Simon Fraser University	Mechanisms that Relate Transverse Loading of Muscle to Change in Contractile Performance
2:00 pm	99-3	Kehl CE, Wu J, Lu S, Drushel RF, Smoldt RK, Chiel HJ; University of North Carolina at Chapel Hill, Case Western Reserve University	Effect of the Sub-radular Fibers on Grasper Opening in <i>Aplysia californica</i>
2:15 pm	99-4	Biondi AA, Amplo HE, Crawford CH, Bemis KE, Flammang BE; New Jersey Institute of Technology, Virginia Institute of Marine Science	Adventures in scaling and remodeled morphology: the case of the Ocean Sunfish
2:30 pm	99-5	Fraser CJ, Hill EC, Butler MA; University of Hawaii	Morphological Variation between Terrestrial and Semi-Aquatic Papuan Microhylid Frogs visualized through DiceCTs and Dissection
2:45 pm	99-6	Wilken AT, Middleton KM, Sellers KC, Cost IN, Holliday CM; University of Missouri	Functional Morphology of the Palate of <i>Varanus exanthematicus</i> and its Significance for the Evolution of Cranial Kinesis
3:00 pm	99-7	Cuff AR, Bishop PJ, Michel KB, Gagniet R, Hutchinson JR*; Royal Veterinary College	Anatomically Grounded Estimation of Limb Muscle Sizes in Archosauria
3:15 pm		Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM	Session 100	Lone Star G
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Physiology Through the Seasons

Chairs: David Swanson, Kevin Roberts

1:30 pm	100-1	Roberts KT, Williams CM; Univ of California, Berkeley	A gradual release of metabolic suppression during diapause termination in a montane insect
1:45 pm	100-2	Melicher DM, Yocum GD, Rinehart RP; USDA ARS	Transcriptomic response to long-term storage under a fluctuating thermal regime in <i>Drosophila melanogaster</i>
2:00 pm	100-3	Rowsey LE, Reeve C, Savoy T, Speers-Roesch B; University of New Brunswick	Thermal Constraints on Anaerobic Exercise and Aerobic Performance are Not Major Drivers of Winter Dormancy in Cunner
2:15 pm	100-4	Ramirez RW, Riddell EA, Wolf BO; University of New Mexico, University of California, Berkeley	Seasonal and geographical variation in thermoregulatory performance of Cricetid rodents in the Mojave desert
2:30 pm	100-5	Stager M, Senner NR, Tobalske BW, Cheviron ZA; University of Montana, University of South Carolina	What makes the Snow Bird fit for winter? The mechanisms underlying seasonal physiological flexibility
2:45 pm	100-6	Eberts ER, Guglielmo CG, Welch KC; University of Toronto Scarborough, University of Western Ontario	Seasonal Changes in Body Composition and Torpor Use of Ruby-throated Hummingbirds (<i>Archilochus colubris</i>)
3:00 pm	100-7	Swanson DL, Oboikovitz P; University of South Dakota	Environmental Heterogeneity and Metabolic Flexibility in Horned Larks and House Sparrows: A Test of the Climatic Variability Hypothesis
3:15 pm	100-8	Elowe CR, Gerson AR; University of Massachusetts Amherst	Flux Capacity: Seasonal Changes in Body Composition and Metabolism in Migratory White-Throated Sparrows (<i>Zonotrichia albicollis</i>)
3:30 pm		Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM	Session 101	Rooms 301-302
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Two to tango: Host-parasite interactions

Chairs: Susan Balenger, Christian Cox

1:30 pm	101-1	Balenger SL, Sikkink K, Zuk M, Bailey NW; University of Mississippi, St Andrews University	Fitness consequences and immunogenetic strategies against a novel parasitoid in a field cricket
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1:45 pm	101-2	Conrad H, Wittman T, Pollock N, John-Alder H; Rutgers University, University of Texas, University of Virginia	Tolerance of ectoparasitism in Eastern Fence Lizards, <i>Sceloporus undulatus</i>
2:00 pm	101-3	Fuess LE, Weber JN, Steinel NC, Den Haan S, Bolnick DI; University of Connecticut, University of Alaska Anchorage, University of Massachusetts Lowell, University of Texas	Transcriptomic analyses of <i>Gasterosteus aculeatus</i> parasite response reveal mechanisms of resistance
2:15 pm	101-4	Talbot KM, Soini HA, Novotny MV, Whittaker D, Higgins B, Ketterson ED; Indiana U, Michigan State U	Does Haemosporidian infection status influence volatile composition of avian preen oil?
2:30 pm	101-5	Cox CL, Rosso AA, Nicholson DJ, McMillan WO, Logan ML; Florida International University, Georgia Southern University, Queen Mary University London, Smithsonian Tropical Research Institute, University of Nevada-Reno	Sex-biased Parasitism and the Expression of a Sexual Signal in a Tropical Forest Lizard
2:45 pm	101-6	Rudzi EN, Kohl KD, Stephenson JF; University of Pittsburgh	Skin Microbiome Significantly Predicts Susceptibility to Ectoparasite Infection in Trinidadian Guppies, <i>Poecilia reticulata</i>
3:00 pm	101-7	Sandmeier FC, Leonard KL, Weitzman CL, Tracy CR, Bayer B, Bauschlicher S; Colorado State University, Virginia Polytechnic Institute and State University, University of Nevada	Indirect, facultative interaction between a commensal microbe and an opportunistic pathogen in the tortoise respiratory tract
3:15 pm	101-8	Kelly TR, Boyer A, MacDougall-Shackleton EA, MacDougall-Shackleton SA; Louisiana State University, Western University	Experimental acute-phase immune activation in migratory sparrows has host-antigen specific effects on body mass and migratory restlessness
3:30 pm		Coffee Break	Grand Ballroom

1:30 PM – 3:30 PM	Session 102	Rooms 303-304
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Ecophysiology of Diet

Chair: Beck Wehrle

1:30 pm	102-1	Yang ZY, Easy RH, Avery TA; Acadia University	Identification and quantification of Atlantic Salmon <i>Salmo salar</i> , Arctic char <i>Salvelinus alpinus</i> , Cod <i>Gadus morhua</i> , and Capelin <i>Mallotus villosus</i> in Striped Bass diets in Labrador
1:45 pm	102-2	Little A, Garcia M, Teets N; University of Kentucky	Does a Well-Balanced Diet Keep You Going When the Going Gets Cold?
2:00 pm	102-3	Trevelline BK, Maier M, Martínez-Mota R, Derting T, Pasch B, Dearing MD, Kohl KD; Univ of Pittsburgh, Univ of Utah, Murray State Univ, Northern Arizona Univ	Investigating the mechanisms of diet-induced metabolic depression in wild rodents
2:15 pm	102-4	Muhammad S, Dick MF, Welch KC; University of Toronto	Sugar Flux and Metabolism in the Ruby-Throated Hummingbird.
2:30 pm	102-5	Azzolini JA, Denardo DF; Arizona State University	Effect of elevated glucose intake on physiological biomarkers
2:45 pm	102-6	Sandfoss MR, Claunch NM, Stacy NI, Romagosa CM, Lillywhite HB; University of Florida	A tale of two islands: stress response and immune function of an insular pit viper following ecological disturbance.
3:00 pm	102-7	Frazier AJ, Jensen NR, Young SP, Cooley-Rieders CC, Todgham AE; University of California Davis, Kootenai Tribe of Idaho	Does a Cannibal Feeding Strategy Impart Differential Metabolic Performance in Young Burbot <i>Lota lota</i> ?
3:15 pm	102-8	Wehrle BA, Gonzalez AX, Stone J, Rankins D, Vu E, Herrel A, Tadic Z, German D; UC Irvine, MNHN/CNRS, U Zagreb	Do digestive enzyme activities explain increased plant digestibility in a newly omnivorous lizard?
3:30 pm	.....	Coffee Break	Grand Ballroom

1:30 PM – 3:15 PM Session 103**Room 205****Sensing and Navigation***Chairs: Jeff Riffell, Tanvi Deora*

1:30 pm	103-1	Johnson TL, Defino NJ, Rauscher MJ, Heckscher ES, Fox JL; Case Western Reserve University, University of Arizona, University of Chicago	Interneurons for Mechanosensory Processing in Adult <i>Drosophila</i>
1:45 pm	103-2	Sprayberry JDH; Muhlenberg College	Compounds without borders: a novel paradigm for quantifying complex odors and responses to scent-pollution in bumblebees
2:00 pm	103-3	Riffell J, Chan J, Okubo R; University of Washington	Sensory biology of mosquito-flower interactions
2:15 pm	103-4	Bakken GS, Schraft HA, Orduno-Baez A, Clark RW; San Diego State Univ	Temperature Dependences and Angular Resolution of the Pacific Rattlesnake Facial Pit.
2:30 pm	103-5	Lohmann KJ, Brothers JR, Lohmann CMF; University of North Carolina at Chapel Hill	No Place Like Home: Sea Turtles and Geomagnetic Imprinting
2:45 pm	103-6	McEntire KD, Poljan M, Vela S, Thompson ML, Baum A; Trinity University	Do I Match? Exploring Self-Awareness of Color for Background Matching in Texas Horned Lizards
3:00 pm	103-7	Deora T, Brunton BW, Ahmed M, Daniel TL; University of Washington	Tactile active sensing and learning in plant-insect pollination
3:15 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:00 PM Session 104**Rooms 201-202****Comparative Endocrinology***Chairs: Stefanny Titon, Nick Holloway*

1:30 pm	104-1	Titon SCM, Titon Jr. B, Teixeira RV, Lima AS, Garcia Neto PG, Ferreira LF, Assis VR, Gomes FR, Markus RP; University of São Paulo, University Center Fundação Santo Andre	Immune and hormonal circadian rhythms in captive bred Bullfrog (<i>Lithobates catesbeianus</i>)
1:45 pm	104-2	Hunt KE, Buck CL, Hudson J, Fernández-Ajó A, Heide-Jørgensen MP, Ferguson SH, Matthews CJD; George Mason U, N Arizona U, U Manitoba, Greenland Inst Nat Res, Fish Oc Canada	Patterns in Reproductive Seasonality Inferred From Annual Testosterone Cycles In Baleen Of Adult Male Bowhead Whales (<i>Balaena mysticetus</i>)
2:00 pm	104-3	Cox RM, Wittman T, Robinson CD, Cox CL, John-Alder HB; University of Virginia, Georgia Southern University, Rutgers University	Sex steroids as mediators of phenotypic integration, genetic correlations, and evolutionary transitions
2:15 pm	104-4	Holloway ND, Mackenzie DS, Riley BB; Texas A&M University	Evidence for expression of the sodium iodide symporter (NIS) in novel neural and ovarian locations in teleost fish
2:30 pm	104-5	Müller UK, Summers AP; CSUF, UW - Friday Harbor Labs	SICB Journals - synergy, status, and a call to action
2:45 pm	104-6	Summers AP, Müller UK; UW -Friday Harbor Labs, CSUF	Ideas and initiatives for the two SICB journals
3:00 pm	.....	Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM Session 105**Rooms 203-204****The Evolution of Morphology***Chair: Margaret Hall*

1:30 pm	105-1	Hall MI, Plochocki JH, Sosa JRR, Voegele GM; Midwestern University, University of Central Florida, Dartmouth College	The evolution of cutaneous muscles in placental mammals
1:45 pm	105-2	Webb JF, Molnar EJ, Nickles KR, Jones AE, Conway KW, McHenry MJ; University of Rhode Island, Texas A&M, University of California Irvine	How to Distinguish Pattern from Chaos: Superficial Neuromasts of the Mechanosensory Lateral Line System in Fishes
2:00 pm	105-3	Simon MN, Brandt R, Kohlsdorf T, Marroig G; University of Sao Paulo	Linking Phenotypic Modularity to Directional Selection on Multiple Functional Performances

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2:15 pm	105-4	<i>Oufiero CE; Towson U</i>	Morphological evolution of the praying mantis (Mantodea) raptorial foreleg in relation to body size and depth perception
2:30 pm	105-5	<i>Roberts A, Wainwright P; University of California, Davis</i>	Anatomical basis of jaw protrusion directionality in ponyfishes (Leiognathidae)
2:45 pm	105-6	<i>Schwaha T; University of Vienna</i>	O anus where art thou? An investigation of ctenostome bryozoans
3:00 pm	105-7	<i>Feltmann A, Gifford M, Field E; University of Central Arkansas</i>	Effect of Selection and Genetic Drift on Phenotypic Diversification in the Eastern Collared Lizard
3:15 pm	105-8	<i>Goodman CM, Buckman KN, Hill JE, Tuckett QM, Romagosa CM; University of Florida</i>	Dispersal, performance, and Morphometry of a Novel Invader (<i>Xenopus tropicalis</i>) in Central Florida: Evidence of Spatial Sorting?
3:30 pm		Coffee Break	 Grand Ballroom

1:30 PM – 3:30 PM	Session 106	Rooms 402-403
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The Evolution of Physiology

Chair: Anthony Gilbert

1:30 pm	106-1	<i>Saenz DE, Winemiller KO, Markham MR; Texas A&M University, University of Oklahoma</i>	Derived Loss of Signal Plasticity in a Genus of Weakly Electric Fish
1:45 pm	106-2	<i>Gilbert AL, Rutschmann A, Fitschen-Brown MS, Miles DB, Clobert J; Ohio University, University of Auckland, Theoretical and Experimental Ecology Station</i>	Acclimation to warmer temperatures attenuates heat-shock plasticity in high elevation populations of common lizards
2:00 pm	106-3	<i>Faria S, Goodbody-Gringley G, Marangoni L, Pereira C, Bateman S, Zilberberg C, Mies M, Kitahara M, Bianchini A, Garland T, Navas C; Bermuda Institute of Ocean Sciences, Monaco Scientific Center, Federal University of Rio de Janeiro, University of São Paulo, University of California, Riverside</i>	Brazilian Phenotypic Plasticity under Climate Changes: an Evolutionary History Scripted in the Coral-Dinoflagellate Symbiosis
2:15 pm	106-4	<i>Boggs TE, Friedman JS, Gross JB; University of Cincinnati</i>	Parallel adaptation to hypoxia in the blind Mexican cavefish, <i>Astyanax mexicanus</i> .
2:30 pm	106-5	<i>Gamboa MP, Kohlruess PS, Wolf BO, Sillett TS, Funk WC, Ghalambor CK; Colorado State University, University of New Mexico, Smithsonian Conservation Biology Institute</i>	Climate variation facilitates morphological, not physiological, divergence in song sparrows
2:45 pm	106-6	<i>Marshall CA, Zeller KR, Ghalambor CK; Colorado State University</i>	The Effects of Long- and Short-Term Salinity Acclimation on the Aerobic Scope of Trinidadian Guppies: Implications for Dispersal
3:00 pm	106-7	<i>Zhang Y, Wong HS; University of Memphis, Buck Institute for Research on Aging</i>	Are mitochondria the major contributor of reactive oxygen species production? No.
3:15 pm	106-8	<i>Wolf CJ, Cheviron ZA; University of Montana</i>	Seasonal Variation of Body Composition in Deer Mice (<i>Peromyscus maniculatus</i>)
3:30 pm	.....	Coffee Break	 Grand Ballroom

Monday POSTER SESSION P3

Grand Ballroom, 3:30-5:30 PM

Poster Set Up: 7:00-8:00 am; Poster Teardown: 5:30-6:00 pm

Even # - Authors present from 3:30-4:30 pm; Odd # - Authors present from 4:30-5:30 pm

Pollution and toxicity

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| <p>P3-1 Ujhegyi N, Bókonyi V; Plant Protection Institute</p> | Skin Coloration as a Possible Non-Invasive Marker for Skewed Sex Ratios and Gonadal Abnormalities in Immature Common Toads |
| <p>P3-2 Abdulelah SA, Crile KG, Almouseli A, Awali S, Tutwiler AY, Tien EA, Manzo VJ, Hadeed MN, Belanger RM; University of Detroit Mercy</p> | DNA damage in the cells of lateral antennules of crayfish (<i>Faxonius virilis</i>) is increased following exposure to environmentally relevant concentrations of atrazine |
| <p>P3-3 Price ER, Mager EM; University of North Texas</p> | The Effects of Oil and PAH Exposure on Swim Bladder Development and Function |
| <p>P3-4 Jacob JR, Vo CP, Stahlschmidt ZR; U Pacific</p> | Glyphosate in a warming world: Effects on lifespan, feeding, and food conversion efficiency in a field cricket, <i>Gryllus lineaticeps</i> |
| <p>P3-5 Almouseli A, Manzo VJ, Yacoo KE, Dayfield DJ, Torres VC, Evans KR, Roberts-Kirchhoff ES, Belanger RM; University of Detroit Mercy</p> | The effects and quantitation of atrazine in crayfish tissue post-exposure |
| <p>P3-6 Lacy BD, Rahman MS, Rahman MS; University of Texas Rio Grande Valley</p> | Interactive Effects of Heat Stress and Pesticide Co-exposure on Osmoregulation and Antioxidant System in Gill and Kidney of Goldfish |
| <p>P3-7 Crile KG, Abdulelah SA, Almouseli A, Manzo VJ, Hadeed MN, Fard A, Iqbal T, Belanger RM; University of Detroit Mercy</p> | Ecologically relevant atrazine exposures affect the cells of the hepatopancreas of crayfish (<i>Faxonius virilis</i>) |
| <p>P3-8 Smith TR, Moore IT, Hernandez J; Virginia Tech</p> | Using buccal cells to estimate DNA damage associated with urbanization |
| <p>P3-9 Awkerman JA, Lavelle CM, Henderson WM, Hemmer BL, Lilavois CR, Harris P, Zielinski N, Hoglund MD, Glinski DA, MacMillan D, Ford J, Seim RF; US EPA RF</p> | Cross-taxa Distinctions in Developmental Effects of Trifluralin Exposure between Representative Toxicological Species for Aquatic Risk Assessment |
| <p>P3-10 Wilburn PA, Maness TJ; Louisiana Tech University</p> | Liver lead concentration is unrelated to presense of lead shot in waterfowl gizzards |
| <p>P3-11 Flood S, Depaola N, Moody T, Mass S, St. John P; SUNY New Paltz</p> | Quantification of BPA Retention in Planaria |
| <p>P3-12 Silva MA, Cho A, Ibarra JN, Naquin TE, Teeple JB, Whittemore KS, Hoese WJ, Burnaford JL, Carrillo A, Leigh S; California State University Fullerton, Cabrillo Marine Aquarium</p> | Bust A Move: Movement of Microplastics Through Open Water Marine Trophic Levels |

Ecotoxicology

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|---|--|
| <p>P3-13 Dubois S, Rahman AF, Rahman MD*; University of Texas Rio Grande</p> | Investigating Environmental Contamination in the Lower Laguna Madre Through CYP1A Expression in Pinfish Liver |
| <p>P3-14 Ackerly KL, Esbaugh AJ; University of Texas at Austin</p> | Additive effects of oil exposure and hypoxia on aerobic performance in red drum, <i>Sciaenops ocellatus</i> |
| <p>P3-15 Goodchild CG, Durant SE; Oklahoma State University, University of Arkansas</p> | Avian eggs externally exposed to sublethal crude oil applications have reduced heart rate and metabolic rate. |
| <p>P3-16 Tellez-Gomez QM, Flores-Santin JR; Universidad Autonoma del Estado de Mexico</p> | Embryonic Developmental Effects of Maternal Ingestion of Cypermethrin in Japanese Quail <i>Coturnix japonica</i> |
| <p>P3-17 Llewellyn HJ, Hare-Harris A, Hranitz JM, Surmacz CA; Bloomsburg University</p> | Sublethal Doses of the Neonicotinoid Imidacloprid Alters mRNA Expression in Cellular Stress Pathways in Honey Bees |
| <p>P3-18 Fritz T, Brogren D, Burley A, Holihan M, Graham M, Chrysler J, Scott J; Saginaw Valley State University</p> | Dioxin-induced steatosis and liver toxicity is enhanced by a ketogenic diet |

Molecular Evolution

- P3-19** Thueson KA, Rabinowitz SA, Havird JC; University of Texas at Austin
Nuclear Compensation as the Dominant Form of Mitonuclear Coevolution
- P3-20** Briseno JL, Tassia MG, Waits DS, Halanych KM; University of California Santa Cruz, Auburn University
TIR Domain-Containing Protein SARM1 Diversity in Deuterostomes and Lophotrochozoans
- P3-21** Yousefelahiyeh M, Miller DR, Kim H, Parker J; California Institute of Technology
Dalotia coriaria as a genetic model system of animal symbiosis
- P3-22** Fitzgerald RP, Chandler C; SUNY College at Oswego
Determining Sex Specific Loci in the Genome of the Terrestrial Isopod *Porcellio scaber*
- P3-23** Bogantes VE, Waits DS, Halanych KM; Auburn University
Toxin diversity across the annelid tree of life
- P3-24** Saiz LV, Kelleher ES; University of Houston
Does the *Drosophila melanogaster* gene *bruno* impact transposition?
- P3-25** Plakke MS, Blumenstiel JP, Walters JR; University of Kansas
Patterns of small non-coding RNA expression across dimorphic sperm
- P3-26** Joglekar IU, Clark AC; University of Texas at Arlington
Evolution of Conformational Landscape in Reef-Building Coral Caspases
- P3-27** McElroy KE, Boore J, Logsdon JM, Neiman M; Iowa State University, Providence St Joseph Health, Institute for Systems Biology, University of Iowa
Effects of asexuality on repetitive element evolution in a freshwater snail

Hormones, Behavior, Development and Reproduction

- P3-28** Cheung JA, Rose CS; James Madison University
The hormonal control of anuran ossification sequences
- P3-29** Heppner JJ, Ouyang JQ; University of Nevada, Reno
Urbanization and parental investment in a free-living songbird
- P3-30** Closs LE, Baker DM, Fontaine R, Weltzien FA; University of Mary Washington, Norwegian University of Life Sciences
Investigating Reproductive Success and Endocrine Regulation of Mating Strategies in Male Medaka
- P3-32** Cooper D, Kovacs J; Spelman College
Evidence of Horizontal Gene Transfer in the Pea Aphid *Acyrtosiphon pisum*
- P3-33** Thomas P, Pang YF, Tan W; University of Texas at Austin
Rapid Progesterone Induction of Sperm Hypermotility in Marine Fish through Membrane Progesterone Receptor Alpha
- P3-34** Clapp N, Reichert M; Oklahoma State University
The Effect of Arginine Vasotocin on Competitive Behavior in *Hyla chrysoscelis*
- P3-35** Lusk EP, Witek TAR, Casto JM; Illinois State University
Effects of *in ovo* treatment with etiocholanolone on nestling development
- P3-36** Ziauddin LS, Sarathy J, Hall IC*; Benedictine University
Prolactin influences osmoregulation in adult African clawed frogs, *Xenopus laevis*.
- P3-37** Kratochvil LB, Small TW, Thompson RR; Bowdoin College, Oxford College of Emory University
Rapid effects of androgens on olfaction in the zebrafish, *Danio rerio*
- P3-38** Eshleman MA, Klug PE, Wissel B, Greives TJ; NDSU, USDA-APHIS-WS, University of Regina
Migration and Reproduction: Is There a Reproductive Advantage to a Shorter Migration?
- P3-39** Tait C, Ramirez MD, Olson M, Katz PS; Univ of Massachusetts Amherst
Molecular and behavioral characterization of two reproductive hormones in the nudibranch *Berghia stephanieae*
- P3-40** Comito D, Bentley GE; University of California Berkeley
Gonadotropin-Inhibitory Hormone and its Receptor in Zebra Finch Spinal Cord: A Novel Pathway for Neuropeptide Action?

Immunity: in defense of an organism

- P3-41** Cornelius Ruhs E, Martin LB, Downs CJ; University of South Florida, SUNY-ESF
The impacts of body mass on immune cell concentrations in birds
- P3-42** Dallas JW, Deutsch M, Warne RW; Southern Illinois University
Thermal Performance of an Exotic Gekkonid and the Effects of n-3 PUFAs on Immunity
- P3-43** Martin MN, Zimmerman LM; Millikin University
In vitro synergistic activity of antibiotics and red-eared slider plasma on bacterial growth
- P3-44** Barsotti AMG, Madelaire CB*, Wagener C, Titon Jr. B, Gomes FR, Measey J; University of São Paulo, Northern Arizona University, Stellenbosch University
Challenges of the invasion front: water balance, stress and immunity in the Guttural toad

Immune-based tradeoffs

- P3-45** Weier D, Ranchod P, Steffenson M; St Edward's University The Effect of Colony Relocation Stress on Honeybee Immunity
- P3-46** Smith JJ, Balenger SL; University of Mississippi Costs of Immunity vs. Costs of Infection: Is the Relationship Between Humoral Immunity and Corticosterone Context Dependent?
- P3-47** Kenny E, Howey CAF; University of Scranton Ambient Light at Night and Effects on the Immune Response of Anoles
- P3-48** Rowley AA, Adelman JS, Dalloul RA, Vinkler M, Henschen AE, Hawley DM; Virginia Tech, University of Memphis, Charles University Are There Broader Immunological Effects of Evolved Disease Tolerance in House Finches?
- P3-49** Baeza K, Ranchod P, Steffenson M; St Edward's University The Introduction of Commonly Used Pesticides and Their Effect on the Immunological Function of Honeybees
- P3-50** Virgin EE, Kepas ME, Hudson SB, French SS; Utah State University Comparisons of egg yolk physiology and hatchling quality between urban and rural Side-blotched lizards (*Uta stansburiana*)

Reproductive Biology

- P3-51** Davis AC, Ryan MJ; University of Texas Austin Mirror mirror on the wall: Using mirror image scrutiny to probe phenotypic variation in an asexual-sexual fish system
- P3-52** Angelis E, Greenway G, Miller CW; University of Florida How does weapon loss influence mating behavior in the coreid *Narnia femorata*?
- P3-53** Lane ZM, Darnell MZ; University of Southern Mississippi A Home Worth Fighting For: Burrows as a Thermoregulatory Resource in the Fiddler Crab *Uca pugnator*
- P3-54** Dennis AJ, Taylor LA, Pertuit OR, Carson IR, Sanger TJ, Johnson MA; Trinity University, Loyola University Oviposition site choice in the brown anole lizard, *Anolis sagrei*
- P3-55** Brewer VN, Lane SJ, Sewall KB, Mabry KE; New Mexico State University, Virginia Polytechnic Institute and State University Effects of Urbanization on Extra-pair Paternity in the Song Sparrow
- P3-56** Hain TJA, Churchman EKL, Knapp R, Neff BD; University of Western Ontario, University of Oklahoma Nest size and 11-ketotestosterone in bluegill sunfish (*Lepomis macrochirus*)
- P3-57** Collum A, Whitman S, Hodges A; State University of New York Does Mating with a Novel Male Affect Female Fecundity in Bean Beetles?
- P3-58** Xavier C, Bergey L, Ritchie L, Jean-Paul J; Centenary University Differences in reproductive efforts in the invasive grass shrimp, *Palaemon macrodactylus* over gravid native *Palaemon* shrimp.
- P3-59** Strom MK, Mabry KE; New Mexico State University The Influence of Habitat Type on the Reproductive Success of Brush Mice (*Peromyscus boylii*)
- P3-60** L'Ecuyer Z, Sharp S, Todd K; Westminster College Hormonal circuits responsible for reproductive behavior
- P3-61** Solis GM, Husak JF; University of St Thomas The Role of Aromatization in Male Brown Anole Sexual Behavior
- P3-62** Afkhami M, Masly JP; University of Oklahoma The genetics of co-evolved reproductive traits in *Drosophila*
- P3-63** Keck CMT, Earley RL, Gresham JD; University of Alabama How Do Males Reproduce When Prospective Partners Prefer to Mate with Themselves?
- P3-64** Choudhry A, Lo B, Freeman A, Ophir A; Thomas Jefferson High School for Science and Technology, Cornell University Female African giant pouched rats scent mark at similar rates despite reproductive differences
- P3-65** Tweeten KA, Scollick JA; St Catherine University Tracking of Labeled Sperm Suggests that Diploid Populations of Sexually Reproducing *Lumbriculus* Cross Fertilize

Predator-Prey Interactions

- P3-66** Stewart KA, Mutsuddy A, Seroy SK; Heritage University, Wheaton College, University of Washington Effects of Warming Ocean Temperatures on Predation Rates on the Marine Snail *Lacuna vincta*
- P3-67** Folfas E, Cox C, McMillan WO, Logan ML; Univ of Toronto, Georgia Southern Univ, Smithsonian, Univ of Nevada Changes in escape behavior in a terrestrial vertebrate after experimental transplantation to a novel environment
- P3-68** Schneider NG, McKamy AJ, Diamond KM, Blob RW; Clemson Univ Do predators take advantage of prey blind spots? In-stream analysis of predator-prey interactions in Hawaiian stream fishes.
- P3-69** Chamberlain JD; Southern Arkansas University The Role of a Thiamine-degrading Enzyme in Shaping Trophic Ecology of Watersnakes

P3-70	Fabian ST, Lin HT; Imperial College London	Dissecting the Implementation of Dragonfly Guidance Behaviours
P3-71	Gutierrez-Andrade D, Middlebrooks ML; University of Tampa	Effectiveness of ceratal autotomy as a defense mechanism for the sacoglossan sea slug <i>Placida kingstoni</i>
P3-72	Luebbert KM, Martin AL; Saginaw Valley State University	How Predators and Conspecifics Influence Crayfish Shelter Preference?
P3-73	Chandler KL, Davis J, Wolford D; Radford University	Arthropod Thunderdome: Antipredator responses of <i>Gromphadorhina portentosa</i> in relation to predator species and relative size differential
P3-74	Baker NJ, Garcia L; Austin College	Transgenerational Effects of Predatory Stress in Pea Aphids
P3-75	Jean-Paul J, Bergey L, Ritchie L, Xavier C; Centenary University	Effects of Light Conditions and Morphological Size on Predation of the Invasive Grass Shrimp, <i>Palaemon Macrobrachium</i> , and a Native Species, <i>Palaemonetes Pugio</i> .
P3-76	Howerin HM, Foltz SL; Radford University	The Perfect Home: What Nestbox Features and Environmental Conditions Do Eastern Bluebirds and Tree Swallows Prefer?
P3-77	Jara RF, Crego RD, Samuel MD, Rozzi R, Jiménez JE; University of North Texas, University of Wisconsin-Madison	Nest-Site Selection and Breeding Success of Passerines in the Southernmost Forest of the World

Complementary to S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models

P3-78	Ferreira LF, Garcia Neto PG, Titon SCM, Titon Jr. B, Gomes FR, Assis VR*; Santo Andre Foundation University Center, University of Sao Paulo	Exploring toads immune response with molecular techniques
P3-79	Durica DS, Wolfard F, Shyamal S, Das S, Mykles DL; University of Oklahoma, Colorado State University	Examination of Ecdysteroid Hormone Biosynthetic Enzyme Genes in the Y-Organ Transcriptome and Developing Limb Bud Transcriptome During the Crab Molt Cycle
P3-80	Bentley VL, Mykles DL; Colorado State University	Investigating the function of Krüppel homolog 1 (Kr-h1) on molt regulation in <i>Gecarcinus lateralis</i>
P3-81	Rocereto SK, Whittall JB, Wheat CW, Rank NE, Dahlhoff EP; Santa Clara Univ, Univ Stockholm, Sonoma State Univ	Non-synonymous variation at a metabolic enzyme locus (<i>Pgi</i>) under purifying selection
P3-82	Valle PF, Rocereto SK, Rank NE, Dahlhoff EP; Santa Clara Univ, Sonoma State Univ	Star-crossed lovers: Mitonuclear interactions may affect reproductive activity and offspring performance in a montane leaf beetle

Comparative Genomics and Proteomics

P3-83	Barreira SN, Baxeavanis AD; NIH	Exploring the Role of Ribosomal Biogenesis in the Context of Regeneration
P3-84	Chang ES, Traver M, Sanders SM, Klompen AML, Gonzalez P, Barreira S, Mullikin J, Cartwright P, Baxeavanis AD; NHGRI/NIH, U Kansas, U Pittsburgh	The genome of the hydrozoan <i>Podocoryna carnea</i> : An emerging resource for comparative biology
P3-85	Gonzalez P, Seaver EC, Baxeavanis AD; NHGRI/NIH, University of Florida	Haplotype-Phased <i>de novo</i> Genome Assembly of the Marine Annelid <i>Capitella teleta</i> Using a Three-Generation Long-Read Binning Approach
P3-86	Preisig GA, Faber-Hammond JJ, Renn SCP; Reed College	aCGH Detects Copy Number Variation with Similar Resolution to PacBio Sequencing Approaches
P3-87	Anderson AP, Renn SCP; Reed College	A genus of gouramis, <i>Sphaerichthys</i> , as a novel system for investigating evolution of transitions of sex-roles in brood care and sexual selection.
P3-88	Firreno TJ, Emery AH, Roelke CE, Fujita MK; University of Texas at Arlington	Investigating Toxin Evolution in the Bufonid Parotoid Gland
P3-89	Krantz J, Daly M, Macrander J; Florida Southern College, Ohio State University	Identifying Convergence of ShK Toxins in Sea Anemones
P3-90	Ortiz J, Debiase MB, Ryan JF; University of Florida, Iowa State University	Evolutionary history of an ancient innexin gene cluster in ctenophores
P3-91	McKinley CN, Lower SE; Bucknell University	Using transcriptomics to identify candidate genes involved in predatory behavior of femme fatale fireflies

- P3-92** Zhang P, Xu S, Heath-Heckman E, Jacobs D; University of California Los Angeles
Historical DNA Methylation Using Computational Methods
- P3-93** Waits DS, Ribeiro R, Kocot KM, Bullard SA, Halanych KM; Auburn University, University of Alabama
You Aren't What You Eat: The Impact of Sequence Contamination on Phylogenomics of Blood Flukes (Platyhelminthes; Schistosomatoidea)
- P3-94** Paulat NS, Manthey JD, Platt II RN, Ray DA; Texas Tech University, Texas Biomedical Research Institute
Transposon Activity and Mutational Impacts in *Myotis*
- P3-96** Doerr H, Palmisciano M, Flannery C, Hamilton S, Logan C; California State University, Moss Landing Marine Labs, Humboldt State University
Effects of fluctuating vs. static exposure to hypoxia and high pCO₂ on gill transcriptomes in three rockfish species

Integrative Biology of Reproduction

- P3-97** Morningstar S, Maslikova V*, Reams B, Short C, Mashanov V, Jahan-Mihan A, Hahn DA, Hatle JD; Univ of North Florida
Dietary and storage protein thresholds for reproduction in grasshoppers
- P3-98** Mark D, Nasari A, Triano N, Bauer C; Adelphi University, Hicksville High School
Early identification of pregnancy in a precocial rodent (*Octodon degus*)
- P3-99** Bentz EJ, Mason RT; Oregon State University
Characterizing the Function of the Harderian Gland and its Interactions with the Vomeronasal Organ in the Red-sided Garter Snake
- P3-100** Ochs RA, Chamberlain JD; Southern Arkansas University
The Reproductive Effects of Supplemental Nutrition in an Income-breeding Snake
- P3-101** Bleke CA, French SS, Roberts SB, Gese EM; Utah State University, Idaho Department of Fish and Game, USDA-National Wildlife Research Center
Natural variations in fecal steroid hormones across pregnancy and population
- P3-102** Weber WD, Fisher HS; University of Maryland
Mating system drives the evolution of male and female reproductive traits in *Peromyscus mice*
- P3-103** Rennolds CW, Bely AE; University of Maryland
Reproductive investment is enhanced by food but independent of injury history in an asexual annelid
- P3-104** Stephens ER, Harris BN, Prater CM, Soto PL, Carr JA; Texas Tech University, Louisiana State University
Testicular histopathology in an Alzheimer's disease model
- P3-105** Baloun DE, Lane JE, McAdam AG, Dantzer BJ, Boutin S; University of Saskatchewan, University of Guelph, University of Michigan Ann Arbor, University of Alberta Edmonton
Does the ability to dissipate endogenous heat to their environment constrain reproductive investment for wild endotherms?

Muscle and cardiovascular physiology

- P3-106** Merges CR, Craig K, Pirtle T; College of Idaho
Exposure to cAMP and cGMP Inhibits Heart Rate in *Daphnia Magna*
- P3-107** Gardner S, Appel A, Mendonça MT; Auburn University
Chasing cane toads: locomotive and behavioral changes from northward dispersal
- P3-108** Weiss A, Lau B, Spaniac M, Monroy JA; Claremont Colleges
The Effects of Eccentric Resistance Training on History-Dependent and Elastic Properties of Skeletal Muscles from Mice
- P3-109** Farmer L, Krajniak K; Southern Illinois University Edwardsville
The effects of FMRFamide and APKQYVRFamide on the same isolated crop-gizzards of earthworm, *Lumbricus terrestris*
- P3-110** Larson AM, Kanatous SB; Colorado State University
Temporal Examination of Myoglobin and Myosin Heavy Chain Expression Patterns in Skeletal Muscle Cells
- P3-111** Goodreau JL, Krans JL; Western New England University
Using STED to measure RNAi induced changes in isoform structure of the titin ortholog, *sallimus*.
- P3-112** Hefeke KR, Jorgensen DD; Roanoke College
Ventricular function in American lobsters and Atlantic blue crabs: does contractility change with increasing metabolic demand?
- P3-113** Fletcher ML, Barrett LM, Dearolf JL, Thometz NM, Bryan A, Reichmuth C; Hendrix College, Univ of San Francisco, Alaska Department of Fish and Game, Univ of California Santa Cruz
Fiber-type profile of bearded seal (*Erignathus barbatus*) longissimus dorsi muscle
- P3-114** Flores JP, Gad M, Bushong E, Schulz JR; Occidental College
From Sequence to Activity: Synthetic Neuroexcitatory Peptides from Fish-Hunting Cone Snails

- P3-115** Nazar S, Dearolf JL, Thometz NM, Bryan A, Reichmuth C; Hendrix College, Univ of San Francisco, Alaska Department of Fish and Game, Univ of California Santa Cruz
Fiber-type profile of the locomotor muscle of spotted seals
- P3-116** Mukhtar V, Dearolf JL, Thometz NM, Bryan A, Reichmuth C; Hendrix College, Univ of San Francisco, Alaska Department of Fish and Game, Univ of California Santa Cruz
Fiber-type profile of the *latissimus dorsi* muscle of the ringed seal
- P3-117** Kinsey ST, Cook JG, Laite C, Secor SM; University of North Carolina Wilmington, University of Alabama
Muscle growth patterns and implications for energy costs in diamondback water snakes (*Nerodia rhombifer*)
- P3-118** Craig KJ, Merges C, Pirtle TJ; College of Idaho
Exposing *Daphnia magna* to Ethanol Results in a Decline in Heart Rate by Increasing Nitric Oxide Production
- P3-119** Porras ND, Culverhouse EK, Tate KB; Texas Lutheran University
The Metabolic and Cardiovascular Response of Central Texas Pulmonate Snails to Acute and Chronic Warming Events
- Locomotion - Swimming**
- P3-120** Fish FE, Segre PS, Potvin J, Goldbogen JA; West Chester University, Stanford University, St Louis University
The Upper Jaw of Rorquals Can Act as a Delta Wing for Stability during Lunge Feeding
- P3-121** Kirwan DJ, Ruddy BT, Porter ME; Florida Atlantic University
Predator-Prey Swimming Kinematics of *Sphyrna mokarran* and *Carcharhinus limbatus*
- P3-122** Smith HJ, Gough WT*, Savoca MS, Czapanskiy MF, Fish FE, Potvin J, Cade DE, Bierlich KC, Kennedy J, Goldbogen JA; Southwestern University, Stanford University, West Chester University, Saint Louis University, University of California Santa Cruz, Duke University
The Physics of Whale Movement: Drag and Thrust Production to Measure Whale Propulsive Efficiency
- P3-123** De La Cruz D, Pergola D, Svensson K, Gellman E, Ellerby DJ*; Wellesley College
Scaling of preferred swimming kinematics in bluegill sunfish (*Lepomis macrochirus*)
- P3-124** Akanyeti O, Strong JB; Aberystwyth University
Achieving cohesive and mobile groups using simple sensory feedback
- P3-125** Coughlin DJ, Chrostek JD, Ellerby DJ; Widener University, Wellesley College
Intermittent Propulsion in Largemouth Bass
- P3-126** Chamanlal A, Sayegh N, Martinez D, Maia A; Rhode Island College
Function of the Erector Muscles of the Spiny Dorsal Fin in Bluegill exposed to Turbulence
- P3-127** Blackshare TW, Ford MP, Garayev K, Murphy DW, Santhanakrishnan A; Oklahoma State University, University of South Florida
Metachronal, synchronous, and hybrid stroke patterns in aquatic paddling locomotion
- P3-128** Rosado KA, Kruppert S, Summers AP; Monmouth University, University of Washington
Armor and Maneuverability of Poachers
- P3-129** Logsdon M; University of Washington
LiEFi (Light-Energy Fish): Using Simple Bio-Mechanical Models to Simulate Climatic Changes in Fish Communities
- P3-130** Formoso KK, Habib MB, Bottjer DJ; University of Southern California
Assessing the Mosasaur Pectoral Girdle and its Controls on Chest Width: Implications for Mosasaur Swimming Function

Locomotion - Tricky substrates

- P3-131** Mann SD, Reed SA, Bergmann PJ; Clark University
Running on Land and Water: Three-dimensional Limb Kinematics and Locomotor Performance of *Anolis sagrei*
- P3-132** Ashley-Ross MA, Bressman NR; Wake Forest University
A twisted tail of intrigue: Does fish vertebral morphology constrain locomotor mode?
- P3-133** Kinsey CT, Blob RW; Clemson University
Predatory selection across stages of limb and tail development in *Xenopus* tadpoles
- P3-134** Reed SE, Mann SDW, Bergmann PJ; Clark University
Mechanisms That Determine Success At Running On Water In The Quadrupedal Lizard *Anolis sagrei*
- P3-135** Huang S, Tang Y, Tao J; Arizona State University
SBOR: A Self-Burrowing-Out Robot Inspired by Razor Clam
- P3-136** Treers LK, Stuart H; University of California Berkeley
The Effect of Shell Shape on Burrowing Dynamics in Granular Media
- P3-137** Redmann E, Ward AB; Adelphi University
The Effect of Substrate on Terrestrial Locomotion in *Lepidosiren paradoxa*, the South American Lungfish, Informs the Water-to-Land Transition

P3-138 Yohannan K, Narici V, Mass S; SUNY New Paltz

Further studies of axolotl and tiger salamander kinematics

P3-139 Gamel KM, Astley HC; University of Akron

Design and Fabrication of an Underwater Force plate

Biomaterials - Fluids

P3-140 Reid HE, Zhou H, Deng J, Jankauski M; Montana State University, Binghamton University

Towards the Design of Dynamically Similar Isospectral Isomodal Artificial Insect Wings

P3-141 Hagood ME, Porter ME; Florida Atlantic University

Anisotropic Mechanical Properties of Shark Skin

P3-142 West J, Farina S, Gibb A; Howard University, Northern Arizona University

Preference and Performance in Flatfish Burial

P3-143 Wong JCM, Joshi V, Jaiman RK, Altshuler DL; University of British Columbia

Wing Morphing During Avian Flight Induces Changes in Local Wing Stiffness Which Affect Aeroelastic Response

P3-144 McCarter MG, Loudon C; University of California Irvine

Mechanical damping of cricket antennae

P3-146 Prakash VN, Bull MS, Prakash M; Stanford University

Tissue fracture dynamics govern plastic shape changes in a simple animal

P3-147 Zeng Y, Nieders K, Petrichko S, Fudge D; Chapman University

Epidermal Threads in Pacific Hagfish (*Eptatretus stoutii*)

P3-148 Elcock JN, Summers AP, Hall KC; Howard University, University of Washington

Skating on Egg Shells: Microstructure of Skate Egg Cases and Attachment to Substrate

P3-149 Mvetimbo-Tambo KLO, Taft BN, Taft NK; University of Wisconsin Parkside, Landmark Acoustics LLC

Comparative Fin Ray Stiffness in Coho Salmon

P3-150 Eng CM, Yawar A, Venkadesan M; Yale University

Functional Curvature and the Stiffness of Rayed Fins

P3-151 Mohammadi S, Waldrop LD, Hassanalian M; Chapman University, New Mexico Tech

Investigation on aquatic animal colors and skin temperature on skin friction drag reduction

Ventilation and sensing

P3-152 Amacker KY, Farina SC; Howard University

Asymmetrical Breathing in Flatfishes

P3-153 Clark AE, Meredith TL, Porter ME; Florida Atlantic University

Comparing Olfactory Rosette Morphology Among Elasmobranchs

P3-154 Handy SD, Farina SC; California State University San Bernardino, Howard University

Gill Position Affects Ventilatory Pressure Amplitudes in Pacific Spiny Dogfish

P3-155 Jones AE, Webb JF; University of Rhode Island

Implications of the Relatively Long Larval Phase of a Salmonid (Brook Trout, *Salvelinus fontinalis*) for Mechanosensory Lateral Line System Morphology

P3-156 Carter D, Lee-Robinson B, Williams T, Farina S; Howard University

Evolutionary Morphological and Behavioral Specializations for Jet Propulsion in Frogfishes

P3-157 Hardy DJ, Salcedo MK, Kenny MC, Pulliam JN, Pendar H, Socha JJ; Morehouse College, Virginia Tech, Wake Forest University

Shot through the heart: a non-invasive IR technique to measure dorsal heart pumping in insects

P3-158 Gabriel AN, Brainerd EL, Olsen A, Hernandez LP, Camp A, Farina SC; Howard University, Brown University, George Washington University, University of Liverpool

Influence of mechanical linkages between the buccal and gill chambers on ventilatory kinematics

P3-159 Young BA, Adams J, Knoche L, Cramberg M, Klassen M; Kirksville College of Osteopathic Medicine

Regulation of Narial Patency in *Alligator mississippiensis*

Locomotion - Gliding and Flying

P3-160 Ribak G, Urca T, Debnath AK, Stefanini J, Gurka R; Tel Aviv University, Coastal Carolina University, TSI France

The Aerodynamics and Energetics of a Long-Distance Flying Beetle Studied Using PIV

P3-161 Swinsky CM, Jackson BE; Longwood University

(Don't) Shake a Tail Feather: Function of American Goldfinch Tails During Slow Flight

P3-162 Sathe EA, Dudley R; University of California Berkeley

Forelimb Kinematic Variation Alters Body Velocity in Flat-tailed House Geckos (*Hemidactylus platyurus*) During Directed Aerial Descent

P3-163 Senthivasan S, Altshuler DL; University of British Columbia

Automated kinematic tracking using inertial sensor arrays

P3-164 Fan X, Swartz SM, Breuer KS; Brown University

A reduced order computational model to simulate the dynamics of maneuvering flight

- P3-165** Byrnes G, Lim NTL; Siena College, National Institute of Education, Nanyang Technological University
Membrane shape changes during gliding in flying squirrels
- P3-166** Bortoni A, Morris AT*, Young IR, Breuer KS, Swartz SM; Brown University
How Bats Don't Crash and Burn: Bilateral Muscle Recruitment for Recovery Maneuvers in Egyptian Fruit Bats
- P3-167** Von Hagel AA, Malingen SA, Daniel TL; University of Washington
Predicting muscle length changes from EMG activation in *Manduca sexta*
- P3-168** Worrell TA, Weiss TM, Gonzalez MG, Whitehead JG, Salcedo MK, Pulliam JN, Graham M, Socha JJ; Virginia Tech
Development of a multi-camera array to study gliding in flying snakes

Biological Rhythms

- P3-169** McCahon SL, Shankar A, Williams C; University of Alaska Fairbanks
Effects of short photoperiod on sleep and carbohydrate consumption in diurnal grass rats
- P3-170** Callegari K, Shankar A, Seitz T, Drown D, Williams C; University of Alaska Fairbanks
Effects of Short Photoperiod and Carbohydrate Consumption on the Gut Microbiome of Diurnal Grass Rats
- P3-171** Taylor LA, Pertuit OR, Carson IR, Tang C, Dennis AJ, Thawley CJ, Johnson MA; Trinity University, United International College, Davidson College
Artificial Light At Night (ALAN): An Anthropogenic Challenge for Urban Lizard Behavior and Physiology
- P3-172** Berger CA, Tarrant AM; Woods Hole Oceanographic Institution
Can the cnidarian circadian clock entrain to temperature cycles?
- P3-173** Longmire AE, Clark AE, Earley RL, Gresham JD; University of Alabama
Self-Compatibility in a Self-Fertilizing Fish

Social Behaviours

- P3-174** Sieber KR, Zlotnik S, Miller CW; University of Florida
Feeding Facilitation and its Impacts on Mouthpart Development in the Leaf-Footed Bug, *Narnia femorata*
- P3-175** Hurd PL, Dittmann N, Kruschke Z, Vandenberg P; University of Alberta
Behavioural differences between unstudied male and female morphs in the kribensis cichlid
- P3-176** Molina R, Kolonin A, Aspbury AS, Gabor CR; Texas State University
Western Mosquitofish Social Behavior Varies with Levels of Land Use Conversion
- P3-177** Guo Y, Shampay J, Renn SCP; Reed College
Effects of Social Stress on Telomere Length and Telomerase Activity in *Astatotilapia burtoni*
- P3-178** Curtis NJ, Mackiewicz AG, Putland RL, Mensinger AF; University of Minnesota Duluth
Seasonal changes in male Oyster Toadfish's response to boatwhistle playbacks
- P3-179** Wang JY, Paggeot LX, Friesen CN, Solomon-Lane TK, Hofmann HA, Young RL; University of Texas at Austin
Neural Transcriptomic Responses to Social Opportunity
- P3-180** Wallace KJ, Hofmann HA; University of Texas at Austin
Neuroendocrine basis of cognition and behavior in a highly social cichlid fish
- P3-181** Price S, Schumer M, Wang S, Cummings M; University of Texas at Austin, Stanford University, University of British Columbia
Transcriptomic signatures of "choosy" vs "indecisive" social preferences in a sailfin molly (*Poecilia latipinna*)
- P3-182** Weber AM, George EM, Rosvall KA; Indiana University, Bloomington
Individual changes in conspecific aggression across breeding stages: an exploration into adaptive plasticity
- P3-183** Zona JO, Macomber GE, Martin AL, Moore PA; Saginaw Valley State University, Bowling Green State University
Effects of Population Structure on Crayfish Behavior
- P3-184** Langager MM, Hawley DM; Virginia Tech
Effects of *Mycoplasma gallisepticum* infection on juvenile sociality in house finches (*Haemorrhous mexicanus*)
- P3-186** Aguiñaga J, Gomulkiewicz R, Watts HE; Washington State University
Modeling private versus social information in the assessment of environments
- P3-187** Rodriguez SD, De Jesus-Soto MG, Fletcher SJ, Pretends Eagle TJ, Pentanidou T, Tscheulin T, Barthell J, Giray T, Abramson CI; St Philip's College, University Puerto Rico, Oklahoma State University, North Dakota State University, University of the Aegean, University Central Oklahoma, Oklahoma State University
Observation learning of the cap pushing response in honey bees (*Apis mellifera*)
- P3-188** Ryan LM, Gunderson A; Tulane University
Testing for differences in temperature-dependent activity between introduced *Anolis sagrei* and native *Anolis carolinensis* in the U.S.
- P3-190** Vargas C, Graham ZA, Palaoro AV, Angilletta MJ; Arizona State University, Universidade Federal de São Paulo
Sex Differences in Offensive and Defensive Investment in Crayfish Claws

- P3-191** Greene MJ, Renner K, Swallow JG; University of Colorado Denver, University of South Dakota Mechanisms of Pavement Ant Aggression.
- P3-192** Johnson ZV, Long L, Li J, Aljapur V, Arrojjwala M, Hegarty BE, Lee T, Gu K, Lecesne RL, Moorman JM, Streelman JT, McGrath PT; Georgia Institute of Technology PT Depth sensing and deep learning: new insights into social bower building behaviors in Lake Malawi cichlids
- P3-193** Bilbrey CM, Olenski M, Dirienzo N, Dornhaus A; University of Arizona Tucson Serotonin Reduces Aggression in Black Widow Spiders
- P3-194** Hastings BT, Jackson BE; Longwood University Analyzing the Flight Patterns and Behavior of Dragonflies Engaged in Aerial Territory Battles
- P3-195** Young RL, Weitekamp CA, Triki Z, Bshary R, Hofmann HA; University of Texas at Austin, University of Neuchatel Comparative Transcriptomics of Cooperative Behavior in Cleaner Wrasses
- P3-196** Ismail A, Goldina A; Elizabethtown College Assessing the effect of antidepressant sertraline on agonistic behavior of the subordinate crayfish *Orconectes rusticus*
- P3-197** Ellison M, Bush J; University of Tennessee Knoxville Hierarchical shifts in green anole social networks following brown anole invasion
- P3-198** White KJ, Starkey JM, Sah S, Pradhan DS; Idaho State University Different Aggressive Intensities Within Two Social Contexts in a Hermaphroditic Fish
- Development in an ecological context**
- P3-200** Shrestha S, Tung J, Grinshpon RD, Swartz P, Hamilton PT, Mydlarz L, Clark AC; University of Texas at Arlington, North Carolina State University Caspases from Scleractinian Coral Show Unique Regulatory Features
- P3-201** Marshall AS, Mullins H, Urista CY, Davis JE; Radford University Neutrophil/Lymphocyte Ratio as a Measure of Immune Response in Humans Exposed to Novel Microbiomes
- P3-202** Bae J, Bertucci EM, Moore JA, Bock SL, Rainwater TR, Hale MD, Parrott BB; Augusta Univ, Univ of Georgia, Benedict College, Tom Yawkey Wildlife Center, Univ of Virginia "The effects of the developmental environment on telomere length in *Alligator mississippiensis* hatchlings"
- P3-203** Salazar-Nicholls MJ, Macias H*, Warkentin KM; Boston University, Smithsonian Tropical Research Institute, Pontifical Catholic University Ontogeny and extent of hatching enzyme accumulation in red-eyed treefrog embryos
- P3-204** Mutsuddy A, Stewart K, Seroy SK; Wheaton College, Heritage University, University of Washington Effects of temperature and habitat on egg hatching time in the marine snail *Lacuna vincta*
- P3-205** Lau E, Oakley TH; University of California Santa Barbara A light meal: dietary acquisition and metabolism of bioluminescent compounds in the midshipman fishes
- P3-206** Lewis JA, Secor SM; University of Alabama Postprandial Remodeling of Organs and Intestinal Tissues by the Boa Constrictor
- P3-207** Camilliere M, McPherson DR; SUNY Geneseo Bimodal Effects of Serotonin on Cardiac Development in Japanese Quail Embryos
- P3-208** Finkler MS, Rhoda MA; Indiana University Kokomo Separating the effects of temperature on embryonic growth and development in *Chelydra serpentina*.
- P3-209** Pyatt JE, Li CY, Waits A, Earley RL; University of Alabama Mechanisms underlying temperature-dependent sex change
- P3-210** Reynolds JA; Ohio State University Coordinated microRNA and Endocrine Regulation of Insect Diapause
- P3-211** Hawkins TM, Short RA, Davis JE; Radford University Exploring the Impacts of Royal Jelly, Juvenile Hormone, and Nutritional State on Immune Response of *Gromphadorhina portentosa*
- P3-212** Zeller KR, Marshall CA, Ghalambor CK; Colorado State University The effects of local adaptation and rearing salinity on sustained swimming performance in freshwater estuary dwelling Trinidadian guppies
- P3-213** Martinez J, Kopylay C, Misamore M*; Texas Christian University Environmental factors effecting the survival and reproductive success of the invasive zebra mussel *Dreissena polymorpha*
- P3-214** Rashid S, Halanych K, Moss A; Auburn University Differential Gene Expression of Wound Repair in *Mnemiopsis leidyi*
- P3-215** Hagen OL, Cervený KL; Reed College How does cell proliferation in the optic tectum change when fish see?

Character Development and Evolution

- P3-216** Rajaratnam G, Supeinthiran A, Su KFY, Meier R; National University of Singapore, University of Toronto Scarborough, Lee Kong Chian Natural History Museum
Sex brushes and dirty flies: The development and evolution of a novel abdominal appendage in male sepsid flies
- P3-217** Zaloga AR, Neal S, Koenig KM; Harvard University
Axon Guidance Cues in the Visual System of the Cephalopod *Doryteuthis pealeii*
- P3-218** Goodheart JA, Minsky G, Brynjegard-Bialik MN, Drummond MS, Munoz JD, Fallon TR, Schultz DT, Weng J, Torres E, Oakley TH; UC Santa Barbara, California State Univ Los Angeles, Massachusetts Institute of Technology, Monterey Bay Aquarium Research Institute
Laboratory culture of the California Sea Firefly *Vargula tsujii*: Developing a model system for the evolution of marine bioluminescence
- P3-219** Kudla AM, Nijhout HF; Duke University
Sources of Treehopper Pronotal Variability: An Exploration of Evolutionary Potential in *Entylia carinata*
- P3-220** Hammond TA, Kovacs J, Werren J; Spelman College, University of Rochester
Evidence of Horizontal Gene Transfer in the Kissing Bug, *Rhodnius prolixus*

Undergraduate education

- P3-221** McCue MD, Arbutina L, Lighton JRB; Sable Systems International
A new model for introducing undergraduate biology students to energy budgets
- P3-222** Whitenack LB; Allegheny College
Insights from a five-year partnership between Allegheny College and local STEM teachers
- P3-223** Price SA, Larouche O, Friedman ST, Corn KA, Wainwright PC, Martinez CM; Clemson University, University of California Davis
A practical guide to implementing a quantitative specimen-based classroom undergraduate research experience
- P3-224** Kane EA; Georgia Southern University
On designing and implementing a new course as a new professor
- P3-225** Garner AM, Ramer AL, Niewiarowski PH; University of Akron
A Sticky Situation: Anole Adhesive Performance as an Inquiry-based Learning Exercise in an Introductory Biology Course
- P3-226** Silverthorn DU; University of Texas at Austin
Teaching Epithelial Transport as a Core Concept in Physiology
- P3-227** Chang ML, Abalusi D, McFarlane DA, Schmitz L; Claremont McKenna, Scripps, and Pitzer Colleges
Exploring the Tempo of Eye Evolution through a Web Interface Application
- P3-228** McAlister JS, Prestwich KN; College of the Holy Cross
A liberal arts approach to introductory biology: Introductory sequence that gives full time to modern organismal biology
- P3-229** Calle E, Schenker E, Duprez D, Myers M, Lee V, Gilchrist SL; New College of Florida
Adding STREAM to a Study Abroad Program in Honduras
- P3-230** Hoese WJ, Burnaford JL; Cal State Univ Fullerton
Southern California Ecosystems Research Program: A Year-round Program Fostering Undergraduate Ecology Research
- P3-231** Krumm JL, Shea EK, Woods JL; Widener University, Delaware Museum of Natural History
Integrating Digitized Natural History Collections into Course-based Undergraduate Research Experiences
- P3-232** Hebert AK, Mineo PM, Bennett KF, Ksiazek-Mikenas K, Marsh TM, Mellgren EM, Raimondi SL; Elmhurst College
Incorporating Vision and Change at Elmhurst College: a Departmental Approach
- P3-233** Arrez SA, Arango K, Ferrigno A, Gidmark NJ; Knox College
Impacts of a fin whale skeleton in teaching Art and Biology courses at an undergraduate-only college

Rising temperatures and climate change

- P3-234** Johnstone JB, Rahman MS; University of Texas Rio Grande Valley
Impacts of rising temperature on gonadal functions, heat shock protein expression, cellular apoptosis, and body fluid conditions in Atlantic sea urchin
- P3-235** Shllki NJ, Powers DR; George Fox University
Do Hummingbirds Select Perch Microclimates to Maximize Their Ability to Dissipate Heat?
- P3-236** Manzi S, Macrander J, Frias A, Krantz J; Florida Southern College
A Comparative Analysis of Differentially Expressed genes from a stress response to increased water temperatures between sea anemones *Exaiptasia pallida*, *Diadumene lineata*
- P3-237** Ayala AN, Chamberlain C, Holbrook NM; University of Texas at Austin, Harvard University
Temperate forests! How climate change affects growth and phenology

- P3-238** Bonfoey AM, Padda SS, Stahlschmidt ZR; U Pacific Effects of Spatiotemporal Variation in Temperature and Water Availability on a Riparian Insect Community
- P3-240** Cahill AE, Breen C, Stander R, Jost S, Hernandez R; Albion College Seasonal differences dominate spatial ones in an inland salt marsh community
- P3-241** Zinn D, Connor C, Watson CM; Midwestern State University Indications of stress in *Anolis oculatus* and *Anolis cristatellus* populations two years after Hurricane Maria
- P3-242** Clardy TR, Thomas BK, Das PB, Al-Nuwairah MA, Heinle MJ, Hikmawan TI, Prihartato PK, Abdulkader KA, Qurban MA; King Fahd University of Petroleum and Minerals, Environmental Protection Department Optimal temperatures for common copepods in the Western Arabian Gulf
- P3-243** Alba JC, Onthank KL; Walla Walla University Predatory Behavior of *Octopus rubescens* in Response to Elevated Carbon Dioxide and Temperature

Complementary to S10: Melding Modeling and Morphology: integrating approaches to understand the evolution of form and function

- P3-244** Howell BK, Hagey TJ, Winchell KM; Mississippi University for Women, Washington University in St Louis Adapting to Urban Habitats: How Toe Pad Shape Varies in Puerto Rican Anoles
- P3-245** Upadhyay A, Stayton TC, Hagey TJ; Mississippi University for Women, Bucknell University Convergent Evolution in Toe Pad Shape Across Pad Bearing Lizards
- P3-246** Hennessey PJ, Streicher JW, Cox CL; Georgia Southern University, Natural History Museum London, Florida International University Evolution of skull morphology during diversification in specialist snakes
- P3-247** Donatelli CM, Sanders E, Polavaram T, Toner M, Pfiennenberger J, Tytell ED; University of Ottawa, Tufts University A Thousand Fibers: The Functional Morphology of Fish Skin Collagen Fibers
- P3-248** Turner M, Clardy T, Donatelli CM; University of Washington, King Fahd University of Petroleum, University of Ottawa Bits and Pieces: Using Fractals to Understand Complex Morphology
- P3-249** Rolfe S, Winchester J, Pieper S, Boyer D, Summers A, Maga M*; University of Washington, Duke University, Isomics Inc SlicerMorph: Retrieve, Visualize and Analyze 3D Morphology with Open-Source
- P3-250** Sajdah-Bey N, Wyman J, Srinivas A, Sallan L; University of Pennsylvania The Hydrodynamic Effects of Pectoral Fins Attached to Back of the Skull in Extinct Cartilaginous Fishes (Iniopterygians)
- P3-251** Turner M, Clardy T, Donatelli CM; University of Washington, King Fahd University of Petroleum, University of Ottawa Bits and Pieces: Using Fractals to Understand Complex Morphology
- P3-252** Levy MG; University of California Berkeley Modeling the Developmental Shape Transition in the Morphogenesis of Cowrie Shells
- P3-253** Storch JD, Hernandez LP; George Washington University Calibrating Empirical Estimates of Theoretical Morphospace: A Phylometricmorphospace Approach

Tuesday Schedule of Events

Events take place in the JW Marriott Austin, unless otherwise noted

EVENT

Speaker Ready Room
Registration
Coffee Break AM

TIME

7:00 AM – 10:00 AM
7:30AM – 2:30PM
9:30 AM – 10:30 AM

LOCATION

Room 405
Grand Ballroom Foyer
Grand Ballroom

SPECIAL LECTURE

Moore Lecture: Emily Graslie
Prehistoric Road Trip: Crafting a Story 2 Billion Years in the Making

3:45 PM – 4:45 PM

Salon 5

SYMPOSIUM ORAL PRESENTATIONS

S10: Melding Modeling and Morphology: integrating approaches to understand the evolution of form and function
Chairs: Lindsay Waldrop, Jonathan Rader

7:45 AM – 3:30 PM

Lone Star D

S11: Integrative comparative cognition: can neurobiology and neurogenomics inform comparative analyses of cognitive phenotype?
Chairs: Yuxiang Liu, Sabrina Burmeister

8:00 AM – 3:00 PM

Rooms 301-302

CONTRIBUTED PAPER ORAL PRESENTATIONS

MORNING

Session 107: Complementary to S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models, Part I

8:00 AM – 9:45 AM

Lone Star A

Session 108: Twist and Turn

8:00 AM – 9:45 AM

Lone Star B

Session 109: Molecular Mechanisms Underlying Physiology, Performance and Life History

8:00 AM – 10:15 AM

Lone Star C

Session 110: Mechanics of Leftovers: Bone, Gristle and Sinew

8:00 AM – 9:45 AM

Lone Star F

Session 111: Dealing with Damage

8:00 AM – 9:30 AM

Lone Star G

Session 112: Bitchin Bioindicators

8:00 AM – 10:00 AM

Lone Star H

Session 113: Sensory Biology - Navigation and Sensing

8:00 AM – 9:45 AM

Rooms 303-304

Session 114: Complementary to S8: Long Limbless Locomotors Over Land: The Mechanics and Biology of Elongate Limbless Vertebrate Locomotion

8:00 AM – 9:30 AM

Room 205

Session 115: Animal Movement

8:00 AM – 9:30 AM

Rooms 201-202

Session 116: Reproduction & Development - Hormonally Speaking

8:00 AM – 9:45 AM

Rooms 203-204

Session 117: Reproduction and Sensory Biology

8:00 AM – 9:45 AM

Brazos

Session 118: Evolutionary Morphology and Modularity

8:00 AM – 9:30 AM

Rooms 402-403

Session 119: Complementary to S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models, Part II

10:15 AM – 12:00 PM

Lone Star A

Session 120: Robot Chicken of the Sea

10:15 AM – 12:00 PM

Lone Star B

Session 121: Ionic and Osmotic Regulation: From Molecules to Organisms

10:30 AM – 12:00 PM

Lone Star C

Session 122: Into the Interstitial Matrix

10:15 AM – 12:00 PM

Lone Star F

Session 123: Growing Pains

10:00 AM – 12:00 PM

Lone Star G

Session 124: Huevos to Ninos-Larvae, Yolks and Hatching

10:30 AM – 11:45 AM

Lone Star H

Session 125: How Hormones Make Animals do What They do

10:15 AM – 11:45 AM

Rooms 303-304

Session 126: Social Communication and Competition

10:15 AM – 12:00 PM

Room 205

Session 127: "One Ant, One Bird, One Tree", Biodiversity

10:30 AM – 11:45 AM

Rooms 201-202

Session 128: Behavioural Phenotypes

10:15 AM – 11:45 AM

Rooms 203-204

Session 129: Shedding Light on Adaptation and Co-evolution

10:15 AM – 12:00 PM

Brazos

Session 130: Take a Bow for the New "Evolution"- Evolutionary and Population Biology

10:30 AM – 12:00 PM

Rooms 402-403

AFTERNOON

Session 131: Find Food, Eat or be Eaten	1:30 PM – 3:15 PM	Lone Star A
Session 132: Paddles, Fins and Schools: Variety in Swimming Tools	1:30 PM – 3:15 PM	Lone Star B
Session 133: Muscle Physiology and Function	1:30 PM – 3:15 PM	Lone Star C
Session 134: Biological Velcro	1:30 PM – 3:15 PM	Lone Star F
Session 135: Playing with Shape: Plasticity	1:30 PM – 3:15 PM	Lone Star G
Session 136: Mechanisms of Development	1:30 PM – 3:15 PM	Lone Star H
Session 137: Complementary to S9: Applied Functional Biology: Linking Ecological Morphology to Conservation and Management	1:30 PM – 3:15 PM	Rooms 303-304
Session 138: Courtship Communication	1:30 PM – 3:30 PM	Rooms 201-202
Session 139: On Not-So-Solid Ground	1:30 PM – 3:15 PM	Rooms 203-204
Session 140: Comparative Genomics, Proteomics, Cell Type Evolution	1:30 PM – 3:30 PM	Brazos

COMMITTEE AND BOARD MEETINGS

Executive Committee with 2020 Symposium organizers and ICB Editors/Associate Editors	7:00 AM – 9:00 AM	Room 401
Executive Committee Meeting	7:45 AM – 9:00 AM	Room 409
Public Affairs Committee	12:00 PM – 1:30 PM	Room 408
<i>IOB</i> Editorial Board Meeting	12:00 PM – 1:30 PM	Room 406

WORKSHOPS AND PROGRAMS

Student Postdoctoral Affairs Committee Workshop: Transitions in Science Careers	12:00 PM – 1:30 PM	Lone Star E
Workshop: Building Bridges from Genome to Phenome: Molecules, Methods and Models	12:00 PM – 1:30 PM	Room 401
Workshop: 3D Visualization and Morphometrics with SlicerMorph	12:00 PM – 3:30 PM	Rooms 502-503

SOCIAL EVENTS

Morning Run	6:00 AM	JW Marriott Lobby
Society-wide social in honor of students and post-docs	5:00 PM – 7:00 PM	Griffin Hall

Tuesday Program Symposia

Note: Presenter is first author unless noted by an asterisk (*).

7:45 AM – 3:30 PM		Symposium S10	Lone Star D
Melding Modeling and Morphology: integrating approaches to understand the evolution of form and function			
<i>Chairs: Lindsay Waldrop, Jonathan Rader</i>			
7:45 am	S10-0	Waldrop LD, Rader JA; Chapman University, UNC Chapel Hill	Introduction to Melding Modeling and Morphology
8:00 am	S10-1	Hebdon N, Ritterbush KA; University of Utah	Seeing Spirals: Evaluating the hydrodynamic effect of changes in spiraling morphology of ammonoids
8:30 am	S10-2	Anderson PSL; University of Illinois Urbana-Champaign	Keep It Simple Stupid: Using simple models to explore how physical laws influence the evolution of biomechanical systems across clades
9:00 am	S10-3	Battista NA; College of New Jersey	Fluid-structure interaction for the people!
9:30 am	Coffee Break		Grand Ballroom Foyer
10:00 am	S10-4	Dakin R, Segre PS, Berberi I, Altshuler DL; Carleton University, Stanford University, University of British Columbia	Multilevel analysis of maneuvering performance and morphology in hummingbirds
10:30 am	S10-5	Holzman R, Olsson K; Tel Aviv University	Using performance landscapes to understand adaptive diversification within fishes
11:00 am	S10-6	Muñoz MM, Anderson PSL, Hu Y, Patek SN, Camarillo H; Yale University, University of Illinois, Urbana-Champaign, Brown, Duke University	How Predictable and Correlated are Patterns of Form-Function Evolution?
11:30 am	Lunch Break		
1:00 pm	S10-7	Polly PD; Indiana University	The landscape of adaptive landscapes: trade-offs between performance surfaces in space and time
1:30 pm	S10-8	Rader JA, Mohammadi S, Hedrick TL, Waldrop LD; University of North Carolina, Chapman University	Modeling diversification and constraint in avian wing morphology
2:00 pm	S10-9	Salcedo MK, Hoffmann J, Donoughe S, Combes SA, Mahadevan L; Virginia Tech, Harvard University, University of Chicago, University of California Davis	What's in a vein? Using computational tools to explore wing diversity and functional consequences of venation patterns on hemodynamics
2:30 pm	S10-10	Waldrop LD, Mohammadi S, Rader JA, He Y; Chapman University, UNC Chapel Hill, University of North Texas	Using uncertainty quantification to infer physical constraints on the evolution of fluid-structure functional systems
3:00 pm	S10-11	Womack MC; National Museum of Natural History	Disentangling intrinsic and extrinsic factors underlying anuran postcranial skeleton evolution

8:00 AM – 3:00 PM		Symposium S11	Rooms 301-302
Integrative comparative cognition: can neurobiology and neurogenomics inform comparative analyses of cognitive phenotype?			
<i>Chairs: Yuxiang Liu, Sabrina Burmeister</i>			
8:00 am	S11-1	Burmeister SS, Liu Y; University of North Carolina, University of Texas Southwestern Medical Center	Hippocampal transcriptomes are associated with cognitive ability in two species of frog
8:30 am	S11-2	MacLean E, Gnanadesikan G, Bray E, Snyder-Mackler N; University of Arizona, Arizona State University	Dog Diversity as a Natural Experiment in Cognitive Evolution
9:00 am	S11-3	Ladage LD; Penn State Altoona	Reptiles: an evolutionarily important link in comparative cognition and neurobiology
9:30 am	Coffee Break		Grand Ballroom Foyer

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10:00 am	S11-4	Chittka L; Queen Mary University of London	The Mind of the Bee
10:30 am	S11-5	Audet JN; Rockefeller University Field Research Center	Comparative approaches for ecological and neurobiological correlates of innovation
11:00 am	S11-6	Leal M, Powell JB; University of Missouri	A Comparative Study of Behavioral Flexibility in <i>Anolis</i> Lizards
11:30 am	S11-7	Healy SD; University of St Andrews	Using Neural Activation to Understand Nest Building in Birds
12:00 pm	Lunch Break		
1:30 pm	S11-8	Liu Y; University of Texas Southwestern Medical Center	The Era of Single-Cell Sequencing: Lessons from Comparative Cognition of Model Organism
2:00 pm	S11-10	Burmeister SS; University of North Carolina	Integrative Comparative Cognition
2:30 pm	S11-11	Bingman VP; Bowling Green State University	Avian Spatial Navigation and the Hippocampus: Can Diversity in Behavioral Mechanisms Guide Searches for a Genetics of Cognition?

Tuesday Program Morning Sessions

Note: Presenter is first author unless noted by an asterisk (*).

8:00 AM – 9:45 AM **Session 107** **Lone Star A**

Complementary to S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models, Part I

Chairs: Richelle Tanner, Nicholas Teets

8:00 am	107-1	Weaver RJ, Gonzalez B, Santos SR, Havird JC; University of Texas Austin, Hawaii Baptist Academy, Auburn University	How does a shrimp become red? From molecules to putative genes underlying variation in red carotenoid coloration of <i>Halocaridna rubra</i>
8:15 am	107-2	Dixon G, Matz MV; University of Texas at Austin	Three-way genomic characterization (molecular evolution, gene expression, and DNA methylation) of the key morphological innovation of the coral genus <i>Acropora</i>
8:30 am	107-3	Zhao X, Million W, Kenkel C; University of Southern California	Gene expression noise its role in coral responses to environmental variation
8:45 am	107-4	Matoo OB, Montooth KL; University of Nebraska-Lincoln	Ethanol, Flies and Metabolism: Linking Genotypes to Phenotypes
9:00 am	107-5	Tanner RL, Gleason LU, Dowd WW; Washington State Univ, Sacramento State Univ	Pathway-Dependent Patterns of Gene and Protein Expression Variation Exposed by Thermal Stress in the Intertidal Mussel
9:15 am	107-6	Tomanek L, May M, Vasquez C, Todgham A; California Polytechnic State University, Univ California Davis	From Cellular Omics to Phenomics: The Role of Sirtuins in the Cellular Stress Response
9:30 am	107-7	Teets NM, Dalrymple EG, Hillis MH, Lee RE, Denlinger DL; University of Kentucky, Miami University, Ohio State University	To Freeze or Not to Freeze: Cold Tolerance Strategies in an Antarctic Midge
9:45 am	Coffee Break		Grand Ballroom Foyer

8:00 AM – 9:45 AM **Session 108** **Lone Star B**

Twist and Turn

Chair: Frank Fish

8:00 am	108-1	Goerig E, DiSanto V, Wainwright DK, Castro-Santos T, Akanyeti O, Liao J, Lauder GV; Harvard University, Stockholm University, Yale University, USGS Leetown Science Center, Aberystwyth University, University of Florida	Comparative Undulatory Kinematics in Swimming Fishes: Rethinking Swimming Modes
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8:15 am	108-2	<i>Akanyeti O, Fetherstonhaugh S; Aberystwyth University</i>	A kinematic chain model to quantify undulatory locomotion in animals and robots
8:30 am	108-3	<i>Thandiackal R, Lauder GV; Harvard University</i>	Turning in Zebrafish: Measuring Body Pressure, Torque, and Work During Spontaneous Turns
8:45 am	108-4	<i>Downs AM, Kolpas A, Block BA, Fish FE; West Chester University, Stanford University</i>	Turning Performance by Bluefin Tuna: Novel Mechanism for Rapid Maneuvers with a Rigid Body
9:00 am	108-5	<i>Segre PS, Goldbogen JA; Stanford University</i>	A computational framework for quantifying the maneuvering performance of free-swimming orqual whales
9:15 am	108-6	<i>Leahy AL, Fish FE, Kerr SJ, Leftwich MC; West Chester University, George Washington University</i>	Value of the California Sea Lion (<i>Zalophus californianus</i>) Hindflippers during Porpoising and Turning Maneuvers
9:30 am	108-7	<i>Fish FE, Leahy AM, Kulkarni AA, Leftwich MC; West Chester University, George Washington University</i>	Hydrodynamics of a Crenelated Delta Wing Design of the Hindflippers of the California Sea Lion
9:45 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 10:15 AM Session 109

Lone Star C

Molecular Mechanisms Underlying Physiology, Performance and Life History

Chairs: Rachel Davis, Kent Edmonds

8:00 am	109-1	<i>Bertucci EM, Parrott BB; University of Georgia</i>	Characterization of the Age-Related DNA Methylome and Development of an Epigenetic Age Predictor in Medaka (<i>Oryzias latipes</i>)
8:15 am	109-2	<i>Zikeli S, Yamada K, Yap K, Zhang Y, Kiaris H, Hood W; Auburn University, University of South Carolina</i>	Shy and Stressed? Correlations Between Corticosterone Level, Unfolded Protein Response, and Animal Personality
8:30 am	109-3	<i>Davis RL, Cristol DA, Heidinger BJ, Kittilson J, Swaddle JP; William & Mary, North Dakota State University</i>	Does lifetime methylmercury exposure impact telomere length in various organs within the zebra finch?
8:45 am	109-4	<i>Heine KB, Justyn NM, Hill GE, Tucker VL, Jung D, Pollock B, Hood WR; Auburn University</i>	Modeling Mitochondrial Behavior and Morphology from TEM Micrographs of Copepod Myocytes Following Ultraviolet Irradiation
9:00 am	109-5	<i>Mackessy SP; University of Northern Colorado</i>	A little variety goes a long way: Diversification of three-finger toxins in rear-fanged snake venoms
9:15 am	109-6	<i>Edmonds KE, Gibson L, Roederer L; Indiana University Southeast</i>	Corticosterone and Estradiol Regulation of Gastrointestinal (GI) Development and Reproduction in the Marsh Rice Rat (<i>Oryzomys palustris</i>)
9:30 am	109-7	<i>Titon Jr. B, Titon SCM, Assis VR, Barsotti AMG, Teixeira RV, Gomes FR; University of São Paulo</i>	Time-Related Inflammatory Response in <i>Rhinella diptycha</i> Toads
9:45 am	109-8	<i>Vandepas LE, Stefani C, Traylor-Knowles N, Browne WE, Goetz FW, Lacy-Hulbert A; National Oceanographic and Atmospheric Administration, Benaroya Research Institute, University of Miami, University of Washington</i>	Tick, Tick, Boom: Exploring diverse immune cell behaviors in ctenophores and oysters
10:00 am	109-9	<i>Klumpen AML, Sanders SM, Cartwright P; University of Kansas Lawrence, University of Pittsburgh School of Medicine</i>	Hazardous Hydroids of Hydractinia: Variation in venom expression and nematocyte distribution in functionally distinct tissues of a hydractiniid hydrozoan
10:15 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:45 AM Session 110

Lone Star F

Mechanics of Leftovers: Bone, Gristle and Sinew

Chairs: Hila Tzipora, Mason Dean

8:00 am	110-1	<i>Williams KL, Evans KM, Simons AM; University of Minnesota, Brown University</i>	The morphology of tooth replacement in Salariin Combtooth Blennies (Blenniiformes: Blenniidae: Salariini)
8:15 am	110-2	<i>Zack EH, Smith SM, Angielczyk KD; University of Chicago, Field Museum of Natural History</i>	Zoo Versus Wild: Trabecular Bone Architecture in Captive and Wild Xenarthra

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8:30 am	110-3	<i>Ingle DN, Porter ME; Florida Atlantic University</i>	Cetacean vertebral trabecular bone mechanical properties and structure vary among swimming modes and diving behaviors
8:45 am	110-4	<i>Chase HT, Tobalske BW; University of Montana</i>	Bird to the Bone: Functional Adaptation in the Avian Wing
9:00 am	110-5	<i>Dean MN, Blumer M, Gualda E, Chaumel J, Seidel R, Marsal M, Omelon S; MPIKG</i>	Cartilage canals in ray skeletons: Morphology, homology and putative role in mineralization
9:15 am	110-6	<i>Chaumel J, Schotte M, Bizzarro J, Zaslansky P, Fratzl P, Baum D, Dean M; MPIKG, ZUSE, UCSC, Charité Hospital</i>	Are the cells in stingray mineralized cartilage performing the roles of bone cells? Quantitative analysis of the lacuno-canalicular network in stingray tesserae
9:30 am	110-7	<i>Mossor AM, Austin BL, Avey-Arroyo JA, Butcher MT; Youngstown State University, Sloth Sanctuary of Costa Rica</i>	Are sloths horses hanging upside down?: Suspensory adaptations of sloth flexor tendons
9:45 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:30 AM **Session 111** **Lone Star G**

Dealing with Damage

Chairs: Andrew Mountcastle, Vivek Prakash

8:00 am	111-1	<i>Gawne R, Levin M; Tufts University</i>	Planarian Head Shape Control: Regeneration Recapitulates Phylogeny
8:15 am	111-2	<i>Prakash VN, Bull MS, Prakash M; Stanford University</i>	Motility induced fractures reveal a ductile to brittle crossover in the epithelial tissues of <i>Trichoplax adhaerens</i>
8:30 am	111-3	<i>Mountcastle AM, Ahlholm PD, Stone I, Federico P, Nixon E, Johnson N; Bates College</i>	Effects of wing size and wingbeat frequency on wing wear in bumblebees
8:45 am	111-4	<i>Combes SA, Gagliardi SF, Wargin AH; UC Davis</i>	Wing damage isn't all bad for bumblebees: Asymmetric damage impairs maneuverability, but symmetric damage improves stability
9:00 am	111-5	<i>Kruppert S, Chu F, Stewart MC, Schmitz L, Summers AP; Friday Harbor Laboratories, University of Washington, Scripps College</i>	En Garde! The poachers' body armor is no show-off but a heavy defensive trait.
9:15 am	111-6	<i>Van Wassenbergh S, Böhmer C, Abourachid A; Universiteit Antwerpen, Muséum National D'Histoire Naturelle</i>	Analysis of the Shock Absorption Paradox in Woodpeckers
9:30 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 10:00 AM **Session 112** **Lone Star H**

Bitchin Bioindicators

Chair: Travis Wilcoxon

8:00 am	112-1	<i>Wilcoxon TE, Spence JM*; Millikin University</i>	Effects of cypermethrin on neurophysiology, development, and behavior of Cuban treefrog (<i>Osteopilus septentrionalis</i>) and American bullfrog (<i>Lithobates catesbeiana</i>) tadpoles.
8:15 am	112-2	<i>Marbach S, Xu W; Texas A&M University Corpus Christi</i>	The Toxic Effects of Nanoplastic Particles on Fish Embryonic Development
8:30 am	112-3	<i>Bain SR, Lower SE; Bucknell University, Bucknell University</i>	Using Environmental Factors to Predict the Emergence Patterns of Firefly Species in Pennsylvania
8:45 am	112-4	<i>Jones CLC, Huber RJ, Kim W, Prater C, Shafer ABA, Wagner ND, Frost PC; Trent University, Loughborough University, Baylor University</i>	Animal co-limitation by calcium and phosphorus revealed through experimental nutrigenomics
9:00 am	112-5	<i>Fetke JK, Flick RW, Martinson JW, See MJ, Pilgrim EM, Biales AD; University of Cincinnati, US EPA</i>	Investigating the effects of DNA methylation on EE2 induction of Estrogen Receptor alpha gene expression in fathead minnows (<i>Pimephales promelas</i>)
9:15 am	112-6	<i>Steele AN, Moore PA; Bowling Green St Univ, Univ of Michigan Biological Station</i>	Behavioral consequences of per- and poly-fluorinated alkyl substances (PFAS) exposure on Northern Michigan crayfish species

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9:30 am	112-7	Zahor DL, Glynn KJ, Chiparus S, Cornelius JM; Eastern Michigan University, Oregon State University	Bioaccumulation of lead (Pb) in songbirds following the Flint, Michigan drinking water crisis
9:45 am	112-8	Leigh SC, Paig-Train M; California State University Fullerton	The catch of the day is...plastic? The ingestion of microplastics by zooplankton in southern California
10:00 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:45 AM **Session 113** **Rooms 303-304**

Sensory Biology - Navigation and Sensing

Chair: Jamie LocPort

8:00 am	113-1	Fitak RR, Wheeler BR, Naisbett-Jones LC, Scanlan MM, Noakes DLG, Johnsen S; University of Central Florida, Duke University, University of North Carolina, Oregon State University	Time-dependent Characterization of Candidate Magnetoreception Genes in the Brain of Chinook Salmon
8:15 am	113-2	Bressman NR, Hill JE, Ashley-Ross MA; Wake Forest University, University of Florida	Why (and how) did the catfish cross the road? Chemoreceptive terrestrial orientation and amphibious natural history of the invasive walking catfish (<i>Clarias batrachus</i>)
8:30 am	113-3	Granger J, Walkowicz L, Fitak RR, Johnsen S; Duke University, Adler Planetarium	Gray Whales Strand More Often on Days With Increased Levels of Atmospheric Radio Frequency Noise
8:45 am	113-4	McKee AA, Soto AP, Chen P, McHenry MJ; University of California Irvine	The role of vision and flow sensing in schooling behavior
9:00 am	113-5	Mhatre N; Western University	Active amplification in tree cricket hearing
9:15 am	113-6	Simonitis LE, Marshall CD; Texas A&M University at Galveston	A Natural Occurring Shark Repellent: Ink has a Negative Effect on Shark Swimming Behavior
9:30 am	113-7	LocPort JK, Daniel TL, Willis MA; University of Washington, Case Western Reserve University	Agent-based Models of Insect Odor Tracking Based on Behavior Experiments
9:45 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:30 AM **Session 114** **Room 205**

Complementary to S8: Long Limbless Locomotors Over Land: The Mechanics and Biology of Elongate Limbless Vertebrate Locomotion

Chair: Christopher Kenaley

8:00 am	114-1	Jurestovsky DJ, Usher L, Astley HC; University of Akron	Propulsion via vertical undulation in snakes
8:15 am	114-2	Kaba AK, Rieser JM, Paez VM, Astley HC, Goldman DI; Georgia Tech, Akron University	Amplitude Modulation in Sidewinding Locomotion Driven by Contact Sensing Facilitates Movement in Heterogeneous Environments
8:30 am	114-3	Rieser JM, Li TD, Goldman DI, Mendelson III JR; Georgia Tech, CUNY, Zoo Atlanta	Evolutionary convergence in nanostructural adaptations in sidewinding viperid snakes
8:45 am	114-4	Danforth SM, Larson JG, Davis Rabosky AR, Moore TY; University of Michigan	A Kinematic Analysis of <i>Micrurus</i> Coral Snake Thrash Duration and Curvature Enables Quantitative Characterization of Non-Locomotory Behavioral Motion
9:00 am	114-5	Paez L, Melo K, Ijspeert AJ; EPFL	The advantage of gait of mosquito larvae over undulatory swimming
9:15 am	114-6	Kenaley CP, Kraemer K, Kunkle H; Boston College	Revisiting the Kinematic Parameters that Define Eel-like Swimming
9:30 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:30 AM **Session 115** **Rooms 201-202**

Animal Movement

Chair: Russell Wyeth

8:00 am	115-1	Uehling JJ, Injaian AS, Taff CC, Winkler DW, Vitousek MN; Cornell Univ, Cellular Tracking Technologies	The relationship between glucocorticoids and movement behavior during breeding in a free-living passerine
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8:15 am	115-2	<i>Majoris JE, Foretich MA, Hu Y, Nickles KR, Di Persia CL, Chaput R, Schlatter E, Webb JF, Paris CB, Buston PM; Boston University, King Abdullah University of Science and Technology, University of Miami, University of Rhode Island, Boston College</i>	Neon Goby Larvae have Sufficiently Developed Sensory Systems and Swimming Abilities to Orient Directionally Beginning Shortly After Hatching
8:30 am	115-3	<i>Spierer AN, Mossman JA, Rand DM; Brown University</i>	Dissecting the genetic modifiers of flight performance using the Drosophila Genetic Reference Panel
8:45 am	115-4	<i>Wyeth RC, Ucciferri C, Youssef K, Stevens H; St Francis Xavier University</i>	Environment- Dependent Switching of Odour-Based Navigation Strategies by the Freshwater Gastropod, <i>Lymnaea stagnalis</i>
9:00 am	115-5	<i>Fuiman LA, Williams TM, Davis RW; University of Texas at Austin, University of California Santa Cruz, Texas A&M University - Galveston</i>	Underwater Navigation by Weddell Seals (<i>Leptonychotes weddellii</i>) in the Antarctic Fast-Ice Environment
9:15 am	115-6	<i>Kamran M, Pollock AMM, Dittman AH, Noakes DLG; Oregon State University, NOAA, Oregon Hatchery Research Center</i>	Homeward Bound: What the Salmon Nose Knows?
9:30 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:45 AM **Session 116** **Rooms 203-204**

Reproduction & Development - Hormonally Speaking

Chairs: Andrea Liebl, Aubrey Converse

8:00 am	116-1	<i>Martin RJ, Kruger MC, MacDougall-Shackleton SA, Sherry DF; Western University</i>	Temperature as a supplementary cue in the reproductive timing of the Black-capped chickadees (<i>Poecile atricapillus</i>)
8:15 am	116-2	<i>Assis BA, Avery JD, Tylan C, Earley RL, Langkilde T; Penn State, University of Alabama</i>	Honest Signaling, Sexual Conflict and Female Ornamentation: an Undesired Quality Signal?
8:30 am	116-3	<i>Gifford ME, Robinson CD; University of Central Arkansas, University of Virginia</i>	T3 as a source of hormonally-mediated maternal effects in a lizard
8:45 am	116-4	<i>Liebl AL, Duprey ER, Russell AF; University of South Dakota, University of Exeter</i>	What is the relationship between developmental stress hormones and adult helping behavior in a cooperatively breeding bird?
9:00 am	116-5	<i>Farrar VS, Viernes RC, Flores L, Calisi RM; University of California Davis</i>	Prolactin maintains a parental phenotype in both sexes of the biparental rock dove
9:15 am	116-6	<i>Converse A, Thomas P; University of Texas Marine Science Institute</i>	Female ZIP9-Knockout Zebrafish Exhibit Abnormal Egg Activation and Reduced Fecundity
9:30 am	116-7	<i>Whelan S, Hatch SA, Benowitz-Fredericks ZM, Chastel O, Elliott KH; McGill University, Institute for Seabird Research and Conservation, Bucknell University, CNRS–Université de La Rochelle, France</i>	Experimental effects of energy status on reproductive hormones, movement, and laying phenology of female black-legged kittiwakes
9:45 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:45 AM **Session 117** **Brazos**

Reproduction and Sensory Biology

Chair: Brooke Vetter

8:00 am	117-1	<i>Bastiaans E, Javalay N, O'Loughlin C, McCormick L, Wegrzyn P; SUNY Oneonta, Portland State University</i>	Can I Buy You a Drink? The Effect of Male Hydration Status on Male Mating Behavior and Female Life History in Bean Beetles
8:15 am	117-2	<i>Brown TA, Tsurusaki N, Burns M; UMBC, Tottori University</i>	Genotyping-By-Sequencing via 3RAD Capture to Determine Reproductive Mode in a Facultative Parthenogen
8:30 am	117-3	<i>Balebail S, Sisneros JA; University of Washington</i>	Relationship of advertisement call parameters with phenotypic traits in "singing" male plainfin midshipman
8:45 am	117-4	<i>Nowicki S, Caves EM, Schweikert LE, Green PA, Taboada C, Zippel MN, Peters S, Johnsen S; Duke University, University of Exeter, Florida International University</i>	Carotenoid Concentration in Avian Retinal Oil Droplets Correlates with Color Discrimination Across a Perceptual Category Boundary

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9:00 am	117-5	<i>Florkowski MF, Yorzinski JL; Texas A&M University</i>	D2 Dopamine Receptor Activation Induces Aggression in Male House Sparrows (<i>Passer domesticus</i>)
9:15 am	117-6	<i>Bush JM, Ellison M, Simberloff D; University of Tennessee Knoxville</i>	Are brown anoles bullies? Insights into interactions between an invasive and native lizard species
9:30 am	117-7	<i>Vetter BJ, Sisneros JA; University of Washington</i>	The swim bladder enhances sound pressure sensitivity and bandwidth of the lagena in female plainfin midshipman (<i>Porichthys notatus</i>)
9:45 am	.....	Coffee Break	 Grand Ballroom Foyer

8:00 AM – 9:30 AM **Session 118** **Rooms 402-403**

Evolutionary Morphology and Modularity

Chair: Todd Oakley

8:00 am	118-2	<i>Fabre AC, Bardua C, Clavel J, Felice RN, Bonnel J, Blackburn D, Stanley E, Streicher J, Goswami A; NHM, UCL, University of Florida</i>	Morphological evolution of the head of Caudata is correlated to rapid diversification and dispersion during warming events
8:15 am	118-3	<i>Zelditch ML, Swiderski DL; University of Michigan, Ann Arbor</i>	An Incisor Runs Through It I. Variational modularity of the squirrel mandible
8:30 am	118-4	<i>Swiderski DL, Zelditch ML; University of Michigan, Ann Arbor</i>	An Incisor Runs Through It II. Evolutionary modularity of the squirrel mandible
8:45 am	118-5	<i>Conith AJ, Hope S, Liu M, Albertson RC; UMass Amherst</i>	The Developmental and Functional Origins of a Key Feeding Innovation in the Cichlid Pharyngeal Jaw
9:00 am	118-6	<i>Gómez-Bahamón V, Chen E, Assis M, Heming N, Marini M, Tuero D, Bates J; University of Illinois, Field Museum, University of Brasília, Universidad de Buenos Aires</i>	Egg Shape and Flight Capacity in Birds Implementing a Novel Geometric Model
9:15 am	118-7	<i>Martinez CM, Friedman ST, Corn KA, Larouche O, Price SA, Wainwright PC; University of California, Davis, Clemson University</i>	Large Mouths and Tapered Tails: Morphological Disparity Increases with Ocean Depth
9:30 am	.....	Coffee Break	 Grand Ballroom Foyer

10:15 AM – 12:00 PM **Session 119** **Lone Star A**

Complementary to S7: Building Bridges from Genome to Phenome: Molecules, Methods and Models, Part II

Chairs: Todd Oakley, Billie Swalla

10:15 am	119-1	<i>Vazquez-Medina JP, Allen KN, Torres-Velarde JM, Lam EK; University of California, Berkeley</i>	Primary tissue culture provides a system for functional genome-to-phenome investigations in marine mammals
10:30 am	119-2	<i>Musser JM, Schippers K, Nickel M, Kohn A, Moroz L, Arendt D; European Molecular Biology Laboratory, University of Florida</i>	Whole-body single-cell RNA sequencing reveals neural elements in a sponge
10:45 am	119-3	<i>Crawford K, Albertin CB, Koenig KM, Rosenthal J; St Mary's College of Maryland, Marine Biological Laboratory, Harvard University</i>	CRISPR-Cas9 Genome Editing in the Cephalopod <i>Doryteuthis (Loligo) pealeii</i>
11:00 am	119-4	<i>Swalla BJ, Fodor A, Lowe EK, Stolfi A; Friday Harbor Laboratories, University of Washington, Georgia Institute of Technology</i>	Tailless Molgulid Ascidians express Larval Pseudogenes
11:15 am	119-5	<i>Ragland GJ, Dowle EJ, Powell THQ, Feder JL, Hahn DA; University of Colorado Denver, University of Otago, State University of New York, University of Notre Dame, University of Florida</i>	Genome-wide variation and transcriptional changes in diverse developmental processes underly the rapid evolution of seasonality in a temperate fly
11:30 am	119-6	<i>Lenz PH, Roncalli V, Cieslak MC, Castelfranco AM, Hartline DK; University of Hawaii at Manoa, University of Barcelona</i>	Organism-Environment Interactions in Marine Zooplankton: Transcriptomic Characterization of a Copepod Phenome

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11:45 am	119-7	<i>Oakley TH, Hensley NM, Ellis EA, Goodheart JA, Varney RM, Gerrish GA, Torres E; UCSB, U Alabama, UW-Madison, CSULA</i>	From Chaos Came Beauty: The Origin of a Novel Bioluminescence Gene with Ecosystem Impacts
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM Session 120 Lone Star B

Robot Chicken of the Sea

Chair: George Lauder

10:15 am	120-1	<i>Lauder GV, Wainwright DK, DiSanto V, White C, Zhu J, Bart-Smith H; Harvard Univ, Univ Virginia</i>	Tuna Robotics: Exploring the High-frequency Performance Space of Swimming Fishes
10:30 am	120-2	<i>White CH, Lauder GV, Bart-Smith H; University of Virginia, Harvard University</i>	Tuna robotics: impact of body flexibility and fin-fin interactions on swimming performance of a new tuna-inspired robotic platform
10:45 am	120-3	<i>Zhu JJ, Wainwright DK, Lauder GV, Bart-Smith H; University of Virginia, Harvard University</i>	Tuna robotics: design and control of an autonomous underwater vehicle inspired by tuna
11:00 am	120-4	<i>Wang J, Qi Z, Han P, Dong H, Wainwright DK, Lauder GV, Zhu J*, Bart-Smith H; University of Virginia, Harvard University</i>	Tuna robotics: Computational FSI optimization of a tuna tail-informed propulsor with high efficiency
11:15 am	120-5	<i>Howe SP, Astley HC; University of Akron</i>	Bio-inspired Control Algorithms Integrating Steady Swimming and Maneuvering in Fish Robots
11:30 am	120-6	<i>Robinson TL, Diaz K, Ozkan-Aydin Y, Wan KY, Goldman DI; Georgia Tech, University of Exeter</i>	Gait dynamics of a quadriflagellate robophysical model
11:45 am	120-7	<i>Ford MP, Santhanakrishnan A; Oklahoma State University</i>	Too close for comfort: importance of inter-appendage spacing in metachronal swimming performance
12:00 pm	Lunch Break		

10:30 AM – 12:00 PM Session 121 Lone Star C

Ionic and Osmotic Regulation: From Molecules to Organisms

Chairs: Charles Booth, Kady Lyons

10:30 am	121-1	<i>Pipes BL, Nishiguchi MK; New Mexico State University</i>	mCherry-pHLuorin Tagging Illuminates the Role of Light Organ pH Modulation in the <i>Vibrio fischeri-Euprymna scolopes</i> Symbiosis
10:45 am	121-2	<i>Orr SE, Buchwalter DB; North Carolina State University</i>	It's All About the Fluxes: Temperature Influences Ion Transport and Toxicity in Aquatic Insects
11:00 am	121-3	<i>Starling JA, Guatam S, Howard LJ, Madsen SS, Tipsmark CK; University of Arkansas, University of Southern Denmark</i>	Salinity effects on water and salt transport components in the intestine of Atlantic killifish (<i>Fundulus heteroclitus</i>)
11:15 am	121-4	<i>Gillen CM, Piermarini PM, Romero MF; Kenyon College, Ohio State University, Mayo Clinic</i>	Electrogenic Sodium Transport by Insect Cation-Chloride Cotransporters?
11:30 am	121-5	<i>Lyons K, Wynne-Edwards KE; Georgia Aquarium, University of Calgary</i>	Legacy PCB Contamination Negatively Impacts Osmoregulatory Biomarkers in Pregnant Stingrays and their Embryos
11:45 am	121-6	<i>Ellis LV, Bollinger RJ, Weber HM, Madsen SS, Tipsmark CK; University of Arkansas, University of Arkansas and University of Southern Denmark</i>	Aquaporin Expression in the Gill of Japanese Medaka
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM Session 122 Lone Star F

Into the Interstitial Matrix

Chairs: Molly Gabler, Marianne Alleyne

10:15 am	122-1	<i>Gignac PM, Kley NJ; Oklahoma State University Center for Health Sciences, Stony Brook University</i>	At the nexus of iodine staining duration and specimen size: repeated-measures study to improve visualization of vertebrate soft-tissue anatomy using diceCT imaging
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10:30 am	122-2	<i>Taylor MS, O'Brien HD, Gignac PM; Oklahoma State University Center for Health Sciences</i>	Shrinkage after swimming in iodine? Evaluating the use of hydrogel stabilization for reinforcing nervous tissues before iodine diffusion
10:45 am	122-3	<i>Smith MG, Westgate AJ, Koopman HN; Harvard University, UNC Wilmington</i>	Adipose tissue in diving animals: measuring the potential for gas exchange
11:00 am	122-4	<i>Jankauski MA; Montana State University</i>	On the Nonlinear Mechanics of the Honeybee Thorax
11:15 am	122-5	<i>Wei L, Reiter KE, McElrath TC, Dunn AC, Alleyne M*; University of Illinois at Urbana-Champaign, Illinois Natural History Survey</i>	The role of cuticular diffraction gratings in beetle iridescence, wetting and friction interactions
11:30 am	122-6	<i>Davis AL, Nijhout HF, Johnsen S; Duke University</i>	Convergent evolution of ultra-black butterfly scales
11:45 am	122-7	<i>Güell BA, Caldwell MS, Warkentin KM; Boston University, Gettysburg College, Boston University</i>	Treefrog egg-clutch biomechanics and their effect on embryo escape-hatching behavior

12:00 pm **Lunch Break**

10:00 AM – 12:00 PM **Session 123** **Lone Star G**

Growing Pains

Chair: *Louis Zachos*

10:00 am	123-1	<i>Zachos LG; University of Mississippi</i>	Matrix Models for Logistic Plate Growth in Sea Urchins
10:15 am	123-2	<i>Regan MC, Ashley-Ross MA; Wake Forest University</i>	Morphological Scaling and Ontogeny of Shark Caudal Fins
10:30 am	123-3	<i>Marce-Nogue J, Liu J; University at Buffalo</i>	Testing an Isometric Ontogenetic Model for Vibrations of Weberian Ossicles in Zebrafish
10:45 am	123-4	<i>Olroyd SL, Sidor CA; University of Washington, Burke Museum</i>	Allometry and porosity of the novel sound reception structure of chameleons
11:00 am	123-5	<i>Cheu AY, Bergmann PJ; Clark University</i>	Ontogenetic allometry of locomotor performance in basilisk lizards
11:15 am	123-6	<i>Green TL, Gignac PM; Oklahoma State University Center for Health Sciences</i>	Cassowary Casques are Lightning Rods for Speculation: Anatomical Development and Phenotypic Variation Clarifies Potential Biological Roles
11:30 am	123-7	<i>White HE, Tucker AS, Goswami A; Natural History Museum, King's College London</i>	Quantification of Suture Morphology in an Ontogenetic Framework across Laurasiatheria
11:45 am	123-8	<i>Graham ZG, Garde E, Heide-Jørgensen MP, Palaoro AV; Arizona State University, Greenland Institute of Natural Resources, Universidade Federal de São Paulo</i>	What is the Function of the Narwhal's Tusk? Insights from Morphology

12:00 pm **Lunch Break**

10:30 AM – 11:45 AM **Session 124** **Lone Star H**

Huevos to Ninos-Larvae, Yolks and Hatching

Chair: *Douglas Pace*

10:30 am	124-1	<i>Birch S, Plachetzki D; University of New Hampshire</i>	Investigating Sensory Integration and Settlement Responses to Sensory Stimuli in the Hydrozoan <i>Ectopleura crocea</i>
10:45 am	124-2	<i>Nguyen H, Hoang T, Hawkins D, Drechsler J, Nilsson P, Steiner B, Pernet B*; California State University Long Beach</i>	Are larvae of the sand dollar <i>Dendraster excentricus</i> food-limited in nearshore waters of southern California?
11:00 am	124-3	<i>Ellison A, Pace DA*; California State University Long Beach</i>	Protein metabolism and food-induced developmental plasticity during echinoid larval development
11:15 am	124-5	<i>Barkhouse JM, Newbrey JL, Newbrey MG; Columbus State University</i>	Laying-Sequence Variation in the Yolk Carotenoids of Eastern Bluebirds
11:30 am	124-6	<i>Newbrey JL, Love Q, Newbrey MG; Columbus State University</i>	Differences in Yolk Carotenoid Concentrations of Three Songbird Species Breeding in Nest Boxes in Georgia, USA

11:45 pm **Lunch Break**

10:15 AM – 11:45 AM Session 125

Rooms 303-304

How Hormones Make Animals do What They do

Chairs: Aurora Solla, Roslyn Dakin

10:15 am	125-2	Christiano BM, Howey CAF; University of Scranton, Penn State University	Timber rattlesnakes (<i>Crotalus horridus</i>) that move more often maintain higher baseline corticosterone levels
10:30 am	125-3	Solla AL, O'Rourke C, Anderson A, Renn SCP; Reed College	Secret's in the Sauce: Hormones and Behavior in <i>Julidochromis marlieri</i>
10:45 am	125-4	McMahon E, Youatt E, Braithwaite V, Cavigelli S; Pennsylvania State University	Stability of behavioral traits and associated physiology
11:00 am	125-5	Grace JK, Angelier F; Texas A&M University, Centre d'Etudes Biologiques de Chize	Post-natal Glucocorticoids Negatively Affect Adult Anti-predator Behavior in House Sparrows
11:15 am	125-6	Ryder TB, Dakin R*, Vernasco BJ, Evans BS, Horton BM, Moore IT; Smithsonian Institution, Carleton University, Virginia Tech, Millersville University	Testosterone modulates status-specific patterns of cooperation in a social network
11:30 am	125-7	Greville LJ, Pollock T, Decatanzaro D, Faure PA; McMaster University	Seasonal Variation in Estradiol Transfer Among Male and Female Big Brown Bats
11:45 am	Lunch Break		

10:15 AM – 12:00 PM Session 126

Room 205

Social Communication and Competition

Chair: Sarah Wofford

10:15 am	126-2	Westerman EL, Ernst DA, Sullivan TJ; University of Arkansas, Gloucester Marine Genomics Institute	The genetic basis of mate preference learning in <i>Bicyclus</i> butterflies
10:30 am	126-3	Wofford SJ; Jacksonville State University	Urine for a fight: Sex-based differences in crayfish contest signaling
10:45 am	126-4	Rocco AJ, Wofford SJ; Jacksonville State University	Battle of the Benthic: Studying Agonistic Interactions Between a Native and Invasive Crayfish Species
11:00 am	126-5	Earl AD, Kimmitt AA, Simpson RK, Yorzinski JL; Columbia University, Indiana University, University of Windsor, Texas A&M University	Female Ornamentation in a Lekking Bird: Bright Females Dominate
11:15 am	126-6	Buchinger TJ, Fissette SD, Brant CO, Li K, Johnson NS, Li W; Michigan State University, US Geological Survey's Hammond Bay Biological Station	A Pheromone Antagonist Liberates Female Sea Lamprey From a Sensory Trap
11:30 am	126-7	Jones MM, Nuñez CMV*; University of Florida Gainesville, University of Memphis	Rising up to the challenge of their rivals: mare behavior alters stallion response to opponent playback
11:45 am	126-8	Reed AJ, Wofford SJ; Jacksonville State University	Turn It Down! The Effects of Acoustic Stimuli on Contest Dynamics in Crayfish
12:00 pm	Lunch Break		

10:30 AM – 11:45 AM Session 127

Rooms 201-202

"One Ant, One Bird, One Tree", Biodiversity

Chair: James Waters

10:30 am	127-1	Goodman AM, Esposito LA; California Academy of Sciences	Spatial and Ecological Niche Partitioning in Congeneric Scorpions
10:45 am	127-2	Germeroth LM, Sumnicht TP, Verble RM; Missouri University of Science and Technology	Maintaining Biodiversity of Ant Communities in the Crocker Range, Malaysian Borneo
11:00 am	127-3	Waters JS; Providence College	Ants of Providence
11:15 am	127-4	Davis-Berg EC, Wilson BA, Arnold C, Almario-Kopp D; Columbia College Chicago, Liberty Public Schools, Prairie State College	Molluscs of Anderson County Prairies, a native tallgrass prairie in Eastern Kansas

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11:30 am	127-5	<i>Cerda PA, Crowe-Riddell J, Larson JG, Nagesan R, Callahan S, Rabosky DL, Davis Rabosky AR; University of Michigan</i>	Comparisons of Interspecific and Intraspecific Variation in Rear-Fanged Snake Venom Expression
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11:45 am **Lunch Break**

10:15 AM – 11:45 AM	Session 128	Rooms 203-204
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Behavioural Phenotypes

Chair: Anna Dornhaus

10:15 am	128-1	<i>Foquet B, Song H; Texas A&M University</i>	Behavioral and molecular reaction norms of locust phase polyphenism in a phylogenetic frame work
10:30 am	128-2	<i>Hellmann JK, Bensky M, Zielinski C, Anderson S, Bell A; University of Illinois, Urbana-Champaign</i>	The Evolution of Sex-Specific Paternal Effects in Threespined Sticklebacks
10:45 am	128-3	<i>Stein LR, Hoke KL; University of Oklahoma, Colorado State University</i>	Parental and personal experience with predation risk interact in shaping phenotypes in a sex-specific manner
11:00 am	128-4	<i>Minicozzi MR, Axlied E, Wilson T, Buck CL, Von Hippel FA; Minnesota State University Mankato, Northern Arizona University</i>	Sodium perchlorate causes behavioral changes in developing zebrafish larva
11:15 am	128-5	<i>Ison T, Charbonneau D, Waugh A, Linksvayer T, Dornhaus A; University of Arizona, Arizona State University, University of Pennsylvania</i>	The Effects of Aging: Task Allocation and Inactivity in Two Ant Species
11:30 am	128-6	<i>Dornhaus A, Kelemen EP, Rivera MD; University of Arizona, York University, University of Illinois at Urbana-Champaign</i>	Designed for Comparative Advantage: Body size, Division of Labor, and the Benefits of Worse Workers in Bumble Bees

11:45 am **Lunch Break**

10:15 AM – 12:00 PM	Session 129	Brazos
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Shedding Light on Adaptation and Co-evolution

Chair: Emily Kane

10:15 am	129-1	<i>Cohen HE, Kane EA; Georgia Southern University</i>	When the Expected Doesn't Happen: A Lack of Local Adaptation in Trinidadian Guppies
10:30 am	129-2	<i>St. John ME, Martin CH; University of California - Berkeley</i>	A tale of scales and snails: behaviorally mediated traits drive the evolution of novelty in a radiation of <i>Cyprinodon</i> pupfishes
10:45 am	129-3	<i>Justyn NM, Heine KB, Peteya JA, Hood WR, Shawkey MD, Wang B, Hill GE; Auburn University, John Carroll University, Ghent University</i>	Persistence of Carotenoids in the Red Eyespots of Copepods (<i>Tigriopus californicus</i>) on Carotenoid-free Diets
11:00 am	129-4	<i>Huie JM, Thacker C, Tornabene L; University of Washington, Natural History Museum of Los Angeles County</i>	Co-evolution of cleaning and feeding morphology in Caribbean and eastern Pacific gobies
11:15 am	129-5	<i>Coryell RL, Nishiguchi MK; New Mexico State University</i>	Temperature Adaptation Influences Environmental and Symbiotic Fitness in the Squid- <i>Vibrio</i> Mutualism
11:30 am	129-6	<i>Gould A, Fritts-Penniman A; California Academy of Sciences</i>	Shedding light on specificity: the phylogeography of a bioluminescent symbiosis
11:45 am	129-7	<i>Bracken-Grissom HD, Deleo DM, Porter ML, Iwanicki T, Sickles J, Frank TM; Florida International University, University of Hawai'i at Mānoa, Nova Southeastern University</i>	Evidence for Extraocular Photosensitivity in the Bioluminescent Organs of Deep-sea Shrimp

12:00 pm **Lunch Break**

Take a Bow for the New "Evolution"-Evolutionary and Population Biology

Chair: Charles Watson

10:30 am	130-1	<i>Cirino LA, Lenga SH, Miller CW; University of Florida</i>	Males with damaged weapons produce more offspring in non-competitive environments
10:45 am	130-2	<i>Buser TJ, Summers AP, Sidlauskas BL; Oregon State University, University of Washington, Friday Harbor Laboratories</i>	Stags of the Sea? Cranial Weapon Morphology in The Fish Subfamily Oligocottinae (Pisces; Cottoidea)
11:00 am	130-3	<i>Krider L, Halsey L, Yap KN, Williams TD*; Simon Fraser University, University of Roehampton</i>	Humans Get Fat on Fat Diets, Why Don't Birds?
11:15 am	130-4	<i>Masonjones HD, Rose E*, Elson J; University of Tampa</i>	Nocturnal surveys of seahorses, <i>Hippocampus erectus</i> , reveal increased densities and seasonal recruitment patterns
11:30 am	130-5	<i>Watson CM; Midwestern State University</i>	Comparative Ecology and Physiology of Anoles on Dominica
11:45 am	130-6	<i>Chinn SM, Beasley JC; University of Georgia</i>	Parental investment strategies in a highly polytocous species: maternal attributes and resource availability modulate litter size and sex ratio
12:00 pm	Lunch Break		

Tuesday Program Afternoon Sessions

Note: Presenter is first author unless noted by an asterisk (*).

Find Food, Eat or be Eaten

Chair: Bahniskha Dutta

1:30 pm	131-1	<i>Lessig EK, Nonacs PN; University of California Los Angeles</i>	Foraging choices, learning, and behavior across paths that vary in risk
1:45 pm	131-2	<i>Dutta B, Goodisman MAD, Goldman DI; Georgia Institute of Technology</i>	Prey and mound manipulation by fire ant collectives
2:00 pm	131-3	<i>Schwaner MJ, Freymiller GA, Clark RW, McGowan CP; University of Idaho, San Diego State University</i>	A heightened vigilance state alters mechanics of jump backs in kangaroo rats (<i>D. deserti</i>)
2:15 pm	131-4	<i>Talal S, Farington R, Harrison JF, Cease AJ; Arizona State University</i>	Diet Preference and Requirements Shift Substantially with Age in the South American Locust (<i>Schistocerca cancellata</i>)
2:30 pm	131-5	<i>Wargin AH, Combes SA; University of California Davis</i>	BEEhavior under pressure: Testing the effects of barometric pressure change on bumblebee foraging behavior
2:45 pm	131-6	<i>Reichert MS, Kulahci IG, Davidson GL, Quinn JL; Oklahoma State University, University College Cork, Cambridge University</i>	Scrounging Versus Learning Strategies in Foraging Songbirds
3:00 pm	131-7	<i>Erdmann JA; Oklahoma State University</i>	Aggressive anglers, seductive serpents, and titillating toads: a discussion of luring and prey manipulation strategies

Paddles, Fins and Schools: Variety in Swimming Tools

Chairs: James Townsend, Arvind Santhanakrishnan

1:30 pm	132-1	<i>Townsend JP, Gemmel BJ, Sutherland KR, Colin SP, Costello JH; Providence College, Marine Biological Laboratory, University of South Florida, University of Oregon, Roger Williams University</i>	Ink release and swimming behavior in an oceanic ctenophore, <i>Eurhamphaea vexilligera</i> Gegenbaur, 1856
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1:45 pm	132-2	<i>Daniels J, Osborn K, Aoki N, Havassy J, Mushegian N, Katija K; Monterey Bay Aquarium Research Institute, Smithsonian Institution</i>	A Midwater Polychaete on the Move: Swimming of <i>Tomopteris</i>
2:00 pm	132-3	<i>Santhanakrishnan A, Ford MP; Oklahoma State University</i>	(Un)synchronized rowing: importance of phase lag in metachronal swimming performance
2:15 pm	132-4	<i>Lucas KN, Lauder GV, Tytell ED; University of Michigan, Harvard University, Tufts University</i>	Revisiting Dubois: the roles of positive and negative pressure in force production during fish swimming
2:30 pm	132-5	<i>Ruddy BT, Long Jr JH, Verma S, Porter ME; Florida Atlantic University, Vassar College</i>	Swimming efficiency influences schooling position of volitionally swimming blacktip sharks.
2:45 pm	132-6	<i>Xargay E, Barton K, Gough W, Adams D, Fish F, Antoniak G, Shorter KA; UMich, SU, CU, WCU, UM</i>	Inverse Dynamics Analysis of Dolphin Swimming
3:00 pm	132-7	<i>Wu C, Howle LE, McGregor AE, McGregor R, Nowacek DP; Duke University, University of Glasgow, HiDef Aerial Surveying Ltd</i>	Computational Fluid Dynamics Analysis of Gliding North Atlantic Right Whale Models with Variable Body Shapes

1:30 PM – 3:15 PM **Session 133** **Lone Star C**

Muscle Physiology and Function

Chairs: Andrea Rummel, David Williams

1:30 pm	133-1	<i>Levendosky MW, Lanier M, Bedore CN; Georgia Southern University</i>	Effect of Anesthesia Immersion on the Coral Catshark, <i>Atelomycterus marmoratus</i>
1:45 pm	133-2	<i>Tune TC, Ma W, Irving T, Sponberg S; Georgia Tech, Illinois Institute of Technology</i>	X-Ray Diffraction of Synchronous Flight Muscle Reveals Thick Filament Force-Length Hysteresis Varies With Muscle Function
2:00 pm	133-4	<i>Rummel AD, Faure PA, Smotherman MS, Swartz SM, Marsh RL; Brown University, McMaster University, Texas A&M</i>	Is Reduced Thermal Sensitivity in Distal Wing Muscles a Functional Adaptation to Bats' Unique Wing Morphology?
2:15 pm	133-5	<i>Williams CD, Knijnenburg TA; Allen Institute for Cell Science</i>	Spatial reorganization and clustering during the formation of myofibrils
2:30 pm	133-6	<i>Neurohr JM, Kinsey ST; University of North Carolina Wilmington</i>	The Impact of Tissue Aerobic Capacity and Life Stage on Oxidative Damage and Protein Turnover in Skeletal Muscle of the Blue Crab, <i>Callinectes sapidus</i>
2:45 pm	133-7	<i>Kirkpatrick A, Kanatous S, Crocker D, Trumble S; Baylor University, Colorado State University, Sonoma State University</i>	Fatty acids and Diving Development: Age class and sex differences in skeletal muscle fatty acid compositions the northern elephant seal <i>Mirounga angustirostris</i>
3:00 pm	133-8	<i>Gau JF, Lynch J, Gravish N, Sponberg S; Georgia Tech, UC San Diego</i>	Asynchronous properties of synchronous hawkmoth flight muscles

1:30 PM – 3:15 PM **Session 134** **Lone Star F**

Biological Velcro

Chairs: David Labonte, Adam Summers

1:30 pm	134-1	<i>Diaz C, Tanikawa A, Long JH; Vassar College, University of Tokyo</i>	Some Spider Glue is Super: Modeling the Fast Spreading Bioadhesive That Defeats the Scale Shedding Defense of Moths
1:45 pm	134-2	<i>Matherne M, Howington O, Lenaghan O, Hu DL; Georgia Tech</i>	The Effect of Nectar on the Honey Bee Pollen Pellet Removal Force
2:00 pm	134-3	<i>Mitchell CT, Drotlef D, Dayan CB, Sitti M, Stark AY; Villanova University, Max Planck Institute</i>	Peeling the layers back: Examining the roles of capillary adhesion and material softening on gecko and gecko-inspired synthetic adhesive performance in variable temperature and humidity
2:15 pm	134-4	<i>Cobos AJ, Higham TE; University of California Riverside</i>	Get a grip: the effect of asperity size on gecko adhesion
2:30 pm	134-5	<i>Labonte D; Imperial College London</i>	Dynamic biological adhesion: mechanisms for controlling attachment during locomotion

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2:45 pm	134-6	Yang DY, Gamel K, Flammang B, Shorter KA; University of Michigan, University of Akron, New Jersey Institute of Technology	Modeling and Experimental Evaluation of Traditional and Remora-inspired Suction Cups
3:00 pm	134-7	Summers AP, Trnski T, Hannam S, Conway KW; University of Washington, Auckland War Memorial Museum, Texas A&M	A diversity of fishes that suck - New Zealand edition

1:30 PM – 3:15 PM Session 135 Lone Star G

Playing with Shape: Plasticity

Chair: Craig Albertson

1:30 pm	135-1	Akin DR, Geheber AD; Auburn University, University of Central Missouri	Morphological divergence of a stream fish in altered flow: teasing apart the influences of natural selection and plastic response on body shape
1:45 pm	135-2	Clifton IT, Chamberlain JD, Gifford ME; University of Toledo, Southern Arkansas University, University of Central Arkansas	The Role of Phenotypic Plasticity in Morphological Differentiation Between Watersnake Populations
2:00 pm	135-3	Seroy SK, Grunbaum D, Padilla DK; University of Washington, Stony Brook University	Inducible morphology reveals adult dispersal between habitats
2:15 pm	135-4	Charifson DM, Bourdeau PE, Padilla DK; Stony Brook University, Humboldt State University	Shell remodeling may circumvent limits to phenotypic plasticity in the marine gastropod, <i>Nucella lamellosa</i>
2:30 pm	135-5	Georgadarellis GL, Jiménez JM, Albertson RC; University of Massachusetts Amherst	Increased Swimming Speed Induces Differential Bone Remodeling in Zebrafish
2:45 pm	135-6	Lad SE, Cortese SA, Danison AD, Ravosa MJ; University of Notre Dame, College of Wooster	Bone Remodeling and Cyclical Loading in the Maxilla of White Rabbits (<i>Oryctolagus cuniculus</i>)
3:00 pm	135-7	Herbert AM, Wilga CD; University of Alaska Anchorage	Varied tooth plate shape, varied diet: Morphology of Spotted Ratfish Tooth Plates

1:30 PM – 3:15 PM Session 136 Lone Star H

Mechanisms of Development

Chair: Diego Biston Vaz

1:30 pm	136-1	Hu Y, Harper M, Donahue J, Acosta B, McMenamin S; Boston College	Thyroid Hormone Mediates Proximal-Distal Patterning in Zebrafish Fin Skeleton
1:45 pm	136-2	Vaz DF, Hilton EJ; Virginia Institute of Marine Science, College of William & Mary	When Five Means Four (and Something Else): Ontogeny of the Pectoral Fin of the Plainfin Midshipmen, <i>Porichthys notatus</i> (Batrachoididae: Batrachoidiformes), with implications to evolution of Batrachoidiformes
2:00 pm	136-3	Funk EC, Kurpios NA, McCune AR; Cornell University	Ventral-dorsal inversion of the air-filled organ (lungs, gas bladder) in vertebrates
2:15 pm	136-4	Faltine-Gonzalez DZ, Layden MJ; Lehigh University	Determining the role of oral-aboral patterning on neurogenesis in the sea anemone, <i>Nematostella vectensis</i>
2:30 pm	136-5	Winchell CJ, Lee DT, Reyes-Rivera J, Rodriguez A, Torres MM, Weisblat DA; UC Berkeley	Functional analysis, by CRISPR mutagenesis, of genes in the atomized Hox cluster of the leech <i>Helobdella austriensis</i>
2:45 pm	136-6	Kishi Y, Brückner A, Thomas IM, Parker J; California Institute of Technology, Columbia University	Hox-logic of Rove Beetle Chemical Weaponry
3:00 pm	136-7	Albertin CB, Parnaik R, Ragsdale CW; Marine Biological Laboratory, University of Chicago	Heterodox Ligands in an Ancient Signaling Center in Octopus Brain

1:30 PM – 3:15 PM Session 137 Rooms 303-304

Complementary to S9: Applied Functional Biology: Linking Ecological Morphology to Conservation and Management

Chairs: Donald Miles, Diego Sustaíta

1:30 pm	137-1	Sustaíta D, Farabaugh SM, Barthman-Thompson L; California State University San Marcos, San Diego Zoo Global, California Department of Fish and Wildlife	Why morphology matters for management: the role of organismal form and function in wildlife conservation and management
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1:45 pm	137-2	Corbin CE, Roper VG; <i>Bloomsburg University</i>	Linking Effects of Acid Mine Drainage to Ecology and Morphology of Riparian Birds
2:00 pm	137-3	Gumm JM, Stanton M, Feuerbacher OG; <i>Ash Meadows Fish Conservation Facility, USFWS</i>	Refuge Populations as Research Populations: Morphology, Reproduction and Ecology in a Captive Population of Devils Hole Pupfish
2:15 pm	137-4	Moran CJ, Hudson D, Gerry SP; <i>Citadel, Maritime Aquarium, Fairfield University</i>	Implications of muscle performance on the management of recreationally and commercially important fishes.
2:30 pm	137-5	Pepper HE, Partin AM, Jenkins MS, Rowland JF, Burghardt GM; <i>University of Tennessee, Knoxville</i>	Responses of Juvenile Eastern Garter Snakes (<i>Thamnophis sirtalis</i>) to Own, Littermate, and Control Chemicals
2:45 pm	137-6	Reisenfeld K, McElroy E, Roosenburg W; <i>College of Charleston, Ohio University</i>	Functional Ecomorphology in the Diamondback Terrapin (<i>Malaclemys terrapin</i>); the Effect of Head-starting on Morphology and Bite Force
3:00 pm	137-7	Miles DB; <i>Ohio University</i>	Can morphology predict the conservation status of iguanian lizards?

1:30 PM – 3:30 PM **Session 138** **Rooms 201-202**

Courtship Communication

Chair: Rosalyn Putland

1:30 pm	138-1	Coomes CM, Derryberry EP; <i>University of Tennessee Knoxville</i>	It's too darn hot: Effects of ambient temperature on singing behavior in male song birds
1:45 pm	138-2	Echeverri SA, Zurek DB, Morehouse NI; <i>University of Pittsburgh, University of Cincinnati</i>	Male <i>Habronattus pyrrithrix</i> Jumping Spiders Adjust Their Attention-Grabbing Courtship Display Based on Spatial and Environmental Context
2:00 pm	138-3	Putland RL, Mackiewicz AG, Rogers LS, Mensinger AF; <i>University of Minnesota Duluth, University of North Carolina, University of Washington</i>	Effect of anthropogenic sound on the communication space of the oyster toadfish, <i>Opsanus tau</i>
2:15 pm	138-4	Gustison ML, Phelps SM; <i>University of Texas at Austin</i>	Vocal activity is coupled to partner proximity and mating during pair-bonding in a monogamous rodent
2:30 pm	138-5	Hood KE, Navarro E, Hurley LM; <i>Indiana University</i>	Playback of female rejection vocalizations modifies male house mouse (<i>Mus musculus</i>) behavior
2:45 pm	138-6	Anderson RC, Ziadi P, Niederhauser J; <i>Florida Atlantic University</i>	Why so many song types? Song sharing, song type matching, and the agonistic function of song type repertoires in Bachman's sparrow
3:00 pm	138-7	Falk JJ, Rubenstein D, Webster M; <i>Cornell University, Smithsonian Tropical Research Institute, Columbia University</i>	Female hummingbirds with male-like coloration may avoid aggressive interaction at food resources
3:15 pm	138-8	Duque FG, Monteros M, Nasir I, Uma S, Rodriguez-Saltos CA, Carruth L, Bonaccorso E, Wilczynski W; <i>Georgia State U, Inst Nacional de Biodiversidad, Emory U, U San Francisco de Quito</i>	Dialects in the high-frequency song of a hummingbird

1:30 PM – 3:15 PM **Session 139** **Rooms 203-204**

On Not-So-Solid Ground

Chair: Brian Chang

1:30 pm	139-1	Clifton GT, Holway D, Gravish N; <i>Univ of California, San Diego</i>	The influence of uneven terrain and vision on ant walking
1:45 pm	139-2	Soto D, Goldman DI; <i>Georgia Institute of Technology</i>	Improving performance of a legged robot on bumpy ground via gentle tail taps
2:00 pm	139-3	Mantilla DC, Tucker EL, Hsieh ST; <i>Temple University</i>	Sand specialists and Non-specialists use Similar Kinematic Strategies for Running on Incline Granular Media
2:15 pm	139-4	Chang B, Nowayti W, Hsieh ST; <i>Temple University</i>	Force response of climbing sand dunes
2:30 pm	139-5	Hubicki CM, Daley MA; <i>Florida State University, University of California, Irvine</i>	Optimal control predictions of running behavior in cursorial birds: non-rigid terrain, scaling, and maneuvering

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2:45 pm	139-6	McGowan CP, Schwaner SJ, Lin DC; University of Idaho, Washington State University	Muscle Dynamics During Hopping on Hard and Sandy Surfaces
3:00 pm	139-7	Young JW, Wilson A, Phelp T, Dunham N; NEOMED, Cleveland Metroparks Zoo	Effects of support diameter on vertical leaping performance in tree squirrels (<i>Sciurus carolinensis</i>)

1:30 PM – 3:30 PM	Session 140	Brazos
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Comparative Genomics, Proteomics, Cell Type Evolution

Chairs: Jason Macrander, Leslie Babonis

1:30 pm	140-1	Tarashansky AJ, Li P, Xue Y, Quake SR, Wang B*; Stanford University	Cross-species mapping of cell type atlases identifies conservation and divergence in planarian and parasitic flatworms
1:45 pm	140-2	Babonis LS, Ryan JF, Martindale MQ; Univ of Florida	Things cells do
2:00 pm	140-3	Brueckner A, Parker J; California Institute of Technology	Single Cell Assembly of a Chemical Key Innovation in a Rove Beetle
2:15 pm	140-4	Schnitzler CE, Nguyen AD, Koren S, Barreira SN, Gonzalez P, Chang ES, Phillippy A, Mullikin JC, Cartwright P, Nicotra ML, Frank U, Baxevaris AD*; U Florida, NHGRI/NIH, U Kansas, U Pittsburgh, NUI-Galway	The Genomics of Hydractinia: Understanding Regeneration, Allorecognition, and Stem Cell Biology
2:30 pm	140-5	Kolchenko S, Abdennur N, Loe-Mie Y, Plessier F, Saudemont B, Frintzenwanker J, Lowe C, Mirny L, Spitz F, Marlow H; University of Chicago, Institut Pasteur, MIT, Stanford University	Evolution of Genome 3D organisation in Metazoa
2:45 pm	140-6	Macrander J, Sachkova M, Surm J, Leach W, Ketchum R, Reitzel A, Moran Y; Florida Southern College, University of Bergen, Hebrew University of Jerusalem, University of North Carolina at Charlotte	A Multi-omic Approach to Evaluate Environmental Influence and Population Dynamics of Venom Production in <i>Nematostella vectensis</i>
3:00 pm	140-7	Lewis ZR, Dunn CW; Yale University	UV Tolerance in the Portuguese Man of War (<i>Physalia physalis</i>)
3:15 pm	140-8	O'Connell J, Shamble P, Koenig K*; Stanford University, Harvard University	Comparative Lens Proteomics Across Aves

3:45 PM – 4:45 PM	MOORE Lecture	Salon 5
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Moore Lecture	Graslie EG; Field Museum	Prehistoric Road Trip: Crafting a Story 2 Billion Years in the Making
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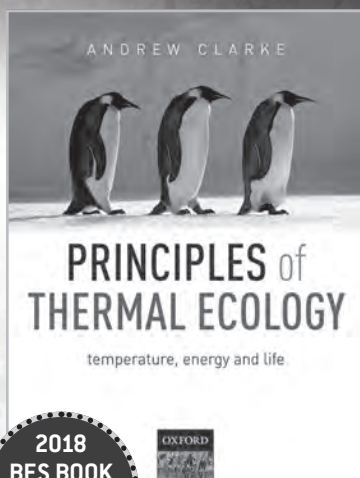
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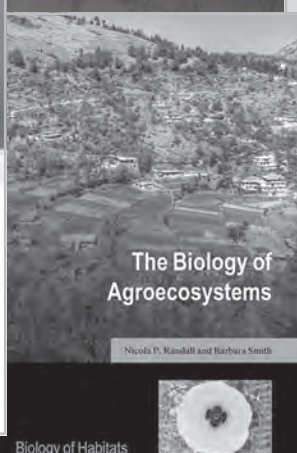
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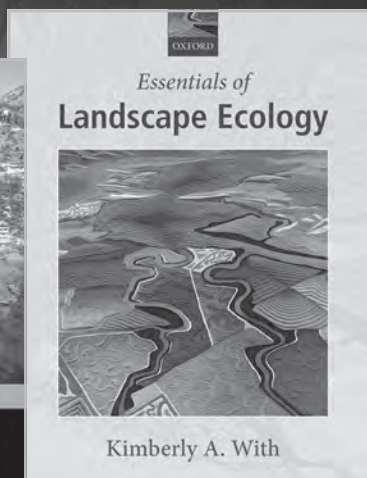


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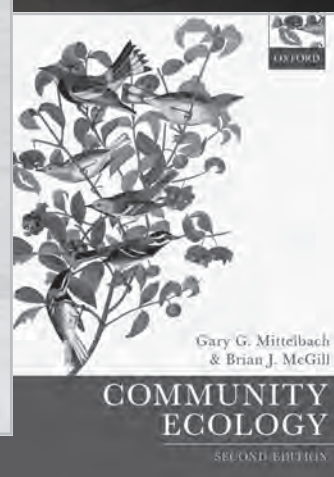
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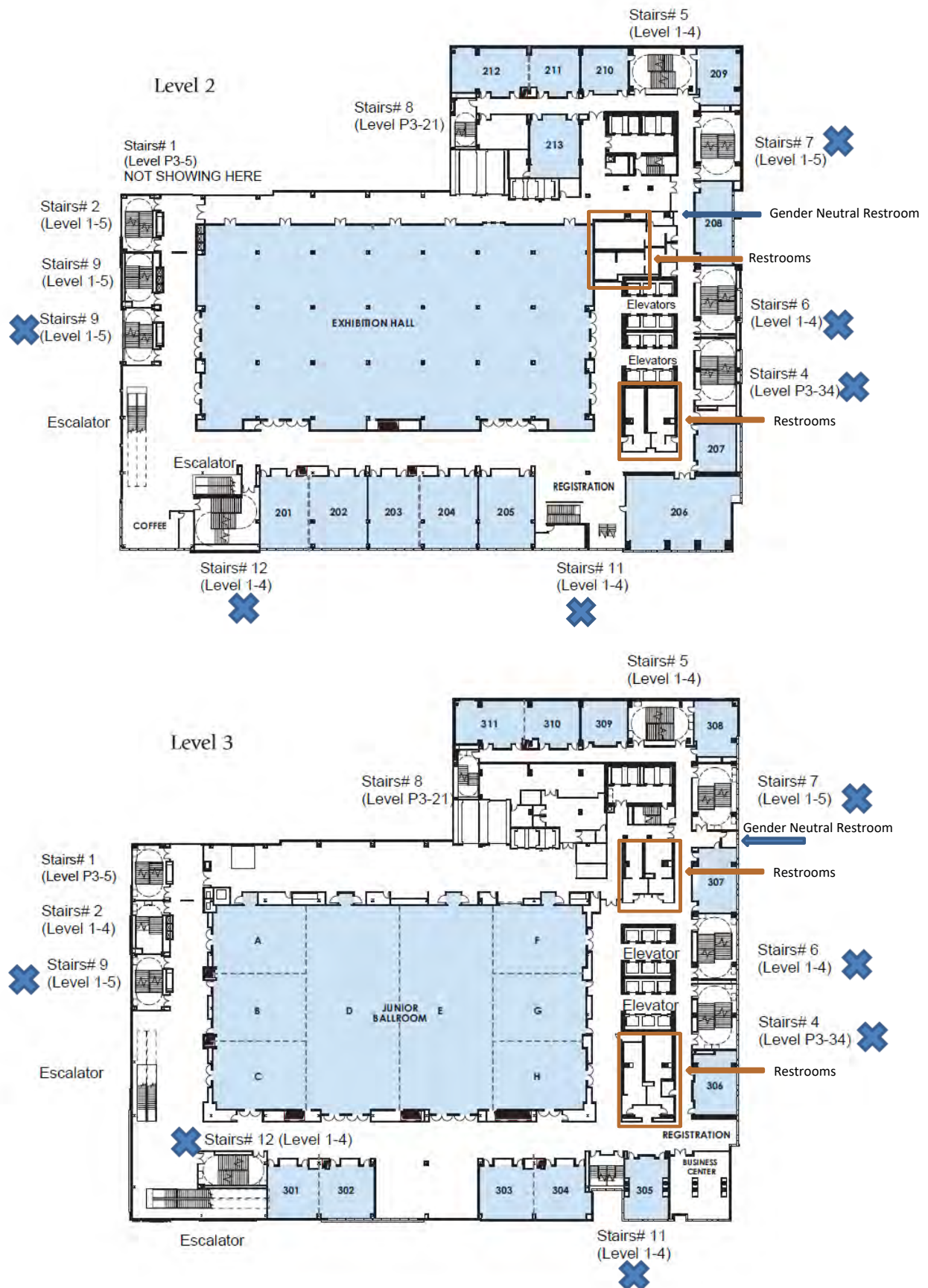
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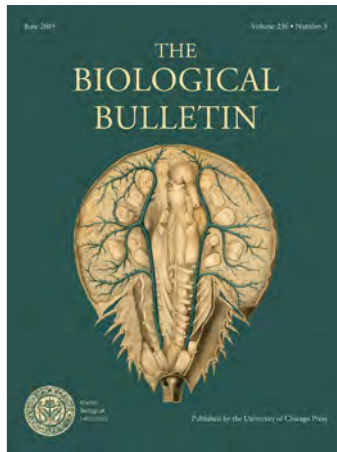


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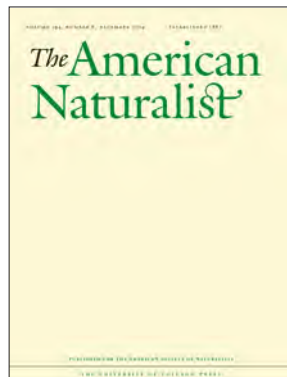
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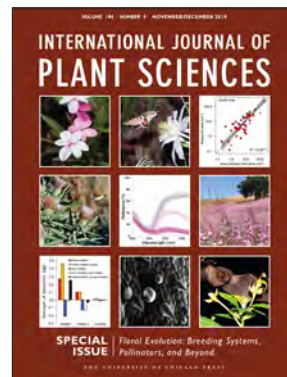
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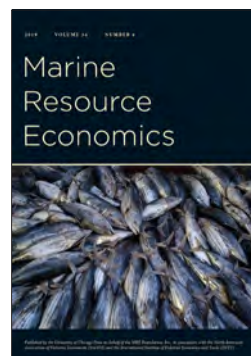
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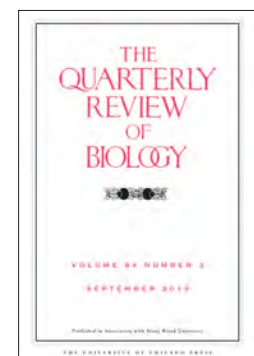
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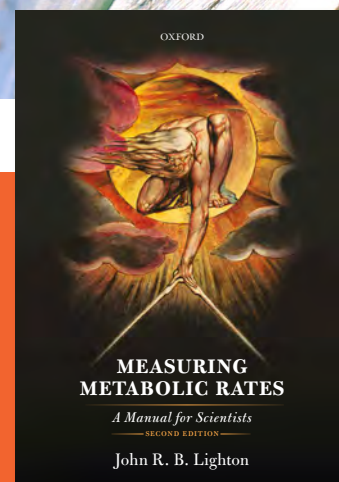


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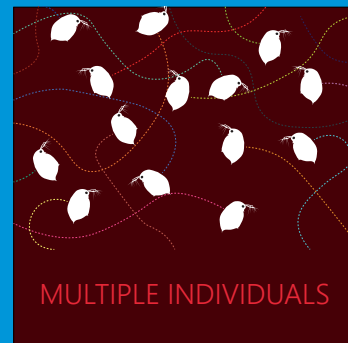
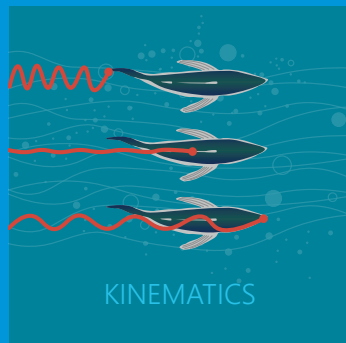
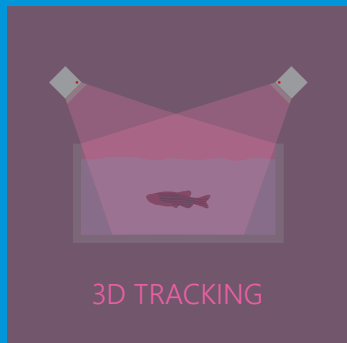
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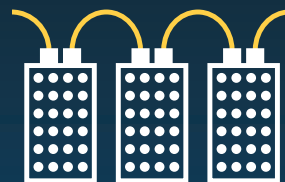
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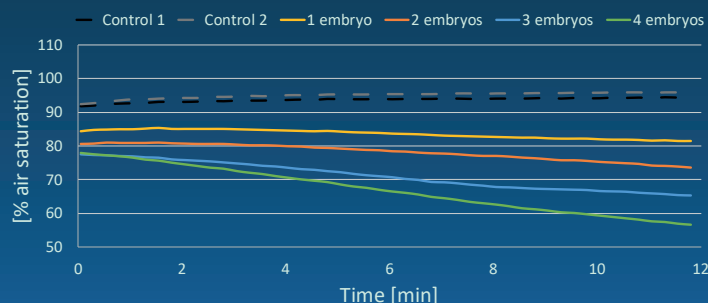
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