



The Society for Integrative and Comparative Biology

with the

American Microscopical Society

The Crustacean Society

FINAL PROGRAM

New Orleans Convention Center

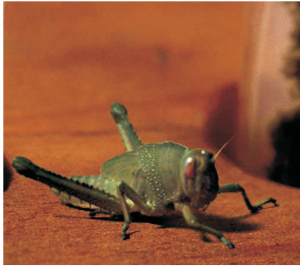
New Orleans, Louisiana | 4-8 January 2017

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The Society for Integrative and Comparative Biology **FINAL PROGRAM**

New Orleans Convention Center

901 Convention Center Blvd
New Orleans, LA 70130

Future Meeting Dates

3-7 January 2018
San Francisco, California

3-7 January 2019
Tampa, Florida

3-7 January 2020
Austin, Texas

The Society for Integrative and Comparative Biology

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Welcome to New Orleans

Message from the President

Welcome to New Orleans and the 2017 meetings of the Society for Integrative and Comparative Biology. This city is renowned as a world class host for conferences and I hope you will take time to enjoy its great food, music and singular vibe. Many months of preparation by our program committee and other parts of our society will come to fruition at the annual meeting. The program is packed with interesting science, from the plenary lecture by our Past President Billie Swalla, the Bern lecture, the Moore lecture, eleven terrific looking symposia, workshops and hundreds of individual talks and posters. As it is every year, this will be a festive celebration of integrative and comparative biology!

Holding our 2017 annual meeting in New Orleans may seem like a natural choice, but in fact our presence here follows a 13-year absence, prolonged by the 2009 suspension of this city as a possible SICB meeting site in the light of a significant objection we voiced to a Louisiana state law that was expected to open the doors to teaching creationism in public schools. Only after decisions in 2011 by the New Orleans City Council and the Orleans Parish School Board to prohibit the teaching of creationism and intelligent design in science classes did we return the city to the list of sites we consider for the annual meeting. It is good to be back!

This year is also special because SICB has embarked on the development of a new open access journal, *Integrative & Comparative Biology Open* and we are in the process of searching for its Founding Editor-in-Chief. ICB Open will be an open access home to high quality primary research papers in all areas of integrative and comparative biology and will complement our existing journal *Integrative & Comparative Biology*, which primarily publishes our symposia. If you have experience in journal editing and think you might have some interest in this position I would urge you to explore this with the chair of the search committee, Elizabeth Brainerd (editorsearch@sicb.org). Because we are early in the development process for this journal, this appointment represents a rare opportunity to have a major influence on the organization, editorial practices, and direction of the new journal.

While enjoying the annual meeting at the Hilton Hotel and New Orleans Convention Center I urge you to take a moment to thank those that have worked so hard to make this a success. Special thanks are due our Program Officer, Rick Blob, who made the complex process of program organization as seamless as possible and together with the divisional program officers, has done a remarkable job of organizing the meeting. Please take a moment to thank Marty Martin, the Editor of *Integrative & Comparative Biology*, for the great work that he and his team have done in collaboration with our partners at Oxford University Press in the production of our journal. And, do not forget our partners at Burk & Associates, Inc. who are instrumental in helping to run the society. Find time to visit our exhibitors and get caught up on the products and publications that are available in our field. We really appreciate the interest shown by our exhibitors in attending the annual meeting. Most of all, I hope you enjoy the 2017 annual meetings. I am looking forward to catching up with you myself!

Peter C. Wainwright

Welcome to New Orleans

Message from the Program Officer

Welcome to the Annual SICB meeting in the Crescent City - New Orleans, Louisiana. We last held our meeting in New Orleans in 2004, and it is exciting to return to such a culturally rich venue. Between the city and conference, there should never be a dull moment. With more than 1900 presentations scheduled over four full days, there will barely be time to come up for gumbo! There are 11 symposia (several with associated complementary sessions), 146 oral sessions, and three days of posters. For a quick guide to where and when everything occurs, the entire schedule grid can be found through links on the meeting webpage (www.sicb.org/meetings/2017/index.php), or use our Annual Meeting Mobile App. Come early, stay late, wear comfortable shoes, and stay hydrated.

Major lectures: We will kick-off the SICB Conference at 7:30 pm on Wednesday, January 4th, with our Plenary Lecture by SICB Past-President, Billie Swalla. Successive evenings will hold the Bartholomew Lecture (Thursday, Jan 5 at 7:00 PM), by Michael Sheriff; the Bern Lecture (Friday, Jan 6 at 7:00 PM) by David Crews; the AMS Keynote Lecture (Friday, Jan 6 at 7:30 PM) by Heidi Sosik, and we will conclude the meeting with the Moore Lecture (Sunday, Jan 8 at 3:45 PM) by Rosalind Reid.

Symposia: The 11 symposia represent the diversity of research across all SICB divisions. You should see excellent research presentations across all of our disciplines as surely as you can tell a beignet from a bagel. What's more, remember that these symposia are the foundation of our journal, *Integrative and Comparative Biology*. As a member, you will have access to the papers developed from symposium papers, as well as other journal content.

Workshops: A remarkable eleven (!) workshops will be run to help you develop new professional skills and think about science in new ways. These include workshops on the development of standards for video data management, RNA-Seq resources and training, using sketching to take notes during presentations, and publishing pointers for students and postdocs (sponsored by Wiley and the *Journal of Experimental Zoology*), as well as workshops associated with two symposia, and workshops offered by the SICB Public Affairs Committee, the Student Post-Doctoral Affairs Committee, the Broadening Participation Committee, the Educational Council and the NSF.

Socials: There will be many social opportunities to catch up with colleagues and make new connections with other SICB participants. In addition to all of the divisional and affiliate socials, there is the society-wide welcome reception on Wednesday after the Plenary talk, from 8:30-10 PM, and the end-of-meeting reception in honor of students and postdocs from 5-7 PM on Sunday. The Broadening Participation Committee also organizes a social that will be held on Saturday from 8-10 PM – check the meeting schedule for its location.

Pub Crawl: The SICB Pub Crawl is a longstanding fundraiser to support student events. This year you can experience the SICB Pub Crawl on your own, or with your own group. We have not designated meeting points or lists of bars, because fun locations for liquid refreshment are easy to find any way you walk in New Orleans! We encourage you get a group together and go out and enjoy the Big Easy. By purchasing a ticket or two, you will get a fantastic shirt and help to support student programs. Even if you don't want to hit the bars, don't miss out on this great shirt and the opportunity to continue making this meeting accessible for students!! Order one through the registration link. Shirts will be available for pick up onsite at the registration desk. <https://ssl4.westserver.net/birenheide/sicbcart/>

Dance: Back by popular request, again this year SICB will host a Dance on Saturday night, from 9:00-11:30 pm.

Business meetings: If you want to learn more about (or participate!!) in the activities of your division, please attend the divisional and society business meetings, especially if you are a student or postdoc. Coming to these meetings is a great way to make connections, learn how your division contributes to the success of SICB, become actively involved in your division, and develop your professional skills.

Finally, please remember to thank the many people who worked hard to put this meeting together, including the Divisional Program Officers, program reps from The Crustacean Society (TCS) and American Microscopical Society (AMS), the symposium organizers, the SICB Executive Officers, and our great team from Burk & Associates: Brett Burk, Lori Strong, Jennifer Rosenberg, Jill Drupa and Ruedi Birenheide.

Enjoy New Orleans and the Meeting, and thank you for coming!

Rick Blob, SICB Program Officer

2017 Officers

Peter Wainwright, President

Louis E. Burnett, President-Elect

Kathryn Dickson, Secretary

Karen Martin, Treasurer

Richard Blob, Program Officer

Sherry Tamone, Past Program Officer

Billie Swalla, Past President

Jennifer Burnaford, Member-At-Large

L. Patricia Hernandez, Member-At-Large

April Hill, Member-At-Large

Lynn B. (Marty) Martin, Editor-in-Chief, *Integrative and Comparative Biology*

Brett J. Burk, Executive Director

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 New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H) or offsite

Wednesday 4 January

Undergraduate Poster Session

Registration Area, Hall C, Convention Center
3:00 pm-7:15 pm

Student Worker Orientation & First Timer Orientation (H)

Hilton Hotel, Grand Ballroom A/B, 5:30 pm-6:30 pm
“How to get the most out of your SICB Meeting”

Plenary Session (H)

Hilton Hotel, Grand Ballroom A/B, 7:30 pm-8:30 pm
The Plenary Address, “Follow the Yellow Brick Road: An Odyssey from Myoplasm to Marine Biology to Genomics” will be given by Billie J. Swalla, University of Washington at Seattle.

Welcome to New Orleans Reception (H)

Hilton Hotel, Grand Ballroom C/D, 8:30 pm-10:00 pm
The Society for Integrative and Comparative Biology welcomes you to New Orleans with a reception. The Welcome Reception will follow the Plenary lecture. Light snacks and cash bar will be provided.

Thursday 5 January

Companion Orientation (H)

Hilton Hotel, Newberry Room, 9:00 am-10:00 am

Poster Session 1

Exhibit Hall C, 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

DAB/DNB Social

Room 225-226, 6:30 pm-8:00 pm

DCPB Social & BART Reception

Room R02/R03/R04, 8:00 pm-10:00 pm

Friday 6 January

AMS Business Luncheon/Business Meeting

Room 225/226, 12:00 pm-1:30 pm
Be sure to register at the SICB Registration Desk if you plan on attending.

Poster Session 2

Exhibit Hall C, 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

DCE/DEDE Social

Room R02/R03, 8:00 pm-10:00 pm

Saturday 7 January

Poster Session 3

Exhibit Hall C, 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

Room 208/209/210, 5:45 pm-6:30 pm
SICB Society Meeting & Awards Presentation

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

Room R06/R07, 6:30 pm-8:30 pm

Broadening Participation Social (Offsite)

The Dragon's Den, 435 Esplanade Ave.
8:00 pm-10:00 pm

SICB Dance

Room R02/R03/R04, 9:00 pm-11:30 pm

DVM/DCB Social (Offsite)

The Maison, 508 Frenchmen St., 9:30 pm-12:00 am

Sunday 8 January

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

Room R02/R03/R04, 5:00 pm-7:00 pm
Join your fellow SICB members for a Society-Wide Social. Cheese and fruit will be served, and a cash bar will be provided.

SICB and Divisional Business Meetings

Thursday 5 January

DAB Meeting, 5:45 PM – 6:30 PM, Room 220
DNB Meeting, 5:45 PM – 6:30 PM, Room 219
DCPB Meeting, 5:45 PM – 6:30 PM, Room 210
DEE Meeting, 5:45 PM – 6:30 PM, Room 214
DCB Meeting, 5:45 PM – 6:30 PM, Room 215-216
DEDE Meeting, 5:45 PM – 6:30 PM, Room 217
DEDB Meeting, 5:45 PM – 6:30 PM, Room 218

Friday 6 January

AMS Luncheon/Business Meeting,
12:00 PM – 1:30 PM, Room 225/226
TCS Business Meeting, 5:45 PM – 6:30 PM, Room 225
DCE Meeting, 5:45 PM – 6:30 PM, Room 214
DIZ Meeting, 5:45 PM – 6:30 PM, Room 219
DPCB Meeting, 5:45 PM – 6:30 PM, Room 220
DVM Meeting, 5:45 PM – 6:30 PM, Room 215/216

SICB Society Business Meeting & Awards Presentation

Saturday 7 January, 5:45 PM – 6:30 PM, Room 208/209/210

Special Lectures

Plenary Lecture

Wednesday 4 January, 7:30 PM – 8:30 PM, Hilton Hotel Ballroom

Follow the Yellow Brick Road: An Odyssey from Myoplasm to Marine Biology to Genomics, *Billie J. Swalla, University of Washington at Seattle*

Bartholomew Lecture

Thursday 5 January, 7:00 PM – 8:00 PM, Room 208/209/210

Integrating Physiology, Behavior, and Ecology to Understand the Mechanisms that Regulate and Limit Animal Populations, *Michael Sheriff, Penn State University*

Sponsored by: Sable Systems International

Bern Lecture

Friday 6 January, 7:00 PM – 8:00 PM, Room 208/209/210

We Have Soiled Our Nest: Now What? *David Crews; University of Texas at Austin*

AMS Lecture

Friday 6 January, 7:30 PM – 8:30 PM, Room 215/216

Life in the Plankton, Stories from Automated Submersible Microscopy and Flow Cytometry, *Heidi M. Sosik; Woods Hole Oceanographic Institution*

Moore Lecture

Sunday 8 January, 3:45 PM – 4:45 PM, Room 208/209/210

Only Converse? A Journalist Sizes Up the Problem of Science Communication, *Rosalind Reid; Council for the Advancement of Science Writing*

Symposia

Thursday 5 January

- S1: Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences (SICB Wide)
- S2: The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity or Performance
Sponsored by: *Loligo Systems*
- S3: Molecular and Neuroendocrine Approaches to Understanding Tradeoffs: Food, Sex, Aggression, Stress, and Longevity

Friday 6 January

- S4: Evolutionary Impacts of Seasonality (SICB Wide)
- S5: With a Little Help from My Friends: Microbial Partners in Integrative and Comparative Biology
- S6: Integrating Cognitive, Motivational and Sensory Biases Underlying Acoustic and Multimodal Mate Choice

Saturday 7 January

- S7: The Evolution of Arthropod Body Plans – Integrating Phylogeny, Fossils and Development
- S8: Integrative Life-History of Whole-Organism Performance (SICB Wide)

Sunday 8 January

- S9: The Development and Mechanisms Underlying Inter-individual Variation in Pro-social Behavior
- S10: Physical and Genetic Mechanisms for Evolutionary Novelty
- S11: Low Spatial Resolution Vision - Function and Evolution

The Exhibits will open on Wednesday 4 January, at 9:30 am.
Exhibit Hall C, New Orleans Convention Center will be the location for coffee breaks on Wednesday, Thursday, and Friday mornings from 9:30 am–10:30 am, and 3:30 pm–5:30 pm during the poster sessions.

Workshops and Programs

Thursday 5 January

Student and Postdoctoral Affairs Committee Workshop: Low on the Totem Pole - Power Structures and Power Struggles in Scientific Careers

12:00 pm-1:30 pm (brownbag), Room 214

In theory, scientific inquiry has a "flat" power structure, where anyone is able to contribute to knowledge building. In practice, scientific inquiry often takes place at institutions with deeply ingrained power structures. Students and trainees may not fully appreciate that such power structures exist, and are typically at the bottom of them to boot. In this lunchtime session sponsored by the SICB Student and Postdoctoral Affairs Committee (SPDAC), we will discuss the potential problems that can arise from power struggles (that students and trainees might not even be involved in directly) and how to navigate systems of power that are often in place in research institutions.

NSF Update - IOS Core Programs Solicitation, Supplement and Meeting Requests, and More

12:00 pm-1:30 pm (brownbag), Room 215/216

NSF Program Officers from the Division of Integrative Organismal Systems (IOS) will give an update on changes to the NSF Core Programs as well as requests for supplements and meeting support. Come meet your program officers, ask questions, and learn more about the National Science Foundation.

RNA Seq Resources and Training

12:00 pm-1:30 pm (brownbag), Room 220

The Animal Genomes to Phenomes (AG2P) Research Coordination Network (RCN) is conducting a workshop on metadata and best practices for annotating RNA-seq data. Participants will have the opportunity to analyze sample datasets using the CyVerse platform. No prior experience with transcriptomic tools is required. Participants should bring a laptop computer.

Sketch Your Conference Notes! A Hands-on Visual Note-taking Workshop

12:00 pm-1:30 pm (brownbag), Room 222

Sketchnoting, also known as visual note taking, is the practice of sketching or doodling notes while listening to a lecture with the purpose of summarizing or recording key concepts visually. Visual note taking is not detailed scientific illustration! The process of listening, identifying key points, and quickly translating them into a visual story on paper 1) increases focus during presentations, 2) helps in the retention and recollection of key concepts and complex scientific ideas, 3) creates a visual dialogue to communicate and share what was learned with the broader community, and 4) is fun! This is an introductory level workshop where you will learn about the power of visuals for learning and communication, practice simple sketching techniques, explore how fonts, colors, design and layout can help get your message across effectively, and how to overcome the challenges of time and complex material. We will also talk about different ways to sketch (from pens and watercolors to digital) and tips for building your sketching tool-kit. This hands-on workshop will include time to practice new techniques and a chance to create your first sketchnote!

Intended Audience:

This workshop is intended for graduate students, postdocs, and research faculty who have an interest in visually capturing challenging concepts and key points quickly during lectures or conference talks. No artistic skills necessary, just the desire to visually communicate more efficiently and effectively!

Presenter:

Shayle Matsuda is a science communicator and PhD student at the Hawai'i Institute of Marine Biology and the University of Hawai'i at Mānoa. He has been watercolor sketchnoting for three years (you can check out his past three years of SICB conference notes on Twitter @wrong_whale). He is a science storyteller (WIRED.com, Story Collider, Nerd Nite), event host (Science, Neat, ChemLab: Chemistry lessons behind the bar), and part of the ComSciCon organizing committee (the National Communicating Science Workshop for STEM graduate students).

What you'll learn:

- Conquer your fear of drawing!
- Turn complex concepts into visual stories quickly
- Tricks for visual storytelling
- Create a visually engaging page
- The power of fonts and colors for emphasis
- Build your sketchnotes toolkit
- Practice live sketchnoting

Friday 6 January

A Primer on Incorporating the Microbiome into Integrative and Comparative Biology (Accompanies Symposium S5 – With a Little Help from my Friends: Microbial Partners in Integrative and Comparative Biology)

12:00 pm-1:30 pm (brownbag), Room 208/209

This workshop will expose attendees to the basic tools and techniques of microbiome research, especially in regards to how microbiome research can be combined within existing integrative biology research projects. Specifically, we will cover the factors that should be considered before embarking on microbiome projects, what types of control samples are required, and what types of additional data should be collected. Also, we will give a brief overview of available data analysis pipelines and ideas for how integrative biologists can push the boundaries of microbiome research.

Public Affairs Committee Workshop: DIY Videography Making Your Research Broadly Accessible

12:00 pm-1:30 pm (brownbag), Room 214

As the world becomes increasingly more interconnected, it is important that scientific research exploits this accessibility to the public and other fields of research. Please join host Dr. Sharri Zamore and guest speaker Shannon Malone of Red Rock Films for an interactive session where we will discuss how to make simple, engaging science videos. This workshop focuses on motivations for producing videos about research, the features of successful, accessible videos, and activities to practice producing great science videos. If possible, bring a 2 sentence blurb or idea about your research that you'd like to communicate.

Journal of Experimental Zoology Workshop: "Publishing Pointers for Students and Postdocs"

12:00 pm-1:30 pm, Room 220

During this workshop, the Editor of the Journal of Experimental Zoology Part A: Ecological Genetics and Physiology, David Crews at the University of Texas at Austin, and the Editor of Journal of Experimental Zoology Part B: Molecular and Developmental Evolution, Günter Wagner at Yale University, will provide advice, tips and pointers on how to get published in their journal. Lunch will be provided. Registration is limited so sign up early!!

Workshops and Programs

Continued

Saturday 7 January

Broadening Participation Committee Workshop: Microaggressions: The Big Impact of Little Things

12:00 pm-1:30 pm (brownbag), Room 214

Why do you sound so white?

You're the best woman I've ever had in this class.

No, where are you really from?

So which bathroom do you use?

These experiences of subtle, indirect, and sometimes unintentional discrimination can add up over time to marginalize students and scientists who are underrepresented in their institution, geographical area, or field of research. This contributes to the steady loss of scientists with diverse backgrounds and viewpoints from the academic pipeline. This workshop will allow participants to share their experiences and brainstorm about when and how to respond to microaggressions. The workshop will include a Q&A session with a panel of diverse scientists and small-group discussions.

Evolutionary Impacts of Seasonality (Accompanies Symposium S4 – Evolutionary Impacts of Seasonality)

12:00 pm-1:30 pm (brownbag), Room 215/216

Organisms living in seasonal environments experience fluctuating selection pressures that influence their ecology and physiology, and drive their evolution. The symposium "Evolutionary Impacts of Seasonality" aims to highlight current research in plants and animals elucidating the complex interactions of life history decisions, environmental sensitivity, and genetic architecture in determining evolutionary responses to past and contemporary changes in seasonality. This workshop is complementary to this symposium, offering an opportunity for symposium speakers and other interested participants to synthesize progress in the field, identify knowledge gaps, and suggest a way forward. The workshop will include a catered lunch, so space is limited. Interested SICB attendees should contact the symposium organizers during the symposium to reserve a place.

TAL-PULSE Workshop: “Using Partnership for Undergraduate Life Sciences Education (PULSE) Resources to Stimulate Transforming STEM Education at the Department Level”

7:30 pm-9:00 pm, Room 224

In 2013, the SICB Educational Council hosted its first Teaching and Learning workshop and focused on *Vision & Change* in Introductory Biology. Since then, departments nationwide have begun working to align their teaching and practices with the AAAS *Vision & Change* recommendations. The Partnership for Undergraduate Life Sciences Education (PULSE), a network of more than 50 faculty leaders from varied institutions across the country, has been working to catalyze implementation of *Vision & Change* recommendations and transform STEM education. PULSE activities focus on departments, and this workshop will introduce participants to the PULSE *Vision & Change* Rubric, the PULSE *Vision & Change* Recognition Program, and the PULSE Ambassadors Program as mechanisms to stimulate STEM education transformation. Facilitators will share findings from pilots of both the Recognition and Ambassadors programs. Workshop participants will use portions of the PULSE Snapshot Rubric, an abbreviated form of the PULSE *Vision & Change* Rubrics, to assess areas where their departments/institutions are making progress, and where additional attention is required. The session will include time for participants to discuss major barriers to change that are revealed by the rubrics. Participants will gain an understanding of how the PULSE *Vision & Change* Rubrics can be used to assess the current state of their STEM department’s alignment with current best practices and learn how both the PULSE *Vision & Change* Recognition Program and the PULSE Ambassadors Program can serve to transform institutional cultures to stimulate undergraduate STEM education reform.

Workshop Presenters:

Dr. Sara Lindsay, University of Maine

Dr. Judy Awong-Taylor, Georgia Gwinnett College

Sunday 8 January

Establishing Standards for Video Data Management

12:00 pm-1:30 pm (brownbag), Room 215/216

Video recordings have been a growing source of data in organismal biology for several decades. With advances in high-speed and X-ray videography, uses of video now commonly span biomechanics, physiology, behavior, and many other fields. Advances in data storage and management have led to large collections of video data, which have potential for big-data and meta-analysis. Data sharing through large data bases is an increasingly common practice in many areas of ecology, evolutionary biology, and bioinformatics, but consideration of such ‘open data’ practices is more recent in organismal biology.

The goal of this workshop is to begin establishing common practices for video data storage and sharing across the fields of integrative and comparative biology. Discussion will focus on identifying best practices for video data management, developing a participatory framework to establish standards, and developing and deploying established standards.

Workshop Coordinators:

Dr. Elizabeth Brainerd, Brown University

Dr. Ulrike Müller, California State University, Fresno

Dr. Richard Blob, Clemson University

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 230**, in the New Orleans Convention Center, 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:

Wednesday 4 January	12:00 PM – 7:00 PM
Thursday 5 January	7:00 AM – 5:00 PM
Friday 6 January	7:00 AM – 5:00 PM
Saturday 7 January	7:00 AM – 5:00 PM
Sunday 8 January	7:00 AM – 10:00 AM

Coffee Breaks

Coffee break service is available each day of the meeting. There will be a morning service from 9:30am–10:30am and an afternoon service from 3:30pm–5:30pm. The coffee breaks will be located in the Exhibit Hall C, Thursday-Saturday, and in the Room 226/227 Foyer on Sunday.

Committee Meetings/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.

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.

Registration

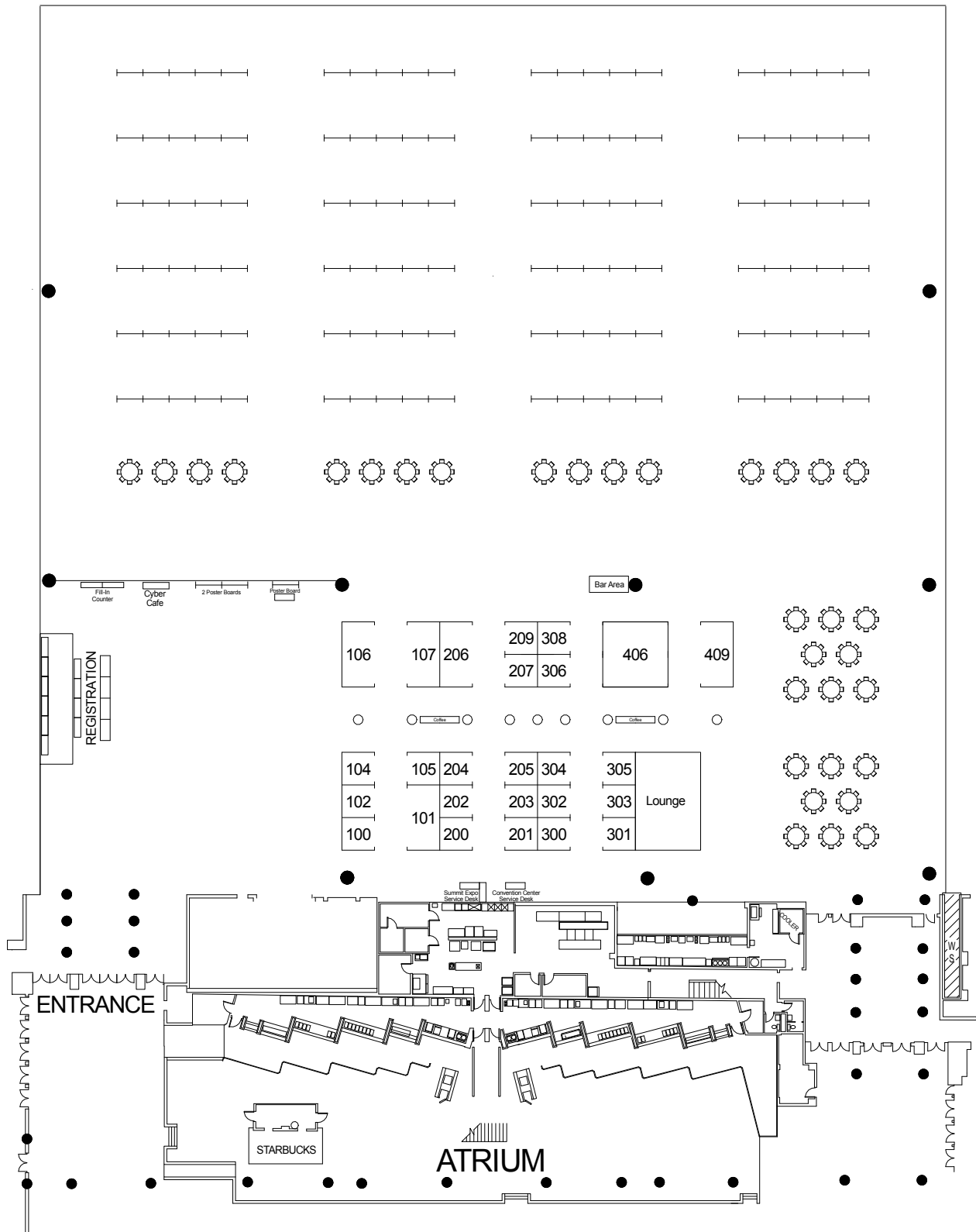
The SICB Registration/Information area is located in the New Orleans Convention Center, in Hall C, Wednesday-Saturday, and in 226/227 Foyer on Sunday. The Registration Desk will be open during the following hours:

Wednesday 4 January	3:00 PM – 8:00 PM
Thursday 5 January	7:00 AM – 5:00 PM
Friday 6 January	7:00 AM – 4:00 PM
Saturday 7 January	7:30 AM – 3:30 PM
Sunday 8 January	7:30 AM – 2:30 PM

SICB App

Be sure to download the SICB 2017 Meeting App! You can find it in the app store. If you need help with your login or password check with the registration desk. All meeting updates and the most current information will be pushed through to the App.

SICB 2017 Exhibitor Floorplan



Exhibitor Floorplan, Exhibit Hall C
New Orleans Convention Center

2017 SICB Exhibitors

Exhibit Hours

New Orleans Convention Center
Exhibit Hall C

Thursday 5 January	9:30 AM – 5:30 PM
Friday 6 January	9:30 AM – 5:30 PM
Saturday 7 January	9:30 AM – 5:30 PM

AEI Technologies **Booth: 209**

201 Hunters Crossing Boulevard, Suite 10-171
Bastrop, TX 78602
630-548-3545; FAX: 630-477-0618
aeitechnologies.com

AEI Technologies offers three levels of Metabolic Carts which are suitable for teaching, research, and clinical applications for resting or exercise physiology. Options include Cardiac Output and canopy testing.

American Microscopical Society **Booth: 101**

141 E. College Avenue
Decatur, GA 30030-3770
312-369-7395; FAX: 312-369-8075
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.

Animal Genome to Phenome Research Coordination Network (AG2PRCN) **Booth: 304**

970-491-7616; FAX: 970-491-0649
ag2p.org

Association Book Exhibit **Booth: 200**

80 S. Early Street
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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.

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Booth: 303

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Booth: 301

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Student Postdoc Affairs Committee

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www.sicb.org

The SICB Student-Postdoctoral Affairs Committee (SPDAC) hosts programs of interest to student and postdoctoral research members of SICB. The SDPAC booth in the Exhibitor Hall provides resources for enhancing scientific and career success including information on how to get through academia, how to write teaching statements, and current grant/fellowship opportunities.

Booth: 202

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Booth: 106

Wednesday Schedule of Events

Events take place in the New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H)

EVENT	TIME	LOCATION
Speaker Ready Room	12:00 PM – 7:00 PM	Room 230
Exhibitor Setup	12:00 PM – 8:00 PM	Hall C
Registration	3:00 PM – 8:00 PM	Hall C
PLENARY LECTURE		
Follow the Yellow Brick Road: An Odyssey from Myoplasm to Marine Biology to Genomics <i>Swalla BJ; University of Washington at Seattle</i>	7:30 PM – 8:30 PM	Grand Ballroom A/B (H)
COMMITTEE & BOARD MEETINGS		
SICB Executive Committee Meeting	2:30 PM – 5:30 PM	Oak Alley (H)
WORKSHOPS AND PROGRAMS		
Student Worker Orientation & First Timer Orientation, “How To Get the Most Out of Your SICB Meeting”	5:30 PM – 6:30 PM	Grand Ballroom A/B (H)
SOCIAL EVENT		
SICB Welcome Reception	8:30 PM – 10:00 PM	Grand Ballroom C/D (H)

Undergraduate Poster Display

The SICB Educational Council will once again highlight the contributions that undergraduates make to the research of their laboratories and to SICB. Posters being presented by undergraduates will be on display in the Registration area on the day of arrival, Wednesday 4 January. Please stop by for a “preview” of the posters that these students will later present in their scheduled poster sessions.

Thursday Schedule of Events

Events take place in the New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H)

EVENT	TIME	LOCATION
Registration	7:00 AM – 5:00 PM	Hall A Foyer
Speaker Ready Room	7:00 AM – 5:00 PM	Room 230
Poster Session 1 Set Up	7:30 AM – 8:00 AM	Exhibit Hall C
Coffee Break AM/PM	9:30 AM – 10:30 AM	Exhibit Hall C
Exhibit Hall	9:30 AM – 5:30 PM	Hall C
Poster Session 1 Even Numbers Viewing	3:30 PM – 4:30 PM	Exhibit Hall C
Poster Session 1 Odd Numbers Viewing	4:30 PM – 5:30 PM	Exhibit Hall C
Poster Session 1 Teardown	5:30 PM – 6:00 PM	Exhibit Hall C
SPECIAL LECTURE		
Bartholomew Lecture <i>Sponsored by: Sable Systems International</i>	7:00 PM – 8:00 PM	Room 208/209/210
SYMPOSIA ORAL PRESENTATIONS		
S1: Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences	8:00 AM – 3:30 PM	Room 208/209
S2: The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity or Performance <i>Sponsored by: Loligo Systems</i>	8:00 AM – 3:30 PM	Room 206
S3: Molecular and Neuroendocrine Approaches to Understanding Tradeoffs: Food, Sex, Aggression, Stress, and Longevity	8:00 AM – 3:30 PM	Room 207
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 1: Evolution of Complex Traits	8:30 AM – 9:45 AM	Room 210
Session 2: Fluids and Flow I	8:00 AM – 9:45 AM	Room 211-213
Session 3: Larval Ecology	8:15 AM – 9:45 AM	Room 214
Session 4: Muscle Physiology and Mechanics	8:00 AM – 9:30 AM	Room 215-216
Session 5: Thermal Adaptation	8:00 AM – 9:45 AM	Room 217
Session 6: Phylogenetics I	8:00 AM – 9:45 AM	Room 218
Session 7: Disease Ecology I: Host-Parasite/Pathogen Interactions	8:15 AM – 9:45 AM	Room 219
Session 8: Crustacean Endocrinology	8:30 AM – 9:30 AM	Room 220
Session 9: Collective Behavior	8:00 AM – 10:00 AM	Room 221
Session 10: Evolution of Communication Systems	8:15 AM – 10:00 AM	Room 222
Session 11: Population Genetics	8:00 AM – 9:45 AM	Room 223
Session 12: Predators and Prey I	8:00 AM – 9:45 AM	Room 224
Session 13: Evo-devo: Developmental Origins of Shape Variation	10:15 AM – 12:00 PM	Room 210
Session 14: Biomaterials I	10:15 AM – 12:00 PM	Room 211-213
Session 15: Coral Reef Biology	10:15 AM – 12:00 PM	Room 214
Session 16: Elastic Mechanisms	10:00 AM – 12:00 PM	Room 215-216
Session 17: Flight I	10:15 AM – 12:00 PM	Room 217
Session 18: Phylogenetics II	10:15 AM – 11:45 AM	Room 218
Session 19: Disease Ecology II: Host-Pathogen Population Dynamics	10:30 AM – 12:00 PM	Room 219
Session 20: Aubrey Gorbman Award – DCE Best Student Presentation	10:15 AM – 12:00 PM	Room 220
Session 21: Behavioral Syndromes	10:30 AM – 12:00 PM	Room 221
Session 22: Genetics of Communication and Social Behaviors	10:30 AM – 12:00 PM	Room 222
Session 23: DNB Best Student Presentations	10:15 AM – 12:00 PM	Room 223

Thursday Schedule of Events

Continued

Session 24: Predators and Prey II	10:15 AM – 12:00 PM	Room 224
Session 25: Evo-devo: Morphogenesis and Organogenesis	1:30 PM – 3:30 PM	Room 210
Session 26: Biomaterials II	1:45 PM – 3:15 PM	Room 211-213
Session 27: Conservation Biology	1:30 PM – 3:30 PM	Room 214
Session 28: Complementary to S5: With a Little Help from My Friends: Microbial Partners in Integrative and Comparative Biology	1:30 PM – 3:30 PM	Room 215-216
Session 29: Evolutionary Biomechanics	1:30 PM – 3:30 PM	Room 217
Session 30: Macroevolution	1:30 PM – 3:15 PM	Room 218
Session 31: Temperature Effects on Morphology and Performance	1:45 PM – 3:15 PM	Room 219
Session 32: Terrestrial Locomotion	1:30 PM – 3:30 PM	Room 220
Session 33: Species Delimitation	1:30 PM – 3:15 PM	Room 221
Session 34: DAB Best Student Presentation	1:30 PM – 3:15 PM	Room 222
Session 35: Neuroethology of Predator-Prey Interactions	1:30 PM – 3:15 PM	Room 223
Session 36: Molecular Evolution	1:30 PM – 3:30 PM	Room 224

COMMITTEE & BOARD MEETINGS

Broadening Participation Travel Award Meet & Greet Breakfast	7:00 AM – 8:00 AM	Room 229
SICB Nominating Committee	7:00 AM – 8:00 AM	Room 232
Divisional Chairs President/President-Elect	12:00 PM – 1:30 PM	Room 232
TCS Board Meeting	5:30 PM – 10:00 PM	Room 230
AMS Executive Committee	8:00 PM – 11:00 PM	Room 232

BUSINESS MEETINGS

DAB Meeting	5:45 PM – 6:30 PM	Room 220
DNB Meeting	5:45 PM – 6:30 PM	Room 219
DCPB Meeting	5:45 PM – 6:30 PM	Room 210
DEE Meeting	5:45 PM – 6:30 PM	Room 214
DCB Meeting	5:45 PM – 6:30 PM	Room 215-216
DEDE Meeting	5:45 PM – 6:30 PM	Room 217
DEDB Meeting	5:45 PM – 6:30 PM	Room 218

WORKSHOPS AND PROGRAMS

Animal Genome to Phenome RCN Workshop: RNA Seq Resources & Training	12:00 PM – 1:30 PM	Room 220
Sketchnotes Workshop: A Hands-on Visual Note-taking Workshop	12:00 PM – 1:30 PM	Room 222
Student Postdoctoral Affairs Brown Bag Workshop: “Low on the Totem Pole: Power Structures and Power Struggles in Scientific Careers”	12:00 PM – 1:30 PM	Room 214
NSF Program Officers: Revisions to the IOS Core Program & Q & A	12:00 PM – 1:30 PM	Room 215-216

SOCIAL EVENTS

Companion Orientation	9:00 AM – 10:00 AM	Newberry Room (H)
DAB/DNB Social Atrium	6:30 PM – 8:00 PM	Room 225-226
DCPB Social & BART Reception	8:00 PM – 10:00 PM	Room R02/R03/R04

Thursday Program Symposia

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

8:00 AM – 3:30 PM		Symposium S1	Room 208/209
Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences			
<i>Chairs: Alex Gunderson, Jonathon Stillman</i>			
8:00 am	S1-1	<i>Ferrari MCO; University of Saskatchewan</i>	Behavioural and cognitive ecology of predation risk assessment in a changing world
8:30 am	S1-2	<i>Swaddle JP; College of William and Mary</i>	Animal communication and species interactions in a changing world: Consequences of noise pollution
9:00 am	S1-3	<i>Dixson DL; University of Delaware</i>	Understanding the direct effects of pH on the sensory systems of marine organisms
9:30 am		Coffee Break	Exhibit Hall
10:00 am	S1-4	<i>Gunderson AR, King E, Boyer K, Tsukimura B, Stillman JH; San Francisco State, UC Berkeley, Cal State Monterey Bay, Cal State Fresno</i>	Species interactions and the cellular stress response in an intertidal crustacean system
10:30 am	S1-5	<i>DeLong JP, Gibert JP, Luhring TM, Bachman G, Reed B, Neyer A, Montooth KM; University of Nebraska - Lincoln</i>	The combined effects of reactant kinetics and enzyme stability explain the temperature dependence of metabolic rates
11:00 am	S1-6	<i>Fey SB; Yale University</i>	Species interactions in variable environments: How temporal patterns of temperature can influence competitive interactions
11:30 am	S1-7	<i>Diamond SE, Chick L, Dunn RR, Ellison AM, Sanders NJ, Gotelli NJ; Case Western Reserve University, North Carolina State University, Harvard Forest, Center for Macroecology, Evolution and Climate, University of Vermont</i>	Heat tolerance predicts the strength of species interaction effects under global climate change
12:00 pm		Lunch Break	
1:30 pm	S1-8	<i>Barton BT, Murrell EG; Mississippi State University, Pennsylvania State University</i>	Comparing the effects of climate warming on biological control in conventional and organic agriculture
2:00 pm	S1-9	<i>Urban MC; University of Connecticut</i>	Searching for the biotic multipliers of climate change
2:30 pm	S1-10	<i>Gilman SE; Claremont McKenna College</i>	Indirect effects of temperature in rocky intertidal communities: When do they matter?
3:00 pm	S1-11	<i>Lany NL, Zarnetske PL, Gouhier TC; Michigan State University, Northeastern University</i>	Incorporating the effects of climate change on species interactions into species distribution models
3:30 pm		Coffee Break	Exhibit Hall
8:00 AM – 3:30 PM		Symposium S2	Room 206
<i>Sponsored by: Loligo Systems</i>			
The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity or Performance			
<i>Chairs: Tony Williams, Shaun Killen</i>			
8:00 am	S2-1	<i>Yap KN, Serota MW, Williams TD; Simon Fraser University</i>	The physiology of exercise in free-living animals: What can we learn from current model systems?
8:30 am	S2-2	<i>Calsbeek R; Dartmouth College</i>	Metamorphosis and the resolution of ontogenetic conflict
9:00 am	S2-3	<i>Tobalske BW, Jackson BE, Dial KP; University of Montana, Longwood University</i>	Ontogeny of pectoralis function and flight capacity in birds
9:30 am	S2-4	<i>Guglielmo CG; Western University</i>	The challenge and promise of integrating wind tunnel and field studies of endurance of flight migratory birds
10:00 am		Coffee Break	Exhibit Hall

Thursday 5 January 2017

10:30 am	S2-5	<i>McClelland GB, Lyons SA, Robertson CE; McMaster University</i>	Exercise fuel use in mammals: Conserved patterns and evolved strategies for aerobic locomotion
11:00 am	S2-6	<i>Hawkes LA, Batbayar N, Butler PJ, Chua B, Frappell PB, Milsom WK, Natsagdorj T, Newman SH, Scott GR, Spivey RS, Takekawa JY, Wikelski M, Witt MJ, Bishop CM; University of Exeter, Wildlife Science and Conservation Centre, University of Birmingham, University of British Columbia, University of Tasmania, Food and Agriculture Organisation of the United Nations, McMaster University, Bangor University, National Audubon Society, Max Planck Institute for Ornithology, Environment and Sustainability Institute</i>	Do bar-headed geese train for high altitude flights?
11:30 am	S2-7	<i>Garland, Jr. T, Albuquerque RL; University of California, Riverside</i>	Locomotion, energetics, performance, and behavior: A mammalian perspective on lizards, and vice versa
12:00 pm	Lunch Break		
1:30 pm	S2-8	<i>Binning SA, Shaw AK, Roche DG; University of Neuchâtel, University of Minnesota</i>	Exercising when sick: The role of pathogens on animal activity
2:00 pm	S2-9	<i>Brownscombe JW, Cooke SJ, Algera D, Burnett NJ, Eliason EJ, Danylchuk AJ, Hinch G, Farrell AP; Carleton University</i>	The ecology of exercise in wild fish – integrating concepts of individual physiological capacity, behaviour and fitness through diverse case studies
2:30 pm	S2-10	<i>Thompson MA, Knight-Maloney M; Fort Lewis College</i>	Physiological and biomechanical mechanisms of distance specific human running performance
3:00 pm	S2-11	<i>Halsey LG; University of Roehampton</i>	“Fit for purpose” and “in the best of shape”: Exploring how physical fitness and body morphology might impact movement ecology
3:30 pm	Coffee Break		Exhibit Hall
8:00 AM – 3:30 PM Symposium S3			Room 207
Molecular and Neuroendocrine Approaches to Understanding Tradeoffs: Food, Sex, Aggression, Stress, and Longevity			
<i>Chairs: Jill Schneider, Pierre Deviche</i>			
8:00 am	S3-1	<i>Emmons SW; Albert Einstein College of Medicine</i>	Neural circuitry that mediates behavior governing the tradeoffs between survival and reproduction in <i>Caenorhabditis elegans</i>
8:30 am	S3-2	<i>Miguel-Aliaga I; Imperial College London</i>	Organ plasticity, sex and reproduction
9:00 am	S3-3	<i>Crespi EJ, Travis JA; Washington State University, Florida State University</i>	The search for mechanisms underlying evolutionary tradeoffs in response to different selection pressures in the least killifish
9:30 am	S3-4	<i>Lutterschmidt DI; Portland State University</i>	Neuroendocrine control of the seasonal switch from reproduction to foraging in garter snakes
10:00 am	Coffee Break		Exhibit Hall
10:30 am	S3-5	<i>Deviche PJ, Bittner S, Gao S, Valle S; Arizona State University</i>	Food supply and the timing of reproduction
11:00 am	S3-6	<i>Bentley GE; UC Berkeley</i>	Neural versus gonadal GnIH: Are they independent systems?
11:30 am	S3-7	<i>Demas GE, Carlton ED; Indiana University</i>	You make me sick: Energetic signals regulating seasonal sickness responses
12:00 pm	Lunch Break		
1:30 pm	S3-8	<i>Willis CKR, Czenze ZC, Davy CM, Fletcher QE, Mayberry HW, McGuire LP, Muise K, Norquay KJO, Webber QMR; University of Winnipeg</i>	Tradeoffs governing the physiological ecology of hibernation in endangered bats
2:00 pm	S3-9	<i>Schneider JE, Benton N, Russo K, Brozek J, Kriegsfeld L; Lehigh University, University of California, Berkeley</i>	The role of GnIH in the tradeoff between reproductive and ingestive behavior

Thursday 5 January 2017

2:30 pm	S3-10	<i>Ferkin MH; University of Memphis</i>	The effects of food availability on the maternal and sociosexual behaviors of meadow voles
3:00 pm	S3-11		Panel Discussion
3:30 pm	Coffee Break		Exhibit Hall

Thursday Program Morning Sessions

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

8:30 AM – 9:45 AM **Session 1** **Room 210**

Evolution of Complex Traits

Chair: Jacqueline Moustakas-Verho

8:30 am	1-1	<i>Moustakas-Verho JE, Stenberg OE, Anttila J, Jernvall J; University of Helsinki</i>	Is high complexity unbearable?
8:45 am	1-2	<i>Meisel RP; University of Houston</i>	The evolution of sex determination in house fly
9:00 am	1-3	<i>Griffith OW, Chavan A, Protopapas S, Maziarz J, Wagner GP; Yale University</i>	The evolutionary origin of implantation in mammals: An examination of maternal-fetal interactions in the short tailed opossum
9:15 am	1-4	<i>Greenli DA, Duan Y, Kronforst M; University of Chicago, Peking University</i>	Investigating the role of insulin/IGF signaling in determining migration traits in the monarch butterfly
9:30 am	1-5	<i>Schwab JL, COUNTERMAN BA; Mississippi State University</i>	How to build a pink butterfly: An investigation of the developmental and environmental influences on color plasticity in the southern dogface butterfly

9:45 am **Coffee Break** **Exhibit Hall**

8:00 AM – 9:45 AM **Session 2** **Room 211-213**

Fluids and Flow I

Chairs: Frank Fish, Kelsey Lucas

8:00 am	2-1	<i>Lucas KN, Tytell ED, Lauder GV; Harvard University, Tufts University</i>	Pressure-based measurement of instantaneous swimming forces produced by bluegill sunfish (<i>Lepomis macrochirus</i>)
8:15 am	2-2	<i>Gemmell BJ, Sutherland K, Conley K, Bouquet JM, Thompson E; University of South Florida, University of Oregon, Sars International Centre for Marine Molecular Biology</i>	Nature's peristaltic pump: Quantification of flow around the undulating tail of appendicularians
8:30 am	2-3	<i>Beckert M, Flammang BE, Nadler JH, Anderson E; Georgia Tech Research Institute, New Jersey Institute of Technology, Grove City College</i>	Computational drag of an attached remora
8:45 am	2-4	<i>Fish FE, Williams TM, Wei T; West Chester University, University of California, Santa Cruz, University of Nebraska, Lincoln</i>	Tail stands in dolphins: Experimental measurement of force generation using bubble DPIV
9:00 am	2-5	<i>Miller LA, Jones S; University of North Carolina</i>	The role of bristles in wing-wing interactions
9:15 am	2-6	<i>Lang AW, Slegers N, Wilroy JA, Wahidi R, Heilman M, Cranford J, Yoder J; University of Alabama, George Fox University</i>	The aerodynamic benefit of butterfly scales
9:30 am	2-7	<i>Ortega-Jiménez VM, Martín-Alcántara A, Fernández-Ferri R, Dudley R; University of California, Berkeley, University of Málaga, Spain</i>	Autorotation performance of animal wings

9:45 am **Coffee Break** **Exhibit Hall**

8:15 AM – 9:45 AM

Session 3

Room 214

Larval Ecology

Chairs: Molly Jacobs, Jason Hodin

8:15 am	3-1	<i>Jacobs MW, Bayer SR; McDaniel College, University of Maine</i>	Effects of postlarval experience on settlement behavior in postlarval and juvenile lobsters, <i>Homarus americanus</i>
8:30 am	3-2	<i>Chan KYK, Ngo J; Hong Kong University of Science and Technology</i>	Is it mom's or dad's fault? Effects of ocean acidification on gametes and fertilization success of the tropical sea urchin <i>Heliocidaris crassispina</i>
8:45 am	3-3	<i>Ferner MC, Hodin J*, Ng G, Lowe CJ, Gaylord B; SFSU and Romburg Tiburon Center, University of Washington, UC Davis, Hopkins Marine Station of Stanford University</i>	Tumbling pass: Sand dollar larvae show genetic variation for their turbulence responses at settlement
9:00 am	3-4	<i>Freckleton ML, Nedved BT, Hadfield MG; University of Hawaii at Manoa</i>	Multiple bacterial cues induce larval invertebrate settlement
9:15 am	3-5	<i>Gehman AM, Byers JE; University of British Columbia, University of Georgia</i>	Temperature effects on parasite larval size over time and across multiple life stages
9:30 am	3-6	<i>Genovese CB, Marko PB, Lei W, Patton A, Moran AL; University of Hawaii at Manoa</i>	Plasticity in thermal tolerance of early life history stages of marine invertebrate larvae

9:45 am

Coffee Break

Exhibit Hall

8:00 AM – 9:30 AM

Session 4

Room 215-216

Muscle Physiology and Mechanics

Chairs: Nicolai Konow, Anthony Hessel

8:00 am	4-1	<i>Hessel AL, Nishikawa KC; Northern Arizona University</i>	Optimal muscle length is the same for twitch and tetanic contractions in muscles from <i>mdm</i> mice: A role for titin in isometric force production?
8:15 am	4-2	<i>Konow N, Tijis C, Biewener AA; U. Mass. Lowell, Harvard University</i>	How does architectural gearing affect muscle function in vivo?
8:30 am	4-3	<i>Rummel AD, Swartz SM, Marsh RL; Brown University</i>	Contractile properties of a carpal extensor in carollia: Are wing muscles adapted to operate below core body temperature?
8:45 am	4-4	<i>Sleboda DA, Roberts TJ; Brown University</i>	Are all skeletal muscles helically-reinforced hydrostats?
9:00 am	4-5	<i>Tijis C, Konow N, Biewener AA; Harvard University</i>	Comparison of fascicle versus whole muscle contractile speed within a compartmentalized muscle
9:15 am	4-6	<i>Holt NC, Eaton CE, Azizi E; University of California, Irvine</i>	Structural limits to mechanical work production in skeletal muscle

9:30 am

Coffee Break

Exhibit Hall

8:00 AM – 9:45 AM

Session 5

Room 217

Thermal Adaptation

Chair: Morgan Kelly

8:00 am	5-1	<i>Kelly MW, Yoon A; Louisiana State University</i>	Protein coding and regulatory variation contribute to heat adaptation in the copepod <i>Tigriopus californicus</i>
8:15 am	5-2	<i>Logan ML, Minnaar IA, Clusella-Trullas S; Harvard University, Stellenbosch University</i>	The evolutionary potential of a global insect invader in the face of rapid environmental change
8:30 am	5-3	<i>Campbell Staton SC, Winchell KM; University of Illinois, Champaign-Urbana, University of Massachusetts, Boston</i>	Urban heat islands and temperature-mediated physiological shifts between populations of the Puerto Rican crested anole
8:45 am	5-4	<i>Fetters TL, McGlothlin JW; Virginia Tech</i>	Geographic variation in incubation duration and egg laying patterns in an invasive lizard (<i>Anolis sagrei</i>)

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9:00 am	5-5	<i>Ferris KG, Phifer-Rixey M, Chavez AS, Bi K, Ballinger M, Heyer GP, Suzuki TA, Nachman MW; UC Davis, UC Berkeley</i>	The genomics of rapid adaptation to climatic extremes in house mice across the Americas
9:15 am	5-6	<i>O'Brien HD; Oklahoma State University Center for Health Sciences</i>	Selective brain cooling as an artiodactyl key innovation for climate change survivorship
9:30 am	5-7	<i>Jangjoo M, Matter SF, Benoit JB, Keyghobadi N; University of Western Ontario, Canada, University of Cincinnati</i>	Gene expression associated with dispersal ability under different temperature conditions in the alpine butterfly, <i>Parnassius smintheus</i>

9:45 am **Coffee Break** **Exhibit Hall**

8:00 AM – 9:45 AM **Session 6** **Room 218**

Phylogenetics I

Chairs: Greg Rouse

8:00 am	6-1	<i>Hernandez AM, Ryan JF; University of Florida</i>	A preponderance of enzymes in the horizontally transferred genes of animals: Evidence from the ctenophore <i>Mnemiopsis leidyi</i>
8:15 am	6-2	<i>Scioli JA, Felder DL; University of Louisiana, Lafayette</i>	Molecular phylogeny of the <i>alpheus</i> “macrocheles” species group in the tropical western Atlantic uncovers undescribed diversity
8:30 am	6-3	<i>Eernisse DJ, Ibañez CM; California State University, Universidad Andres Bello, Chile</i>	Clearing up taxonomic confusion in South American <i>Tonicia</i> (Mollusca: Polyplacophora)
8:45 am	6-4	<i>Rouse GW, Carvajal JI, Oji T, Messing CM; Scripps Institution of Oceanography, Nagoya University, Nova Southeastern University</i>	Insights into extant crinoid phylogeny from transcriptomes and targeted capture molecular sequence data
9:00 am	6-5	<i>Green B, Gosliner TM; California Academy of Sciences</i>	A preliminary molecular phylogeny of the nudibranch genus <i>Flabellina</i>
9:15 am	6-6	<i>Bakkes DK, Sole CL, Mansell MW; Onderstepoort Veterinary Institute, University of Pretoria</i>	Evolutionary history of the extant silky lacewings (<i>Insecta: Neuroptera: Psychopsidae</i>)
9:30 am	6-7	<i>McCarthy JB, Vendetti JE, Krug PJ, Valdés AA; California State Polytechnic University, Pomona, Natural History Museum of Los Angeles County, California State University, Los Angeles</i>	The slug within the bivalve: Reconciliation of shell-based taxonomy and molecular data in Jullidae (<i>Heterobranchia: Sacoglossa</i>)

9:45 am **Coffee Break** **Exhibit Hall**

8:15 AM – 9:45 AM **Session 7** **Room 219**

Disease Ecology I: Host-Parasite/Pathogen Interactions

Chairs: Cynthia Downs, Rudolf Schilder

8:15 am	7-1	<i>Downs CJ, Maccoll E, Vanesky K, Buck JA, Dudek BM, Eagles-Smith CA, Heath JA, Herring G, Vennum C; Hamilton College, Golden Gate Raptor Observatory, US Fish and Wildlife Service, Boise State University, USGS, University of Nevada</i>	Correlates of immune defenses in golden eagles
8:30 am	7-2	<i>Hebert FO, Grambauer S, Barber I, Landry CR, Aubin-Horth N; Laval University, University of Leicester</i>	Major host transitions are modulated through transcriptome-wide reprogramming events in the Cestode <i>Schistocephalus solidus</i> , a threespine stickleback parasite
8:45 am	7-4	<i>Newhouse DJ, Hofmeister EK, Balakrishnan CN; East Carolina University, USGS National Wildlife Health Center</i>	Transcriptional response to west Nile virus infection in zebra finches
9:00 am	7-5	<i>Larson D; University of Alaska Fairbanks</i>	Parasite survival in a freeze-tolerant host
9:15 am	7-6	<i>Schilder RJ, Hornett EA, Marden JH; Penn State University</i>	Ecophysiology of infection-associated metabolic disease in a dragonfly
9:30 am	7-7	<i>Warburton EM, Khokhlova IS, Kiefer D, Krasnov BR; Ben Gurion University of the Negev</i>	Morphological asymmetry and habitat quality: Using fleas and their rodent hosts as a novel experimental system

9:45 am **Coffee Break** **Exhibit Hall**

8:30 AM – 9:30 AM Session 8 Room 220

Crustacean Endocrinology

Chairs: Amir Sagi, Sherry Tamone

8:30 am	8-1	<i>Shpak N, Katzir L, Mentel O, Shavit K, Manor R, Weil S, Aflalo ED, Sagi A; Ben-Gurion University of the Negev</i>	Gene knockdown and dsRNA length in crustaceans
8:45 am	8-2	<i>Calhoun SM, Zou E; Nicholls State University</i>	Correlation between epidermal carbonic anhydrase and exoskeletal metals content in the blue crab, <i>Callinectes sapidus</i>
9:00 am	8-3	<i>Roegner ME, Chen HY, Watson RD; University of Alabama at Birmingham</i>	Cloning of a cDNA encoding a Sarco/endoplasmic Reticulum Ca ²⁺ ATPase (SERCA) from Y-organs of the blue crab (<i>Callinectes sapidus</i>) and spatial and temporal patterns of SERCA expression
9:15 am	8-4	<i>Levy T, Manor R, Tamone SL, Aflalo ED, Sagi A; Ben-Gurion University of the Negev, University of Alaska Southeast</i>	Sexual differentiation during the life history of a protandric shrimp

9:30 am Coffee Break Exhibit Hall

8:00 AM – 10:00 AM Session 9 Room 221

Collective Behavior

Chair: Michael Greene

8:00 am	9-1	<i>Bubak AN, Hoover KM, Renner KJ, Swallow JG, Greene MJ*; University of Colorado Denver, University of South Dakota</i>	The role of brain monoamines (serotonin (5-HT), octopamine, and dopamine in pavement ant aggression
8:15 am	9-2	<i>Hoover KM, Bubak AN, Law IJ, Yaeger JDW, Renner KJ, Swallow JG, Greene MJ; University of Colorado Denver, University of Colorado Anschutz Medical Campus, University of South Dakota</i>	The organization of societal conflicts by pavement ants <i>Tetramorium caespitum</i> : An agent-based model of amine-mediated decision making
8:30 am	9-3	<i>Charbonneau D, Dornhaus A; University of Arizona</i>	Who are the “lazy” ants? Inter-worker variation gives insight into potential functions of inactivity
8:45 am	9-4	<i>Walton AR, Dolezal AG, Toth AL, Walton A; Iowa State University</i>	Larval and adult pollen diet affects a honey bee worker’s response to the queen
9:00 am	9-5	<i>Waters JS, Toth J, Harrison JF, Fewell JH; Providence College, Arizona State University</i>	Metabolic allometry and the scaling of interaction patterns with ant colony size
9:15 am	9-6	<i>Peters JM, Peleg O, Combes SA, Mahadevan L; Harvard University, University of California, Davis</i>	Honey bee colonies use flow-mediated stigmergy to minimize shear during collective nest ventilation
9:30 am	9-7	<i>Gundlach KA, Watson GM; University of Louisiana at Lafayette</i>	Interspecific anemone mucus enhances cnida discharge in the anemone, <i>Haliplanella luciae</i>
9:45 am	9-8	<i>Samson JE, Miller LA; UNC Chapel Hill</i>	Using a neuroscience approach to uncover patterns of collective behavior in pulsing corals

10:00 am Coffee Break Exhibit Hall

8:15 AM – 10:00 AM Session 10 Room 222

Evolution of Communication Systems

Chair: Nate Morehouse

8:15 am	10-1	<i>Morehouse NI, Zurek DB, Taylor LA, Cronin T; University of Cincinnati, University of Florida, Gainesville, University of Maryland, Baltimore County</i>	Repeated evolution of color vision underlies rapid diversification of salticid male coloration
8:30 am	10-2	<i>Sukhum KV, Carlson BA; Washington University in St. Louis</i>	Extreme enlargement of the cerebellum is associated with the evolution of electroreception
8:45 am	10-3	<i>Yohe LR, Rosenthal H, Hoffmann S, Davalos LM; Stony Brook University, Smithtown High School, NYIT College of Osteopathic Medicine</i>	Birth-death dynamics reveal how phylogeny and ecology shape the evolution of mammalian vomerolfaction

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9:00 am	10-4	<i>Buchinger TJ, Bussy U, Li K, Wang H, Baker CF, Huertas M, Jia L, Hayes MC, Li W, Johnson NS; Michigan State University, National Institute of Water and Atmospheric Research, United State Geological Survey</i>	Evolution of pheromone communication in lampreys
9:15 am	10-5	<i>Harness N, Schul J; University of Missouri</i>	The origin of complex calls: Inferences from phylogeny and function
9:30 am	10-6	<i>Bredlau JP, Kester KM; Virginia Commonwealth University</i>	Building a phylogeny of parasitic wasps in the genus, <i>Cotesia</i> , based on species-specific courtship songs
9:45 am	10-7	<i>Garcia SM, Kopuchian C, Fuxjager MJ, Riede T, Goller F; University of Utah, CECOAL-CONICET, Wake Forest University, Midwestern University</i>	Evolution of diverse song: Functional morphology of the avian syrinx and motor control in suboscines and oscines
10:00 am	Coffee Break		Exhibit Hall

8:00 AM – 9:45 AM **Session 11** **Room 223**

Population Genetics

Chairs: Jake Lasala

8:00 am	11-1	<i>Lasala JA, Hughes CR, Wyneken J; Florida Atlantic University</i>	Promiscuity in marine turtles: Evolutionary push for population stability?
8:15 am	11-2	<i>Ayers KD, Gumm JM; Stephen F. Austin State University</i>	Conservation genetics of endemic <i>Cyprinodon rubrofluviatilis</i> and invasive <i>Cyprinodon variegatus</i>
8:30 am	11-3	<i>Havird JC, Sloan DB; Colorado State University</i>	Do mitochondria create species boundaries or ignore them? Evidence from a plant lineage with fast-evolving mtDNA
8:45 am	11-4	<i>Kutch IC, Fedorka KM; University of Central Florida</i>	Does the Y-chromosome facilitate sexual dimorphic evolution or constrain autosomal evolution?
9:00 am	11-5	<i>Hill GE, Lopes RJ, Johnson JD, Toomey MB, Ferreira M, Melo-Ferreira J, Andersson L, Corbo JC, Carneiro M, Hill G; Auburn University, Universidade do Porto, Wash U St Louis, Uppsala University</i>	Genetic basis for red coloration in birds
9:15 am	11-6	<i>Browne L, Karubian J, Browne L; Tulane University</i>	Frequency dependent selection for rare genotypes promotes genetic diversity of a tropical palm
9:30 am	11-7	<i>Weinberg RB, Clancy D, Cohen CS; San Francisco State University</i>	Genetic changes following fusion in the invasive colonial tunicate <i>Didemnum vexillum</i>
9:45 am	Coffee Break		Exhibit Hall

8:00 AM – 9:45 AM **Session 12** **Room 224**

Predators and Prey I

Chairs: Stacey Combes, Megan Porter

8:00 am	12-1	<i>Porter ML, Steck M, Robinson HE; University of Hawai'i at Manoa</i>	The kinematics of larval stomatopod swimming and strike behaviors
8:15 am	12-2	<i>Mendelson L, Techet AH; MIT</i>	Spatially constrained acceleration in jumping archer fish, <i>Toxotes microlepis</i>
8:30 am	12-3	<i>Diamond KM, Schoenfuss HL, Walker JA, Blob RW; Clemson University, St. Cloud State Univ, University of Southern Maine</i>	Does ontogenetic environment influence escape response? Comparative escape responses of goby fishes through ontogeny and among islands
8:45 am	12-4	<i>Combes SA, Gagliardi SF, Salcedo MK, Iwasaki JM, Rundle DE, Crall JD; University of California, Davis, Harvard University, University of Otago, New Zealand</i>	More than one way to capture prey: Comparative flight biomechanics and capture strategies of hunting dragonflies
9:00 am	12-5	<i>Wilson RS, Levy O, Wheatley R, Pavlic T; The University of Queensland, Arizona State University</i>	Predicting escape success of terrestrial animals along paths of varying curvature

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9:15 am	12-6	Boggett S, Stiles J-L, Summers AP, Fudge DS*; University of Guelph, University of Washington, Chapman University	How do hagfishes survive shark attacks?
9:30 am	12-7	Wilson A, Hubel T, Dewhirst O, Roskilly K, West T, Lorenc M, Diack R, Bartlam-Brooks H, Bennitt E, Gobolek K, McNutt J, Curtin N; RVC, University of Botswana, Botswana Predator Conservation Trust	Biomechanics of predator prey interaction in four African mammals—Is it an arms race?
9:45 am	Coffee Break		Exhibit Hall

10:15 AM – 12:00 PM Session 13 Room 210

Evo-devo: Developmental Origins of Shape Variation

Chair: Craig Albertson

10:15 am	13-1	Albertson RC, Kawasaki K, Powder KE; University of Massachusetts, Amherst, Clemson University	Genetic and developmental basis for scale shape variation in Lake Malawi cichlids
10:30 am	13-2	Morris ZS, Pierce SE, Abzhanov A; Harvard University, Imperial College London	Craniofacial growth zones and modularity in Amniota: Insight from the model crocodylian, <i>Alligator mississippiensis</i>
10:45 am	13-3	Lainoff AJ, Young NM, Hallgrímsson B, Marcucio RS; University of California, San Francisco, University of Calgary, AB	Identifying sources of craniofacial phenotypic variation produced by small changes in sonic hedgehog (SHH) signaling
11:00 am	13-4	Roston RA, Yamato M, Roth VL; Duke University, National Museum of Natural History, Smithsonian Institution	Bone overlap (telescoping) and the role of the basicranium in reorientation of the nasal passage in cetacean skulls
11:15 am	13-5	Cooper WJ, Carter C, McMenamin S, Sweet E, Galindo D, Wagner M, Nazaire C, Khalid A; Washington State University, Tri Cities, University of Massachusetts, Lowell	Evo-devo studies identify metamorphosis a critical period for determining jaw protrusion mechanics in both acanthomorph and cypriniform fishes
11:30 am	13-6	Powder KE, Albertson RC; Clemson University, University of Massachusetts, Amherst	Identifying cis-regulatory enhancers associated with cichlid craniofacial evolution
11:45 am	13-7	Lencer E; Cornell University	Sources of skull variation among ecologically differentiated species of pupfish (<i>Genus Cyprinodon</i>)

11:45 am Lunch Break

10:15 AM – 12:00 PM Session 14 Room 211-213

Biomaterials I

Chairs: Mason Dean, Cheryl Wilga

10:15 am	14-1	Kelly DA, Moore BC; University of Massachusetts, Sewanee: The University of the South	Structural and functional differences in the penile tendons of the American alligator (<i>Alligator mississippiensis</i>)
10:30 am	14-2	Sanders EK, Donatelli CM, Tytell ED; Tufts University	With every fiber: The effects of collagen fiber orientation on the body mechanics of six species of elongate fishes
10:45 am	14-3	Minicozzi M, Perez J, Summers A, Gibb AC; Northern Arizona University, University of Washington	It's only a flesh wound! Puncture force scaling in flatfishes
11:00 am	14-4	Freedman C, Fudge DS*; University of Guelph, Chapman University	Hagfish houdinis: Biomechanics and behavior of squeezing through small openings
11:15 am	14-5	Kenaley C, Sanin A; Boston College	Mechanics of fish skin: Contrasting material properties within and between functional systems
11:30 am	14-6	Creager SB, Porter ME*; Florida Atlantic University	A comparative study on the tensile properties of shark skin
11:45 am	14-7	Gough WT, Fish FE, Lewis GT, Bart-Smith H; West Chester University, PA, University of Virginia	Physical properties and anisotropy in the central tissue layer of cetacean tail flukes

12:00 pm Lunch Break

10:15 AM – 12:00 PM **Session 15** **Room 214**

Coral Reef Biology

Chair: Mikhail Matz

10:15 am	15-1	<i>Dixon GB, Bay LK, Matz MV; University of Texas, Austin, Australian Institute of Marine Science, Australia</i>	Implasticity gene body methylation in a reef-building coral
10:30 am	15-2	<i>Barfield SJ, Davies SW, Matz MV; University of Texas, Austin, University of North Carolina, Chapel Hill</i>	Genetic signatures of coral recolonization following extensive mortality by crown-of-thorns (<i>Acanthaster planci</i>) on Yap Island, Micronesia
10:45 am	15-3	<i>Sims RJ, Smith KM, Childress MJ; Clemson University</i>	Defenders of the reef: Impacts of damselfish territoriality on coral reef community structure
11:00 am	15-4	<i>Smith KM, Childress MJ; Clemson University</i>	Top-down versus bottom-up regulation of coral cover in the Florida Keys
11:15 am	15-5	<i>Matz MV, Dixon GB, Trembl EA; University of Texas at Austin, University of Melbourne</i>	Adaptive demographic pathways for Great Barrier Reef corals
11:30 am	15-6	<i>Kitchen SA, Devlin-Durante MK, Harris RS, Ratan A, Fogarty ND, Miller W, Baums IB; Penn State University, University of Virginia School of Medicine, NOVA Southeastern, Penn State University</i>	Genomic evidence of complex hybridization in Caribbean acropids
11:45 am	15-7	<i>Debiasse MB, Stubler AD, Kelly MW; University of Florida, University of North Carolina Wilmington, Louisiana State University</i>	Testing the effect of ocean acidification on a sponge-coral species interaction

12:00 pm Lunch Break

10:00 AM – 12:00 PM **Session 16** **Room 215-216**

Elastic Mechanisms

Chairs: Manny Azizi, Jeffrey Olberding

10:00 am	16-1	<i>Rosario MV, Sutton GP, Patek SN, Sawicki GS; Brown University, University of Bristol, Duke University, North Carolina State University, University of North Carolina at Chapel Hill</i>	The springs of time-limited bullfrog jumps and slow-preparation grasshopper leaps are tuned to their muscle dynamics
10:15 am	16-2	<i>Yawar A, Korpas LM, Lugo-Bolanos M, Mandre S, Venkadesan M; Yale University, Brown University</i>	Bending-stretching coupling in the human foot: Role of the transverse arch
10:30 am	16-3	<i>Abbott EM, Azizi E, Abbott E; University of California, Irvine</i>	When springs have sprung: Tendon recoil rates at different temperatures
10:45 am	16-4	<i>Rankin JW, Blasdell K, McGowan CP; University of Idaho</i>	New insights into the hill-type muscle model: A comparison between simulated and directly measured muscle fiber length changes during jumping in kangaroo rats
11:00 am	16-5	<i>Olberding JP, Deban SM; University of South Florida</i>	The interaction of scale and temperature in elastically powered movements
11:15 am	16-6	<i>Patek SN, Azizi M, Bhamla MS, Cox S, Ilton M, Kim Y, Koh J, Kuo J, Ma X, Prakash M, Sutton GP, Temel Z; Duke University, University of California Irvine, Stanford University, Penn State University, UMass Amherst, Harvard University, University of Maryland College Park, University of Bristol</i>	Extreme power amplification in biological systems
11:30 am	16-7	<i>Kuo C-Y, Ruta A, Thompson C, Patek SN; Duke University, Charles E. Jordan High School</i>	Extreme asymmetry in the energy transfer rate of trap-jaw ant mandibles
11:45 am	16-8	<i>Deban SM, Bloom SV, O'Donnell MK, Olberding JP, Stinson CM, Scales JA; University South Florida, Tampa, Calif. State University, Stanislaus</i>	Evolution of a high performance and functionally robust musculoskeletal system

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 17 Room 217

Flight I

Chair: Ashley Heers

10:15 am	17-1	<i>Gagliardi SF, Combes SA; University of California, Davis</i>	The high cost of flapping faster: Metabolic and kinematic changes in heavily loaded bumblebees
10:30 am	17-2	<i>Gravish N, Gagliardi F, Combes SA; University of California, San Diego, University of California, Davis</i>	Bumblebees shift into reverse: Flight biomechanics and guidance in the presence of tailwinds
10:45 am	17-3	<i>Vance J; College of Charleston</i>	Comparing aerodynamic efficiency of flight kinematics in the honey bee, <i>Apis mellifera</i>
11:00 am	17-4	<i>Yeung D, Wang X, Hsu S, Liu P, Cheng B*, Cheng BO; The Pennsylvania State University</i>	Flight mechanics of landing maneuvers in bluebottle flies
11:15 am	17-5	<i>Thakur N, Hsu S, Delacato C, Cheng B*; The Pennsylvania State University</i>	Kinematics and aerodynamics of forward flight in bluebottle flies: Experiments Using a magnetic flight mill
11:30 am	17-6	<i>Bomphrey RJ, Nakata T, Phillips N, Walker SM; Royal Veterinary College, Chiba University, Oxford University</i>	Mosquitoes show evidence for a new lifting mechanism in insect flight
11:45 am	17-7	<i>Jakobi T, Ravi S, Kolomenskiy D, Ikeda T, Liu H; RMIT, Chiba University</i>	Battling with big blasts: Bumblebees orchestrate clever flight manoeuvres in complex environments

12:00 pm Lunch Break

10:15 AM – 11:45 AM Session 18 Room 218

Phylogenetics II

Chair: Kevin Kocot

10:15 am	18-1	<i>Pisani D; University of Bristol</i>	Improving the fit of the model to the data strengthen support for sponges as the sister group of all the other animals
10:30 am	18-2	<i>Craig CW, Felder DL; University Louisiana, Lafayette</i>	Establishing a global consensus on hermit crab evolution through molecular phylogenetic analysis
10:45 am	18-3	<i>Biancani LM, Osborn KJ, Cummings MP; University of Maryland, College Park, Smithsonian National Museum of Natural History</i>	Unraveling the evolutionary history of hyperiidea (<i>Crustacea: Amphipoda</i>)
11:00 am	18-4	<i>Kocot KM, Struck TH, Merkel J, Waits DS, Todt C, Brannock PM, Weese DA, Cannon JT, Moroz LL, Lieb B, Halanych KM; University of Alabama, University of Oslo, Johannes Gutenberg University, Auburn University, University Museum of Bergen, Georgia College and State University, Naturhistoriska Riksmuseet Stockholm, Whitney Laboratory for Marine Bioscience, Johannes Gutenberg University</i>	Phylogenomics of lophotrochozoa with consideration of systematic error
11:15 am	18-5	<i>Schachat SR; Stanford University, Smithsonian Institution</i>	Unexpected morphology and unprecedented polymorphism: Does <i>Agathiphaga</i> clarify or confuse relationships at the base of the moth tree of life?
11:30 am	18-6	<i>Armbruster JW, Stout CC, Hayes MM*; Auburn University</i>	An empirical test for convergence using african barbs (<i>Cypriniformes: Cyprinidae</i>)

11:45 am Lunch Break

10:30 AM – 12:00 PM Session 19 Room 219

Disease Ecology II: Host-Pathogen Population Dynamics

Chairs: James Adelman, Maxine Zylberberg

10:30 am	19-1	<i>Houston DD, Azeem S, Lundy C, Sato Y, Guo B, Blanchong JA, Gauger PC, Yoon KJ, Adelman JS*; Iowa State University</i>	No evidence of a role for wild songbirds or rodents in spreading avian influenza virus across an agricultural landscape
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10:45 am	19-2	<i>Leon AE, Hawley DM; Virginia Tech, Blacksburg</i>	Virulence and within-host fitness of <i>Mycoplasma gallisepticum</i> in previously exposed house finches
11:00 am	19-3	<i>Sandmeier FC, Maloney NK, Tracy CR, Hunter K, Dupre S; Colorado State University-Pueblo, Vanderbilt University, University of Nevada, Reno</i>	Persistence of respiratory disease in tortoise populations: Subclinical disease, transmission, and a possible dilution-effect
11:15 am	19-4	<i>Zylberberg M, Van Hemert C, Dumbacher JP, Handel CM, Tihan T, Derisi JL; University of California, San Francisco, US Geological Survey, California Academy of Sciences</i>	Applying metagenomic sequencing to search for the cause of an elusive avian disease: Avian keratin disorder in black-capped chickadees
11:30 am	19-5	<i>Direnzo GV, Zipkin EF, Grant EHC, Longo AV, Zamudio KR, Royle JA, Lips KR; Michigan State University, USGS Patuxent Wildlife Research Center, University of Maryland, Cornell University</i>	Modeling amphibian-chytrid disease dynamics less than 10 years following a chytrid outbreak
11:45 am	19-6	<i>Zuazo CE, Bennett S, Kapan D; California Academy of Sciences</i>	Home is where the gut is: Variation among mosquito species and their endosymbionts across different habitats

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 20

Room 220

Aubrey Gorbman Award – DCE Best Student Presentation

Chairs: *Laura Carruth, Rosemary Knapp*

10:15 am	20-1	<i>Booth A, Zou E; Nicholls State University</i>	Impact of molt-disrupting BDE-47 on epidermal ecdysteroid signaling in the blue crab, <i>Callinectes sapidus</i> , in vitro
10:30 am	20-2	<i>Dayger CA, Lutterschmidt DI; Portland State University, Oregon</i>	Modulation of the hypothalamus-pituitary-adrenal axis is associated with life-history transitions in garter snakes
10:45 am	20-3	<i>Ferguson SM, Schoech SJ; University of Memphis</i>	Conspecific call playback leads to an exaggerated adrenocortical response to handling stress in Florida scrub-jay (<i>Aphelocoma coerulescens</i>) nestlings
11:00 am	20-4	<i>Pusch EA, Bentz AB, Navara KJ; University of Georgia</i>	Personality corresponds to differences in immunity in two strains of laying hens
11:15 am	20-5	<i>Crovo JA, Johnston CE; Auburn University</i>	Rhapsody in reproduction: Acoustic modulation of gonadal hormones in a cyprinid fish
11:30 am	20-6	<i>Merritt JR, Mays SG, Ortlund EA, Maney DL; Emory University</i>	An estrogen receptor alpha polymorphism may mediate behavioral polymorphism in the white-throated sparrow
11:45 am	20-7	<i>Elderbrock EK, Small TW, Schoech SJ; University of Memphis</i>	Nestling growth and behavior linked to future physiological phenotype of Florida scrub-jays

12:00 pm Lunch Break

10:30 AM – 12:00 PM Session 21

Room 221

Behavioral Syndromes

Chair: *Danielle Lee*

10:30 am	21-1	<i>Lee DN, Ophir AG; Southern Illinois University Edwardsville, Cornell University</i>	Novelty responses and individuality of African giant pouched rats
10:45 am	21-2	<i>Westrick SE, Van Kesteren F, Boutin S, Humphries MM, Lane J, McAdam AG, Dantzer B; University of Michigan, University of Alberta, McGill University, University of Saskatchewan, University of Guelph</i>	Evolutionary consequences and proximate mechanisms of maternal styles in a wild mammal
11:00 am	21-3	<i>Mowery MA, Pakirathan R, Mason AC, Andrade MCB; University of Toronto Scarborough</i>	Development and behavioural variation in the redback spider
11:15 am	21-4	<i>Hellmann JK, Sabol AC*, Ligocki IY, Hamilton IM; University of Illinois, Urbana-Champaign, University of Michigan, University of California, Davis, Ohio State University</i>	Personality is linked to intragroup social dynamics in a cooperatively breeding fish

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11:30 am	21-5	Keiser CN, Pruitt JN; Rice University, University of California, Santa Barbara	Personality composition alters bacterial transmission dynamics in spider societies
11:45 am	21-6	Marting PR; Arizona State University	Exploring causes and consequences of colony personality in the Azteca-cecropia mutualism

12:00 pm **Lunch Break**

10:30 AM – 12:00 PM **Session 22**

Room 222

Genetics of Communication and Social Behaviors

Chair: David Stern

10:30 am	22-1	Stern DL, Ding Y, Berrocal A, Morita T, Longden KD, Stern D; Janelia Research Campus, UC Berkeley	Natural courtship song variation caused by an intronic retroelement in an ion channel gene
10:45 am	22-2	Ahmed OM, Manoli DS, Tun KM, Serpa P, Cheng J, Knapp JM, Stern DL, Shah NM; University of California, San Francisco, Janelia Research Campus	Evolutionary mechanisms that inhibit interspecies mating in drosophila
11:00 am	22-3	Hensley NM, Frawley J, Gerrish GA, Oakley TH, Rivers TJ; University of California, Santa Barbara, Medical College of Wisconsin, University of Wisconsin, University of Kansas	Illuminating genotype - phenotype connections in the bioluminescent mating displays of cyprinid ostracods
11:15 am	22-4	Field KE, Johnson KK, Maruska KP; Louisiana State University	How do sexually-relevant olfactory and visual signals affect behavior and neural activation in the social African cichlid, <i>Astatotilapia burtoni</i> ?
11:30 am	22-5	Butler JM, Maruska KP; Louisiana State University	Expression of <i>tachykinin3</i> in socially-relevant brain regions is regulated by social status in the African cichlid fish <i>Astatotilapia burtoni</i>
11:45 am	22-6	Wright TF, Hara E, Whitney O, Lucero E, Araya-Salas M; New Mexico State University	Hardwired for plasticity? The role of <i>FoxP2</i> in maintaining vocal plasticity in the budgerigar

12:00 pm **Lunch Break**

10:15 AM – 12:00 PM **Session 23**

Room 223

DNB Best Student Presentations

Chair: Paul Moore

10:15 am	23-1	Bubak AN, Watt MJ, Renner KJ, Swallow JG; University of Colorado, University of South Dakota	Serotonin-mediated aggression: Sex-dependent roles in regulating neuropeptides
10:30 am	23-2	Dabe EC, Gillette R, Moroz LL; University of Florida, University of Illinois	Profiling serotonergic neurons across behavioral arousal states with single-neuron transcriptomes
10:45 am	23-3	Tamvacakis AN, Boykin J, Katz PS; Georgia State University	Differential expression of serotonin receptor genes in homologous neurons underlies species-typical swimming behaviors in Nudipleura sea slugs
11:00 am	23-4	Sinkiewicz DM, Wilczynski W; Georgia State University	Impact of sex and region on gene expression in <i>Hyla cinerea</i> brain
11:15 am	23-5	Rubin LB, Smith K; University of Louisiana at Lafayette	Inactivation of <i>fgfr1</i> and <i>fgfr2</i> in postnatal astrocytes
11:30 am	23-6	Cocilova CC, Milton SL, Flewelling LJ, Bossart GD, Walsh CJ; Florida Atlantic University, FL Fish and Wildlife Research Institute, Georgia Aquarium, Mote Marine Laboratory	The effects of red tide toxins in turtles - developing treatment protocols for endangered sea Turtles
11:45 am	23-7	Cave EJ, Kajjura SM; Florida Atlantic University	Effect of deepwater horizon crude oil on olfactory responses in the Atlantic stingray, <i>Dasyatis sabina</i>

12:00 pm **Lunch Break**

Predators and Prey II

Chairs: Roi Holzman, Yu Zeng

10:15 am	24-1	<i>Kraskura K, Nelson JA, Oufiero CE; Towson University</i>	Sprint, fast start and prey capture performance of juvenile striped bass under levels of hypoxia encountered in nature
10:30 am	24-2	<i>Freymler GA, Whitford MW, Higham TE, Clark RW; San Diego State University, University of California, Riverside, University of California, Davis, University of California, Riverside</i>	Kangaroo rat acrobatics: How to dodge a rattlesnake strike
10:45 am	24-3	<i>Moore TY, Cooper KL, Biewener AA, Vasudevan R; University of Michigan, University of California, San Diego, Harvard University, University of Michigan</i>	How the biomechanics of ricochetal bipedalism enhances predator evasion, resource partitioning, and taxonomic diversity in desert rodent communities
11:00 am	24-4	<i>Zeng Y, Crews S; University of California, Merced, California Academy of Sciences</i>	Dynamic leg deformations drive omnidirectional strike maneuvers in flat spiders
11:15 am	24-5	<i>Soto A, McHenry MJ; UC Irvine</i>	Prey targeting with intermittent locomotion in zebrafish
11:30 am	24-6	<i>McHenry MJ, Nair A, Soto A, Johansen J, Liao J; UC Irvine, University of Florida</i>	What aspects of performance matter for predator evasion in fish?
11:45 am	24-7	<i>Holzman R, Avidan L; Tel Aviv University</i>	Effect of flow speed on aquatic predator-prey interactions
12:00 pm	Lunch Break		

Thursday Program Afternoon Sessions

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

Evo-devo: Morphogenesis and Organogenesis

Chairs: Arkhat Abzhanov, Hui Yang

1:30 pm	25-1	<i>Sanger T, Brahmabhatt P; Loyola University in Chicago</i>	The evolutionary and developmental bases of adhesive toepads in caribbean <i>Anolis</i> lizards
1:45 pm	25-2	<i>Range RC; Mississippi State University</i>	Evolution of anterior-posterior axis specification and patterning: Insights from the sea urchin embryo
2:00 pm	25-3	<i>Womack MC, Stynoski J, Lemmon AR, Lemmon EM, Metz M, Hoke KL; Colorado State University, Fort Collins, Florida State University, Tallahassee</i>	Genetic and developmental drivers of convergent ear loss in toads
2:15 pm	25-4	<i>Abzhanov A; Imperial College London and Natural History Museum</i>	Evolution of the animal face: From principles to mechanisms
2:30 pm	25-5	<i>Stynoski JL, Womack M, Trama FA, Coloma LA, Hoke KL; Colorado State University, Centro de Capacitación en Conservación y Desarrollo Sostenible, Centro Jambatu for Research and Conservation of Amphibians</i>	Repeated evolution of incomplete ear development in acoustically communicating toads
2:45 pm	25-6	<i>Yang H, Hochberg R; University of Massachusetts, Lowell</i>	The ultrastructure of rotifer secretion tubes
3:00 pm	25-7	<i>Jahn C, Lerch S, Eibner C*; Friedrich-Schiller-University Jena</i>	Cell proliferation and segmental patterning are closely linked during posterior segmentation in spiders
3:15 pm	25-8	<i>Ross DL, Shubin NH; University of Chicago</i>	The developmental origins of diversity: Shell patterning in a slipper-shell snail
3:30 pm	Break		Exhibit Hall

Biomaterials II

Chairs: Christopher Kenaley, Marianne Porter

1:45 pm	26-1	<i>Hall GJ, Dean MN, Porter MM; Clemson University, Max Planck Institute of Colloids and Interfaces</i>	Mechanical behavior of a biomimetic chondrichthyan feeding mechanism: Influence of dentition patterns
2:00 pm	26-2	<i>Kruppert S, Horstmann M, Weiss LC, Witzel U, Schaber CF, Gorb SN, Tollrian R; Ruhr-University Bochum, Germany, University of Kiel, Germany</i>	Biomechanical properties of a predator induced body armor in the freshwater crustacean <i>Daphnia</i>
2:15 pm	26-4	<i>Nguyen KD, Yu N, Bandi MM, Venkadesan M, Mandre S; Yale University, Tsinghua University, Okinawa Institute of Science and Technology, Brown University</i>	Curvature-induced stiffening of rayed fins
2:30 pm	26-5	<i>Ditsche P, Jackson P, Wooster A, Aspelund L, Turingan R, Penrod L, Dumont B, Ferry L, Wilga C*; Univ Alaska Anchorage, Florida Inst Technology, Univ Massachusetts Amherst, Arizona State Univ</i>	Biomechanical properties of the jaw and hyoid cartilage in elasmobranchs
2:45 pm	26-6	<i>Lowder KB, Taylor JRA; University of California, San Diego</i>	Building specialized armor: Investigation of the complex exoskeleton of the California spiny lobster
3:00 pm	26-7	<i>Dean MN, Hosny A, Knoetel D, Seidel R, Luger AM, Wainwright D, Blumer M, Baum D; MPIKG, Wyss Inst, ZIB, Harvard, MUI</i>	Bricks and anchors: Strategies for load bearing and muscle attachment in the cartilage skeletons of sharks and rays
3:15 pm	26-8	<i>Barrios AS, Paig-Tran EWM; California State University, Fullerton</i>	Freezing effects on the anosteocytic bone of the Pacific mackerel (<i>Scomber japonicus</i>)

3:30 pm **Break** **Exhibit Hall**

Conservation Biology

Chair: Richard Tracy

1:30 pm	27-1	<i>Tracy CR, Sandmeier F, Hunter K, Snyder S, Weitzman C, Maloney N, Nussear K, Marlow R, Hyde D, Dupre S, Mohammidpour H; Colorado State University, Pueblo, University of Nevada, Reno, Bard College Simon's Rock</i>	Can climate warming offer opportunities to desert tortoises to defend against <i>Mycoplasmata agassizii</i> ?
1:45 pm	27-2	<i>Lolavar A, Wyneken J, Erb T; Florida Atlantic University</i>	Impacts of climate change on sea turtle development
2:00 pm	27-3	<i>Thometz NM, Rosen DAS, Reichmuth C; University of California Santa Cruz, University of British Columbia</i>	Patterns of energy intake in captive spotted seals (<i>Phoca largha</i>) provide insight into physiologically sensitive life-stages
2:15 pm	27-4	<i>Bonka AN, Wibbels T, Hernandez MH, Najera BMZ, Sarti L, Illescas F, Pena LJ, Burchfield PM; University of Alabama at Birmingham, Gladys Porter Zoo, Comision Nacional de Areas Naturales Protegidas, Conservacion y Desarrollo de Espacios Naturales</i>	Hatchling Kemp's Ridley (<i>Lepidochelys kempii</i>) sea turtles: Nest emergence at their primary nesting beach
2:30 pm	27-5	<i>Kramer GR, Streby HM*, Peterson SM, Lehman JA, Buehler DA, Larkin JL, McNeil DJ, Wood PB, Andersen DE; U of Toledo, UC Berkeley, U of Tennessee, USGS</i>	Nonbreeding isolation and population-specific migration routes among three populations of golden-winged warblers
2:45 pm	27-6	<i>Mueck K; University of Louisiana at Lafayette</i>	Aestivation in the apple snail <i>Pomacea maculata</i>
3:00 pm	27-7	<i>Resh CA, Mahon AR; Central Michigan University</i>	Genomic analyses of invasive grass carp (<i>Ctenopharyngodon idella</i>) in Lake Erie
3:15 pm	27-8	<i>Tielens EK, Gruner DS; University of Maryland, College Park</i>	Geological age and host polymorphism affect functional diversity and community composition in plant-insect interactions across a space-for-time chronosequence on the Hawaiian Islands

3:30 pm **Break** **Exhibit Hall**

Complementary to S5: With a Little Help from My Friends: Microbial Partners in Integrative and Comparative Biology

Chair: Khrys Duddleston

1:30 pm	28-1	<i>Flynn RW, Thompson K, Mayer GD, Lance SL; University of Georgia, Odum School of Ecology, Texas Tech University, University of Georgia, Athens, GA</i>	Response of amphibian gut microbiome to coal combustion waste
1:45 pm	28-2	<i>Sutherland V, Phippen B, Reitzel AM*; University North Carolina, Charlotte</i>	Ecological and developmental effects of the microbiome associated with the sea anemone <i>Nematostella vectensis</i>
2:00 pm	28-3	<i>McAnulty SJ, Nyholm SV; University of Connecticut</i>	Judging a bacterium by its cover: Differential hemocyte binding in the squid-vibrio symbiosis
2:15 pm	28-4	<i>Salem H, Kaltenpoth M; Emory University, MPI for Chemical Ecology</i>	Nutritional endosymbionts mediate folivory in leaf beetles
2:30 pm	28-5	<i>Duddleston KN; University Alaska Anchorage</i>	Investigating the gut microbial community of an extreme hibernator, the Arctic ground squirrel
2:45 pm	28-6	<i>Warne R, Kirschman L, Zeglin L; Southern Illinois University, Carbondale, Kansas State University</i>	Microbiome engineering effects developmental plasticity, physiological performance, and disease resistance in larval amphibians
3:00 pm	28-7	<i>Lopanik NB, Mathew M, Bean KI; Georgia Institute of Technology, Georgia State University</i>	Impacts of symbiont-produced natural products on host fitness
3:15 pm	28-8	<i>Brothers CJ, Van Der Pol WJ, Morrow CD, Hakim JA, Koo H, McClintock JB; University of Alabama at Birmingham</i>	Climate warming alters predicted microbiome functionality in a model sea urchin

3:30 pm

Break

Exhibit Hall

Evolutionary Biomechanics

Chairs: Martha Munoz, Charlene McCord

1:30 pm	29-1	<i>Munoz MM, Anderson PSL, Patek SN, Munoz M; Duke University, University of Illinois, Urbana-Champaign</i>	Mantis shrimp reveal the evolutionary dynamics of mechanical sensitivity in form-function relationships
1:45 pm	29-2	<i>George AB, Wright B, Westneat MW; University of Chicago</i>	Evolution of median fin shape and swimming performance in balistoid fishes
2:00 pm	29-3	<i>Kaji T, Anker A, Wirkner CS, Palmer AR; University of Alberta, Edmonton, Museu Paraense Emilio Goeldi, Universität Rostock</i>	Evolutionary origin of "snapping" shrimps: Crossing the gap between pinching and snapping claws
2:15 pm	29-4	<i>McCord CL, Westneat MW; University of Chicago</i>	Phylogenetics, morphometrics and cranial biomechanics of butterflyfishes and angelfishes (<i>Chaetodontoidea</i>)
2:30 pm	29-5	<i>Friedman SF, Price SA, Hoey AS, Wainwright PC; University of California, Davis, James Cook University</i>	Ecomorphological convergence in planktivorous surgeonfishes
2:45 pm	29-6	<i>Van Wassenbergh S, Devos P, Herrel A, Adriaens D; Muséum National D'Histoire Naturelle, Ghent University, Ghent</i>	The trade-off between biting and singing performance in finches explained by biomechanical modelling
3:00 pm	29-7	<i>Hodge JR, Wainwright PC; University of California, Davis</i>	The influence of sociality and trophic niche on defensive morphology in butterflyfishes
3:15 pm	29-8	<i>Anderson P, Hu Y, Nelson-Maney N; University of Illinois, Urbana-Champaign, University of Rhode Island, Kingston, University of Massachusetts, Amherst</i>	The odd couple: Common patterns of mechanical sensitivity in sunfishes and mantis shrimp

3:30 pm

Break

Exhibit Hall

1:30 PM – 3:15 PM		Session 30	Room 218
Macroevolution			
Chair: Julia Sigwart			
1:30 pm	30-1	Chang J, Roy K, Baum JK, Cowman PF, Friedman M, Sallan LC, Clarke JT, Alfaro ME; University of California, Los Angeles, University of California, San Diego, University of Victoria, James Cook University, University of Oxford, University of Pennsylvania	Size-selective harvesting and the macroevolutionary implications of an “anthropogenic filter” in ray-finned fishes
1:45 pm	30-2	Cox CL, Davis Rabosky AR, Watson CM, Cox C; Georgia Southern University, University of Michigan, Midwestern State University	Convergent evolution of decoy coloration in lizards
2:00 pm	30-3	Sigwart JD; University of California, Berkeley	Are rapid radiations doing something better, or is it just luck?
2:15 pm	30-4	Culumber ZW, Gifford ME, Tobler M; Kansas State University, University of Central Arkansas	Diversification on the macroevolutionary adaptive landscape following the loss of lungs in caudate amphibians
2:30 pm	30-5	Arbour JH, Santana SE; University of Washington	Does evolutionary rate heterogeneity explain the uneven distribution of species diversity within primates?
2:45 pm	30-6	Santini F; Associazione Italiana per Studio Biodiversita'	Another look at the evolution of fishes on coral reefs
3:00 pm	30-7	Hill JJ, Donoghue PCJ, Rayfield ER; University of Bristol	Evolution of lower jaw disparity: During the initial radiation of gnathostomes
3:15 pm	Break		Exhibit Hall

1:45 PM – 3:15 PM		Session 31	Room 219
Temperature Effects on Morphology and Performance			
Chair: Gary Burness			
1:45 pm	31-1	Kingsolver JG, Shaw FH; University of North Carolina, Chapel Hill, Hamline U	Inconstancy is informative: Estimating performance curves in fluctuating environments
2:00 pm	31-2	Howey C, Roosenburg WM; The Pennsylvania State University, Ohio University	Effect of temperature on snake locomotion and the interpretation of thermal performance curves
2:15 pm	31-3	Finkler MS; Indiana University Kokomo	Effects of varying temperature during early development on hatching size in <i>Chelydra serpentina</i>
2:30 pm	31-4	Chejanovski ZA, Kolbe JJ; University of Rhode Island	Abiotic and biotic determinants of lizard body size across an urbanized landscape
2:45 pm	31-5	Shishido CM, Lane SJ, Woods HA, Tobalske BW, Moran AL; University of Hawaii at Manoa, University of Montana	Temperature, body size, and righting ability of Antarctic pycnogonids
3:00 pm	31-6	Ben-Ezra N, Harris N, Burness G*; Trent University	Constant and cycling incubation temperatures affect the mass, size, and metabolic rate of adult Japanese quail
3:15 pm	Break		Exhibit Hall

1:30 PM – 3:30 PM		Session 32	Room 220
Terrestrial Locomotion			
Chair: David Lee			
1:30 pm	32-1	Holowka NB, Bhandal V, Lam O, Thompson NE, Demes B; Harvard University, Stony Brook University Medical Center, NYIT College of Osteopathic Medicine	Chimpanzee Impact forces during walking and implications for the evolution of bipedalism
1:45 pm	32-2	Biswas T, Bhandawat V*, Rao S; Loyola University, New Orleans, Duke University	A new biomechanical template for walking

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2:00 pm	32-3	<i>Isaacs MR, Hensel S, Lee DV; University of Nevada, Las Vegas, Technische Universität Darmstadt</i>	Effects of decreased heel deflection on a passive walking prosthesis
2:15 pm	32-4	<i>Lee DV, Isaacs MR, Birn-Jeffery A, Voloshina AS, Zhao G, Seyfarth A, Daley MA; University of Nevada Las Vegas, University of Cambridge, Technische Universität Darmstadt, Royal Veterinary College</i>	Bipedal walking of birds, humans, and robots
2:30 pm	32-5	<i>Reilly SM, Montuelle SJ, Schmidt A, Krause C, Naylor E, Jorgensen ME, Essner RL*; Ohio University, Athens, Klinik Bavaria Kreisch, University of California, Riverside, University of Missouri, Columbia, Southern Illinois University Edwardsville</i>	Pelvic function in anuran jumping: Interspecific differences in the kinematics and motor control of the iliosacral articulation during take-off and landing
2:45 pm	32-6	<i>Shine CL, McGowan CP; University of Idaho</i>	Black bear (<i>Ursus americanus</i>) gaits and ground reaction forces: A comparison to grizzly bears
3:00 pm	32-7	<i>Basu C, Deacon F, Wilson AM, Hutchinson JR; Royal Veterinary College, University of the Free State, Republic of South Africa</i>	The fast-speed kinematics of wild giraffes, using video derived from an unmanned aerial vehicle (UAV)
3:15 pm	32-8	<i>Stover KK, Brainerd EL, Roberts TJ; Brown University</i>	Plodding poultry: Locomotor impacts of muscle mass distribution and altered center of mass in the turkey

3:30 pm **Break** **Exhibit Hall**

1:30 PM – 3:15 PM **Session 33** **Room 221**

Species Delimitation

Chair: *Evon Hekkala*

1:30 pm	33-1	<i>Hilliard JL, Hajduk MM, Schulze A; Texas A&M University Galveston</i>	Delineation of <i>Capitella</i> species (Annelida: Capitellidae) in the Northern Gulf of Mexico and Floridian ecoregions
1:45 pm	33-2	<i>Awbrey JD, Krug PJ; University of Louisiana, Lafayette, California State University, Los Angeles</i>	Delimiting cryptic sea slugs with novel integrative methods
2:00 pm	33-3	<i>Moore JM, Osborn KJ; Florida Museum of Natural History, University of Florida, National Museum of Natural History, Smithsonian Institution</i>	Revealing the identity of the model organism <i>Chaetopterus</i> sp. (Annelida)
2:15 pm	33-4	<i>Buckner JC, Ellingson R, Gold DA, Jacobs DK; University of California, Los Angeles</i>	Sequencing dead ducks - The Labrador duck is sister to Stellar's eider and the subfossil <i>Chendytes lawi</i> roots the dabbling duck clade
2:30 pm	33-5	<i>Pezold FL, Ford KL*, Schmidt RC; Texas A&M University, University of Louisiana, Lafayette, Mpala Research Center, Smithsonian Institute</i>	A new species of killifish (<i>Cyprinodontiformes: Nothobranchiidae</i>) from Liberia, West Africa
2:45 pm	33-6	<i>Hekkala ER, Ardema M, Montanari S, Norell M, Amato GA; Fordham University, American Museum of Natural History</i>	Ancient DNA solves the mystery of the extinct horned crocodile from Madagascar
3:00 pm	33-7	<i>Lipshutz SE, Derryberry EP; Tulane University</i>	Genomic characterization of a hybrid zone between sex-role reversed Jacanas

3:15 pm **Break** **Exhibit Hall**

1:30 PM – 3:15 PM **Session 34** **Room 222**

DAB Best Student Presentation

Chair: *Jenny Gumm*

1:30 pm	34-1	<i>Russell AL, Buchmann SL, Papaj DR; University of Arizona</i>	No experience? Not a problem: Flexible pollen foraging by bees does not require learning
1:45 pm	34-2	<i>Brothers JR, Lohmann KJ; University of North Carolina at Chapel Hill</i>	Magnetic genetics: Sea turtle rookery genetic structures provide evidence for geomagnetic imprinting as a mechanism of natal homing

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2:00 pm	34-3	<i>Grecias L, Hebert FO, Berger C, Barber I, Aubin-Horth N; Université Laval, Leicester University</i>	Is the stickleback manipulated by its parasitic flatworm? Combining phenotypic engineering and transcriptomic approaches
2:15 pm	34-4	<i>Goodchild CG, Schmidt LM, Durant SE; Oklahoma State University</i>	Animal personality explains among-individual variation in antipredator strategies
2:30 pm	34-5	<i>Crane RL, Kisare SA, Patek SN; Stanford University, Duke University</i>	Strategic strikes: How mantis shrimp crack open different prey
2:45 pm	34-6	<i>Delia J, Warkentin KM, Delia J; Boston University</i>	The evolution of parent–embryo interactions in glassfrogs
3:00 pm	34-7	<i>Guindre-Parker S, Rubenstein DR; Columbia University</i>	Cooperative breeding reduces the oxidative costs of reproduction
3:15 pm	Break		Exhibit Hall

1:30 PM – 3:15 PM	Session 35	Room 223
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Neuroethology of Predator-Prey Interactions

Chair: Matt McHenry

1:30 pm	35-1	<i>Krayesky-Self S, Watson GM*; University of Louisiana Lafayette</i>	Sea anemones employ hair bundle mechanoreceptors to target spirocyst discharge to swimming appendages of prey
1:45 pm	35-2	<i>Carrillo A, Byron ML, McHenry MJ; University of California, Irvine</i>	Sensing prey in the dark improves with age in zebrafish
2:00 pm	35-3	<i>McKee A, McHenry MJ; University of California, Irvine</i>	Growth changes the escape response to visual looming stimuli in zebrafish
2:15 pm	35-4	<i>Feller KD, Gonzalez-Bellido PT; University of Cambridge</i>	To strike, or not to strike? – Sensorimotor control of the mantis shrimp weapon deployment
2:30 pm	35-5	<i>Clark JL, Moore PA; Bowling Green State University</i>	The Sensory mechanisms of crayfish (<i>Orconectes rusticus</i>) used in detecting predatory threats
2:45 pm	35-6	<i>Li DH, Gilly WF; Hopkins Marine Station of Stanford University</i>	Effects of hypoxia on jet-propelled escape behavior in <i>Doryteuthis opalescens</i> (California Market Squid)
3:00 pm	35-7	<i>Plylar HB, Gutierrez A, Grace MS; Florida Institute of Technology</i>	How cool is this?! Evaporative heat loss & the snake infrared imaging system
3:15 pm	Break		Exhibit Hall

1:30 PM – 3:30 PM	Session 36	Room 224
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Molecular Evolution

Chair: Anna Savage

1:30 pm	36-1	<i>Tangwancharoen S, Burton RS; Scripps Institution of Oceanography, UCSD</i>	Divergence in cis-regulatory elements and HSPB1 gene expression along a temperature cline in the copepod <i>Tigriopus californicus</i>
1:45 pm	36-2	<i>Ramirez MD, Oakley TH; University of California, Santa Barbara</i>	The kernels of major opsin diversity arose before the last common ancestor of all bilaterians
2:00 pm	36-3	<i>Emerling CA; University of California, Berkeley</i>	Genomic evidence for a crocodylian nocturnal bottleneck and reinvention of trichromatic color vision in crocodiles
2:15 pm	36-4	<i>Tassia MG, Whelan NV, Halanych KM; Auburn University, US Fish & Wildlife Service</i>	Evolution and conservation of deuterostome toll-like receptor pathways
2:30 pm	36-5	<i>Dougherty LF, Serb JM, Li J; University of Colorado, Iowa State University</i>	The evolution of flashing as a signal in <i>Ctenoides ales</i> , 'disco' clams
2:45 pm	36-6	<i>Chiodin M, Kayal E, Ohdera A, Medina M, Plachetski DC, Collins AG, Ryan JF*; Whitney Laboratory for Marine Bioscience, Smithsonian Institution National Museum of Natural History, Penn State University, University of New Hampshire, Whitney Laboratory for Marine Bioscience</i>	You gain some, you lose some: Hox genes in the early history of Cnidaria and Bilateria

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3:00 pm	36-7	<i>Dearborn DC, Gager AB, McArthur AG, Gilmour ME, Mandzhukova E, Mauck RA; Bates College, McMaster University, University of California, Santa Cruz, Kenyon College</i>	How to get diverse MHC genotypes without disassortative mating
3:15 pm	36-8	<i>Savage AE, Mulder KP, Torres T, Wells S; University of Central Florida, Center for Conservation Genomics, Smithsonian Institution, Phoenix Zoo</i>	Lost but not forgotten: Class II MHC genotypes predict overwinter survival despite depauperate MHC diversity in a threatened frog
3:30 pm	Break		Exhibit Hall

7:00 PM – 8:00 PM	BART	<i>Sponsored by: Sable Systems International</i>	Room 208/209/210
Bartholomew Lecture	<i>Sheriff M; Penn State University</i>	Integrating physiology, behavior, and ecology to understand the mechanisms that regulate and limit animal populations	

THURSDAY POSTER SESSION P1

Exhibit Hall C, 3:30-5:30 PM

Poster Set Up: 7:30-8:00 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

Posters P1-1 through P1-18 will be on display during Thursday, Friday and Saturday Poster Sessions.

Education

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| P1-1 | <i>Huffmyer AS, Lemus J; Hawaii Institute of Marine Biology, University of Hawaii at Manoa</i> | Teaching style impacts student achievement in a research-based undergraduate science course |
| P1-2 | <i>Frederich M, Fiefel I, Roese U, Bymers L, Zeeman S; University of New England</i> | TURBO: The Undergraduate Saco River Biodiversity Observatory; An LTER-style research experience to enhance STEM education |
| P1-3 | <i>Collin R, Fredericq S, Freshwater DW, Maslakova S, Miglietta MP, Rocha RM, Rodriguez E, Thacker RW; Smithsonian Tropical Res. Inst., University Louisiana, Lafayette, UNC Wilmington, University Oregon, TAMU, Univ. Federal do Paraná, American Museum, SUNY Stony Brook</i> | Increasing access to methods in organismal taxonomy and identification |
| P1-4 | <i>Woodley SK, Odonnell AF; Duquesne University</i> | CIRCLE: Connecting Interdisciplinary undergraduate Research with Community-engaged Learning Experiences |
| P1-5 | <i>Johnson D, Stahlschmidt ZR; University of the Pacific</i> | Backyard ANTology: Using citizen science to open an ecological black box in California's Central Valley |
| P1-6 | <i>Hodin J, Fauville G, Miller P, Epel D, Säljö R, Dupont S; University of Washington, University of Gothenburg, Stanford University</i> | I2SEA: Students envisioning solutions to ocean acidification and climate change |
| P1-7 | <i>Konte RB, Kapan DD; Cleveland Institute of Art, California Academy of Sciences</i> | Field guide to mosquitoes of medical importance in Hawaii |
| P1-8 | <i>Muller UK, Merana G, Bosse E, Lent DD, Walter EM; California State University Fresno</i> | Exploring student understanding and attitudes in introductory biology courses: Lessons learned |
| P1-9 | <i>Self Davies ZT, Usherwood JR; The Royal Veterinary College</i> | Stepping into science: Engagement doesn't have to be a selfless act |
| P1-10 | <i>Robertson JC; Westminster College</i> | The articulate alligator: Projects for a comparative anatomy course |
| P1-12 | <i>Davis-Berg EC, Minbiole JE; Columbia College</i> | Increasing student completion rate on quizzes and exams by using bullet points or number prompts |
| P1-13 | <i>Cary TL, Wienhold C, Branchaw JL; University of Wisconsin-Madison</i> | Development and validation of the Five Core Concept Instrument (5CCI) to measure student conceptual understanding in biology |
| P1-14 | <i>Fabiano JN, Higgins D, Ortega J, Precopio L, Waters JS; Providence College</i> | The pressure is on: Modeling, design, and performance of circulatory pumps in physiology |
| P1-15 | <i>Pai A, Sharif W, McGinnis G, Kovacs J*, Powolny A; Spelman College, Morehouse College</i> | Personalization of the curriculum: A novel strategy to retain diverse students |
| P1-16 | <i>Havens LT; University of South Carolina</i> | Using autonomous robots to teach neuroethology |
| P1-17 | <i>Staab KL; McDaniel College</i> | Implementation of 3D analysis and MakerEd practices for teaching vertebrate morphology to undergraduates |
| P1-18 | <i>Tapia E, Anderson S, Cruz P, Folks N, Johnson M, Loubriel D, Niedzialek O, Perez M, Travis D, Gonzalez V, Barthell J; University of Central Oklahoma, University of Kansas, Montclair State University, University of Texas at El Paso, Dickinson College, University of Puerto Rico at Rio Piedras, Bard College, Boston University</i> | Creating context for undergraduate research: Embedding journalism in an REU program in the Republic of Turkey and Greece |

Neurobiology

- P1-19** *Ismailov II, Scharping JB, Andreeva IE, Friedlander MJ; Virginia Tech* Behavioral and neural responses to warming in Antarctic fishes
- P1-20** *Rogers DJ, Hendrick M, Watson GM, Smith KM; University of Louisiana at Lafayette* Calcium signaling in GABAergic-cortical astrocyte coculture is influenced by Fibroblast Growth Factor Receptor 1 (FGFR1)
- P1-21** *Ortega JM, Toth CM; Providence College* Analysis of neuroinflammatory genes using human cerebral organoids
- P1-22** *McPherson DR; SUNY Geneseo* Peripheral projections of serotonergic neurons in the nudibranch gastropod *Melibe leonina*
- P1-23** *Huyck TL, Mbarani IM, Watson WH, Newcomb JM; New England College, University of New Hampshire* Localization of the circadian clock in the nervous system of the mollusk *Melibe leonina*, using *in situ* hybridization
- P1-24** *Locke SJ, Thomas RI, Watson WH, Newcomb JM; New England College, University of New Hampshire* Localization of circadian clock proteins in the nervous system of the mollusk *Melibe leonina*
- P1-25** *Booth AM, Her A, Weissenfels M, Jalali A, Lambrecht DI, Chapman H, Lent D; California State University, Fresno* Caffeine's effects on drosophila expressing tau pathology
- P1-26** *Jocque HJ, Bubak AN, Swallow JG, Jocque H; University of Colorado Denver* Serotonin, fluoxetine, and larval behavior in the stalk-eyed fly *Teleopsis dalmanni*
- P1-27** *Stanhope ME, Gandler HI, Shea DN, Pascual MG, Yu A, Lameyer TJ, Roncalli V, Cieslak MC, Dickinson PS, Christie AE; Bowdoin College, University of Hawaii, Manoa* Hormonal modulation in the lobster cardiac neuromuscular system: A transcriptomic analysis of peptide receptors in cardiac ganglion and muscle
- P1-28** *Pong S, Walsh P, Armstrong MK, Christie AE, Dickinson PS; Bowdoin College, University of Hawaii, Manoa* Variable responses to multiple isoforms of a neuropeptide, C-type Allatostatin (AST-C), by the cardiac neuromuscular system of the american lobster, *Homarus americanus*
- P1-29** *Chakka K, Bao Y, Muscedere ML; Hendrix College* Behavioral acceleration after injuries in the ant *Pheidole dentata* is accompanied by changes in brain amine levels
- P1-30** *Bedore CN, Wegner NC; Georgia Southern University, Southwest Fisheries Science Center* Body temperature, cerebral vasculature, and the potential for brain warming in cownose rays (*Rhinoptera bonasus*)
- P1-30.5** *Leri J, Graham Z; Ladage L; McCormick G; Langkilde T; Pennsylvania State University, Arizona State University* Differential contributions to medial cortex volume in Eastern fence lizards *Sceloporus undulatus*

Sensory Biology I

- P1-31** *Rogers LS, Giuffrida B, Le Roux V, Mensinger AF; University of Minnesota Duluth, Wareham Middle School, Woods Hole Oceanographic Institute* Visualization of the oyster toadfish (*Opsanus tau*) anterior lateral line via Micro-CT
- P1-32** *Caudle LD, Maia A; Eastern Illinois University* Murky waters: Effects of turbidity on the vision and behavior of longear sunfish
- P1-33** *Imhoff VE, Anderson C, Gumm JM, Clotfelter E; Stephen F. Austin State University, University of Alabama, Amherst College* The visual ecology of a new world cichlid
- P1-34** *Hulse SV, Mendelson TC; University of Maryland Baltimore County* Efficient coding and the emergence of sensory biases
- P1-35** *Adams SL, Furimsky MM; Westminster College* The effect of masking the parietal eye on normal baseline behaviors regarding light (UVb) and heat preference of the bearded dragon *Pogona vitticeps* and the green anole *Anolis carolinensis*
- P1-36** *Dobrozsi SJ, Munoz MC*, Jayne BC; Lees-McRae College, University Cincinnati* The optokinetic response and visual acuity of phylogenetically diverse snakes
- P1-37** *Lent DD, Mendoza A, Arevalo E; Cal. State University, Fresno* Visual cue perception during the establishment of an ant's foraging route
- P1-38** *Siebels AA, Childs AM, Afful DK, Schmidt JX, Cleland CL; James Madison University* Looming stimuli evoke a turning escape response that is mediated by both cerci and vision in crickets
- P1-39** *Porter ML, Chan A, Gumm JM; University of Hawai'i at Manoa, Stephen F. Austin State University* The evolution of color signals in stomatopod crustaceans
- P1-40** *Gunn T, Bedore C; Georgia Southern University* Environmental regulation of yellow stingray camouflage
- P1-41** *Dimeo CM, Provencher C, Plachetzki D; University of New Hampshire* Phototactic preference and its genetic basis in the planulae of the colonial hydrozoan *hydractinia symbiolongicarpus*

Animal Communication

- P1-42** Ali S, Anderson RC; Florida Atlantic University
Song as an aggressive signal in the bachman's sparrow, *Peucaea aestivalis*
- P1-43** Ferguson SM, Schoech SJ; University of Memphis
Now you're speaking my language! Florida scrub-jays (*Aphelocoma coerulescens*) are more aggressive toward local variants of a geographically variable, female-specific call
- P1-44** Duque-Mendoza FG, Rodriguez-Saltos CA; Georgia State University, Emory University
Exceptionally high fundamental frequencies in a bird vocalization
- P1-45** Van Wert JC, Mensinger AF; University of California, University of Minnesota
Jamming avoidance response in oyster toadfish, *Opsanus tau*
- P1-46** Belles AP, Huckans J, Klinger TS, Hranitz JM; Bloomsburg University of Pennsylvania
Call characteristics of island and mainland fowler's toad
- P1-47** Hood KE, Ramis F, Hurley LM; Indiana University, Stetson University
Male mice respond to dismissive female repertoires
- P1-48** Harbison CW, Ahmed ZB, Sullivan TJ; Siena College
Pheromone-mediated communication in a bird ectoparasite
- P1-49** Wanamaker SM, Schwabl H; Washington State University
Exploring the use of olfaction in house sparrow (*Passer domesticus*) behavior
- P1-50** Beck ML, Hopkins WA; University of Massachusetts Lowell, Virginia Tech
The relationship between plumage coloration and aggression in female tree swallows
- P1-51** Hudson SB, Smith GD, Durso AM, French SS; Utah State University
Reproductive coloration and physiology in female side-blotched lizards (*Uta stansburiana*)
- P1-52** Owen PC, Mustafa AB, Stringfield TW; University of Cincinnati
Examination of sexually dimorphic and aposematic color patches of frogs for carotenoid pigments
- P1-53** Murphy MJ, Hunter KL, Taylor RC; Salisbury University
Your lips move but I can't hear what you're saying: Cognitive overload disrupts multimodal mate choice

Behavioral Ecology I

- P1-54** Manna TJ, Cooper C, Baylis S, Shawkey MD, Waterhouse GIN, Grim T, Hauber ME; CUNY Hunter College, North Carolina Museum of Natural Sciences, Monash University, University of Akron, University of Auckland, Palacký University
Does the house sparrow *Passer domesticus* represent a global model species for egg rejection behavior?
- P1-55** Ward MV, Gray BL, Williams K; Ohio University
Female hooded warbler (*Setophaga citrina*) behavior in response to a foreign object in the nest
- P1-56** Salazar-Nicholls MJ, Escobar KD, Warkentin KM; Pontificia Universidad Católica, Western Connecticut State University, Boston University
Development of hatching ability in red-eyed treefrogs: Escape from complications
- P1-57** Chaiyasarikul A, Warkentin KM; Boston University
Escape hatching of red-eyed treefrogs in wasp attacks: How development changes survival
- P1-58** Escalante I, Machado G, Chelini MC, Classen-Rodriguez L, Fowler-Finn KD; University of California Berkeley, Universidade de Sao Paulo, University of Nebraska Lincoln, University of Puerto Rico, Saint Louis University
Patterns of autotomy in daddy long-legs: The influence of the environment, species, sex and leg length
- P1-59** Rusch TW, Angilletta MJ; Arizona State University
Locomotor capacity and social context under perceived predation threat in male lizards
- P1-60** Bryce CM, Arthur SA, Borg BL, Wilmers CC, Williams TM; University of California, Santa Cruz, Arctic National Wildlife Refuge, Denali National Park and Preserve
The effects of prey and habitat heterogeneity on Denali wolf movements and energetics
- P1-61** Brothers CJ, Smith KE, Amsler MO, Aronson RB, Singh H, McClintock JB; University of Alabama at Birmingham, Florida Institute of Technology, Woods Hole Oceanographic Institution
Sea urchin covering behavior as a possible response to deep-water Antarctic predatory king crabs
- P1-62** Webster MC, Ferrer RP*; Seattle Pacific University
Songbird foraging behavior in the presence of predator odors
- P1-63** Eubank J, Eddington SA, Muscedere ML; Hendrix College
Body size, task specialization, and olfactory learning in carpenter ants (*Camponotus americanus*)

- P1-64** Geary B, Walter ST, Leberg PL, Karubian J; Tulane University, University of Louisiana at Lafayette Individual behavioral plasticity by seabirds in a disturbed foraging environment
- P1-65** Guell BA, Kurle CM, Zeppelin TK, Ream RR; University of California, San Diego, NOAA/NMFS/MML, NOAA/NMFS/MML Determining northern fur seal pup weaning with stable isotope and stomach content analyses
- P1-66** Brown CJ, Miller RL, Close MT; Radford University Does size matter? A look at meal regulation in juvenile snakes
- P1-67** Hudson DM, Smith QM*, Phillips GL, Horton I; Atlanta Metropolitan State College Invasive and native crayfish growth and survival on two feed types

Feeding Ecology and Defenses

- P1-68** Tran MV, Manning A, Scheid N; University of Cincinnati Dietary analysis of the invasive rusty crayfish in their native range
- P1-69** Munstermann MJ, Rocha LA, Rocha CR; University of Connecticut, Calif. Acad. Sciences, San Francisco Reef pest or ecosystem destroyer? The diet of an invasive species in the Caribbean, the lionfish *Pterois volitans*
- P1-70** Cruz MA, Hammerman NM, Lucas MQ, Weil E, Schizas NV; University of Puerto Rico, Interamericana University of Puerto Rico Population structure of the octocoral predator, *Cyphoma gibbosum*, in the wider Caribbean
- P1-71** Middlebrooks ML, Ewen KA, Duethman MG; University of Tampa Unpalatability as a defense mechanism in the sacoglossan sea slugs *Elysia clarki* and *Elysia chlorotica*

Community Ecology

- P1-72** Cruz P, Folks N, Anderson S, Travis D, Gonzalez VH, Hranitz JM, Barthell JF; Montclair State University, University of Texas at El Paso, University of Kansas, Boston University, Bloomsburg University, University of Central Oklahoma Attractiveness of the dark central floret in wild carrots in Western Turkey
- P1-73** Schmidt EC, Schafer TB, Osborne TZ; Knox College, University of Florida, Whitney Lab for Marine Bioscience Evaluation of spatially clustered marsh ponds in a northern Florida salt marsh
- P1-74** Hajduk MM, Schulze A; Texas A&M University at Galveston Using metabarcoding approaches to assess meiofaunal communities of the Laurentian Great Lakes
- P1-75** Roberts AS, Goforth RR; Purdue University Niche partitioning based on temperature gradients in estuarine cyprinodontiform fishes (Families: *Fundulidae*, *Cyprinodontidae*, and *Poeciliidae*)
- P1-76** Flanagan K, Dobkowski K; University of Washington The fight for light: Biotic determinants of *Nereocystis luetkeana* distribution
- P1-77** Murrell EM, Lemmon ME, Ray S, Kaye JP; Penn State University Legacy effects of preceding cover crop species on mycorrhizae, nutrients, and plant-insect interactions in a cash crop

Population Ecology

- P1-78** McClain MA, Daly-Engel TS; University of West Florida Local connectivity and relatedness analysis of tiger sharks between the Gulf of Mexico and West Atlantic
- P1-79** Earl SC, Navarro AJ; SUNY ESF, University of Maryland Competition strategies of the eastern red-backed salamander
- P1-80** Anderson S, Travis D, Hranitz JM, Gonzalez VH, Barthell JF; University of Kansas, Boston University, Bloomsburg University, University of Central Oklahoma Nectar dynamics and population biology of a specialist pollinator of field bindweed
- P1-81** Johnson M, Loubriel Grajales D, Niedzialek O, Perez Torres M, Melendez A, Alemán Ríos J, Mosier A, Abramson C, Giray T, Barthell J, Gonzalez VH, Agosto Rivera J; Dickinson College, University of Puerto Rico, Bard College, Oklahoma State University, University of Kansas A comparative analysis of the circadian rhythms of specialist and generalist bees visiting *Convolvulaceae* flowers
- P1-82** Dykema Z, Bertucci E, Neri C, MacKenty N, Lindsay A; Northern Michigan University, Whitefish Point Bird Observatory Different audiolures lead to different sex-ratio biases in northern saw-whet owl (*Aegolius acadicus*) captures at Whitefish Point Bird Observatory
- P1-83** Bogardus RM, Hatch K, Quintanilla MA*; Brigham Young University, Long Island University Evaluating the utility of deuterium and oxygen stable isotopes in estimating wood warbler (*Parulidae*) breeding origins in the desert southwest

Larval Ecology

- P1-84** You Mak KT, Collin R; Barnard College, Smithsonian Tropical Research Institute
Environmental and parental effects on slipper snail larval growth and survival
- P1-85** Walters L, Makris P, Anderson L, Quintana-Ascencio P, Sacks P; University of Central Florida
Where have all the oysters gone? Multiple stressors impacting estuarine oysters
- P1-86** Sample A, Von Dassow YJ, Von Dassow M; Bowling Green State University, Duke University Marine Lab
Egg mass clumping and exposure survival in intertidal gastropod embryos
- P1-87** Palecanda S, Chan A, Porter ML; University of Hawaii, at Manoa
Shifts in opsin expression during the larval to adult transition in *Pullosquilla thomassini* (Crustacea, Stomatopoda)
- P1-88** Klompen AM, Alpert EJ, Reft AJ, Allen JD; College of William and Mary
Do götte's larvae feed? Culturing indirect developing polyclad flatworms
- P1-89** Bouchard SS; Otterbein University
Silver spoon effect in larval anurans
- P1-90** Strader MS, Matz MV; The University of Texas at Austin
Double-stranded RNA knocks down expression of the target gene in coral larvae

Phenotypic Plasticity and Metamorphosis

- P1-91** Méndez-Narváez J, Warkentin KM; Boston University
Nitrogen excretion plasticity in early life stages of aquatic- and terrestrial-foam-nesting frogs: A potential mechanism facilitating reproductive colonization of land
- P1-92** Bretz KJ, Bonisoli-Alquati A, Mousseau TM; University of South Carolina, Louisiana State University
Effects of radioactive contamination in Chernobyl, Ukraine and Fukushima, Japan on the developmental instability of butterfly species
- P1-93** Kyrkos J, Lachance D, Czesny B, Sanger T; Loyola University Chicago
The developmental defects associated with thermal stress in *Anolis sagrei*
- P1-94** Bonner ER, Spiegel EL, Davis GK; Bryn Mawr College
Evolution of the pea aphid photoperiod response
- P1-95** Rice D, Wilson KA; University of Cincinnati
Analysis of the 5' regulatory region of the gooseoid gene between sea urchins with widely divergent early developmental modes
- P1-96** Yang H, Hochberg A, Dhimitri S, Hochberg R, Walsh E, Wallace R; University of Massachusetts, University of Texas, Ripon College
Getting a new head in life: The non-homology of the rotifer corona and infundibulum
- P1-97** McKenna KZ, Nijhout HF; Duke University
Allometry and reaction norms: Wing-body scaling in *Manduca sexta*
- P1-98** Agosto LM, Helm BR, Holthusen J, Torson AS, Yocum GD, Greenlee KJ, Bowsher JH; University of Central Florida, North Dakota State University, USDA-ARS
Hacking the solitary bee: Connecting hormonal dynamics with underlying molecular mechanisms during development
- P1-99** Nati M, Escobar L, Schreiber AM; St Lawrence University, NY
Influence of sonic hedgehog signaling on intestinal remodeling during xenopus laevis metamorphosis
- P1-100** Dudley C, Foote S, Davis T, Horn R, Miller B, Schreiber AM; St Lawrence University, NY
Matrixmetalloprotease activity is required for both longitudinal and cross-sectional intestinal remodeling during xenopus laevis metamorphosis
- P1-101** Foote S, Monhart M, Yee S, Mauch E, Schreiber AM; St Lawrence University, NY
Thymus gland remodeling during natural and hormone-induced xenopus laevis metamorphosis
- P1-102** Pak C, Park J, Johnson D, Anderson TK, Stahlschmidt ZR; University of the Pacific, USDA-ARS
Developmental plasticity of traits and multi-trait interactions in a wing-dimorphic cricket
- P1-103** Bennett MM, Rinehart JP, Yocum GD, Greenlee KJ; North Dakota State University, USDA-ARS
Keeping rhythm: Environmental cues mediate the emergence of an important pollinator, the alfalfa leafcutting bee, *Megachile rotundata*

Microevolution

- P1-104** Griffiths JS, Kelly MW, Hellberg ME; Louisiana State University
Investigating latitudinal shifts in allele frequencies over 20 years in the coral *Balanophyllia elegans*
- P1-105** Gresham JD, Earley RL; University of Alabama
Fitness consequences of self-fertilization versus outcrossing for the mangrove rivulus fish

- P1-106** Dixon GB, Matz MV; University of Texas, Austin Estimating the strength of spatially varying selection in a reef-building coral
- P1-107** Fragata AE, Poku Y, Graham MA, Foster SA, Baker J; Clark University The influences of biogeography and maternal stress on early life characteristics in threespine stickleback (*Gasterosteus aculeatus*)
- P1-108** Lance SL, Rainwater TR, Zajdel J*, Wilkinson PM, Parrott BB; University of Georgia, Clemson University, Tom Yawkey Wildlife Center Mating dynamics and population genetics of a coastal population of American alligator
- P1-109** Jackson JM, Lozier JD, Pimsler ML, Dillon ME, Strange JP; University of Alabama, University of Wyoming, USDA-Utah State University Investigating genomic patterns of adaptation and gene flow in montane bumble bees
- P1-110** Petranek CJ, Duennes MA, Martínez O, Mérida J, Pineda E, Rachocki L, Parsons Z, Lozier JD, Dillon ME; University of Wyoming, University of California, Riverside, University de San Carlos, ECOSUR, University of Montana Patterns of wing shape differentiation across elevational gradients in North American bumble bees (*Apidae: Bombus*)
- P1-111** Riley SM, Kelly MW, La Peyre MK, La Peyre JF; Louisiana State University Using next generation sequencing to identify local adaptation to salinity in the American Oyster, *Crassostrea virginica*, on the Louisiana gulf coast
- P1-112** Adhav AA, Reitzel AR, McAlister JS; College of the Holy Cross, University of North Carolina at Charlotte Maternal provisioning of eggs of the starlet sea anemone, *Nematostella vectensis*: Selection pressures favoring the evolution of coloniality
- P1-113** Curlis JD, Holmes IA, Davis Rabosky A, Cox CL; Georgia Southern University, University of Michigan Spatial variation of mimetic and non-mimetic color polymorphism in the western ground snake
- P1-114** Clifton IT, Gifford ME; University of Central Arkansas, University of Toledo Phenotypic and genetic integration of morphological characters in diamond-backed watersnakes (*Nerodia rhombifer*)
- P1-115** Zeb AJ, Payne AA, Johnson MA; Trinity University The evolution of social behavior and neuromuscular junctions in Caribbean anole lizards
- P1-116** Rivera-Ordóñez JM, Salazar-Nicholls MJ, Warkentin KM, Delia J; University of Washington, Seattle, Pontificia Universidad Católica, Boston University The adaptive value of delayed hatching in glassfrogs
- P1-117** Mauro AM, Torres Dowdall JR, Ghalambor CK; Colorado State University, Universität Konstanz The impact of competition and salinity on life history traits of two sympatric euryhaline fish
- P1-118** Tiatragul S, Warner DA, Kolbe JJ, Kurniawan A; Auburn University, University of Rhode Island, University of Alabama at Birmingham Embryos of non-native *Anolis* are robust to urban thermal environments
- P1-119** Graham AM, McCracken KG; University of Miami Increased purifying selection plays a dominant role in mitochondrial hypoxia adaptations of three Andean duck species

Best Student Paper – Lynn Riddiford Award

- P1-120** Abegaz MF, Gunderson AR, Salas H, Tsukimura B, Stillman JH; San Francisco State University, University of California Berkeley, California State University Fresno The impacts of density and competition on the reproductive fitness of the intertidal porcelain crab, *Petrolisthes cinctipes*
- P1-121** Berk SA, Breuner CW; University of Montana Glucocorticoids predict the honesty of direct benefits associated with a sexually selected trait in the mountain bluebird (*Sialia currucoides*)
- P1-122** Boersma JP, Schwabl HS, Enbody EE, Karubian JK; Washington State University, Tulane University The role of androgens in evolution of male and multiple female phenotypes in a tropical passerine
- P1-123** Bohanon M, Wurtz M, Cornelius JM; Eastern Michigan University The role of corticosterone and foraging effort in nomadic migration of red crossbills
- P1-124** Claunch NM, Frazier JA, Escallón C, Vernasco BJ, Moore IT, Taylor EN; University of Florida, Cal Poly, San Luis Obispo, Virginia Tech Evaluating the physiological and behavioral effects of corticosterone implants in a free-ranging ectotherm
- P1-125** Fioretti SE, Falvey EL, Baker DM; University of Mary Washington Embryonic development of the stress axis in two model teleost species
- P1-126** Fuller RG, Henry M, Romero LM; Tufts University Physiological effects of changing urbanization on eastern painted turtle populations

P1-127	<i>Geduldig JE, Litwa HP, Tricola GM, Paitz RT, Haussmann MF; Bucknell University, Illinois State University</i>	Individual variation in acute stress responses affects oxidative stress levels in Japanese quail (<i>Coturnix japonica</i>)
P1-128	<i>George EM, Rosvall KA; Indiana University, Bloomington</i>	Ability to elevate testosterone varies with breeding stage in a competitive female songbird
P1-129	<i>Gormally BM, Wright-Lichter J, Henry M, Romero LM; Tufts University</i>	Evaluating physiological and behavioral responses to repeated stressors: Testing the reactive scope model
P1-130	<i>Hack N, Strobel JS, Beckman BR, Lema SC; Cal Poly San Luis Obispo, NOAA Northwest Fisheries Science Center</i>	Insulin-like Growth Factor I (IGF-I) as a physiological biomarker for growth rate in juvenile <i>Sebastes</i> rockfishes
P1-131	<i>Head TB, Tomanek L, Mykles DL; California Polytechnic State University, Colorado State University</i>	Proteomic analysis of the crustacean molting gland (Y-organ) over the molt cycle
P1-132	<i>Henson JR, Sims CG, Schoech SJ; University of Memphis, University of Arkansas Monticello</i>	Mallards regulate stress responsiveness according to energetic demands
P1-133	<i>Hoffman AJ, Wada H; Auburn University</i>	The effects of early stress conditioning on future stress tolerance and fitness-related traits
P1-134	<i>Kass HR, Sandvik GK, Fontaine R, Weltzien FA, Baker DM; University of Mary Washington, Norwegian University of Life Sciences</i>	The effect of kisspeptin 1 on gonadotropin releasing hormone neurons in embryonic medaka (<i>Oryzias latipes</i>)
P1-135	<i>Lantz SM, Boersma J, Schwabl H, Karubian J; Tulane University, Washington State University</i>	Early molting red-backed fairywren males acquire ornamented plumage in the absence of elevated androgens
P1-136	<i>Litwa HP, Tindle KC, Fasanello VJ, Geduldig JE, Tricola GM, Paitz RT, Haussmann MF; Bucknell University, Illinois State University</i>	An acute rise in glucocorticoids reduces antioxidant levels and contributes to oxidative stress in Japanese quail (<i>Coturnix japonica</i>)
P1-137	<i>Montreuil-Spencer C, Schoenemann K, Bonier F; Queen's University</i>	Winter physiology, summer breeding: Is there a link?
P1-138	<i>Navarro D, George EM, Rosvall KA; Washington State University, Indiana University</i>	Does short-term HPG axis activation have long-term effects in tree swallows?
P1-139	<i>Pepper AW, Wilsterman K, Bentley GE; UC Berkeley</i>	Thinking outside of the axis: The mammalian ovary can respond to physiological cues without neural input
P1-140	<i>Prichard MR, Breuner CW; University of Montana</i>	Glucocorticoids and parental effort in tree swallows (<i>Tachycineta bicolor</i>)
P1-141	<i>Schoenemann KL, Montreuil-Spencer C, Bonier F; Queen's University</i>	A picture worth 1000 words: What does a snapshot of a physiological trait tell us about individual variation?
P1-142	<i>Burton CT, Working CL, Vo M, Surber LL, Lin H, Gearhart LM, Reed SY, Jang CE, Smith JE; Mills College</i>	Fecal glucocorticoid metabolites reflect endogenous and environmental factors in free-living California ground squirrels
P1-143	<i>Stothart MR, Newman AEM; University of Guelph</i>	Uptown squirrel: Tuning life to an urbanized world
P1-144	<i>Wilson RC, Lutterschmidt DI; Portland State University</i>	Identification of a leptin-like protein in red-sided garter snakes and its effects on reproductive behavior
P1-145	<i>Wilsterman K, Gotlieb N, Kriegsfeld LJ, Bentley GE; UC Berkeley</i>	Mapping the ovarian pathways involved in stress-induced reproductive dysfunction in mice

Complementary to S5 – With a Little Help From My Friends: Microbial Partners in Integrative and Comparative Biology

P1-146	<i>Stephens EZ, Powers DR; George Fox University</i>	Does poor feeder maintenance increase exposure of hummingbirds to pathogenic bacteria and fungi?
P1-147	<i>Smith PN, Baltzley MJ, Boomer SM; Western Oregon University</i>	The gut microbiota of <i>Helix aspersa</i>
P1-148	<i>Forsman AM, Peralta-Sanchez JM, Winkler DW, Knight R, Angert ER; Cornell University, University Granada, University of California, San Diego</i>	Bird-bed bugs: Evaluating the effects of abundance vs. diversity of nest-dwelling bacteria on maternal deposition of egg yolk antibodies in wild tree swallows
P1-149	<i>Mattern B, Ha D, Coughlin B; University of North Florida</i>	Potassium sorbate inhibits growth of a common species in the human gut microbiome, <i>Enterococcus faecalis</i>
P1-150	<i>Osmani M; University of North Florida</i>	Breast is best: Exploring the differential effects of breast milk versus formula on the growth of neonate gut bacteria

Thermal Physiology

- P1-151** Filippi NN, Morgenroth H, Gmuca NV, Kuhn CE, Dickerson B, Liwanag HEM; Cal Poly SLO, Adelphi University, NMML Under pressure: Instrumentation methods affect fur seal pelt function during simulated dives
- P1-152** Tezak BM, Sifuentes I, Lolavar A, Wyneken J; Florida Atlantic University Temperatures Inside and outside of turtle eggs
- P1-153** Matthews CR, Riddell EA, Apanovitch EK, Rice CD, Sears MW; Clemson University Thermal stress induces melanin production in a lungless salamander
- P1-154** Brueggemann N, Davis C, Williams JB*; Southern Illinois University The effect of cholesterol and γ -tocopherol on cold tolerance, post-cold performance, and rapid cold hardening
- P1-155** Perkins AL, Crabtree L, Reitzel AM*; Purdue University, University North Carolina, Charlotte Roles for exposure duration and geographic origin for temperature-induced heat shock protein expression in an estuarine cnidarian
- P1-156** Musaitif DZ, Jost JA; Bradley University Investigating the cellular and molecular response of the zebra mussel, *Dreissena polymorpha*, to acute and chronic cold stress and its implications on thermal tolerance
- P1-157** King EE, Alaurant T, Fay SA, Hendrickson C, Gapuz J, Stillman JH; University of California, Berkeley Current conditions cause stress for some aquatic caddisflies in the face of drought and warming
- P1-158** Markstein K, Stillman J; San Francisco State University Optimum environmental temperature for the freshwater shrimp *Neocaridina*
- P1-159** Biederman AM, Crockett EL; Ohio University, Athens Properties of neuronal membranes of antarctic notothenioids and implications for thermal tolerance
- P1-160** Genz J; University of West Georgia Metabolic plasticity of juvenile lake sturgeon associated with rearing temperature
- P1-161** Mavroidis SM, Mainwaring WJ, Straits SK, Yanik BM, Nickles NE; University of Mount Union The effect of incubation temperature on embryo metabolism and hatchling morphology of northern bobwhite quail (*Colinus virginianus*)
- P1-162** Cones AG, Liebl AL, Houslay TM, Russell AF; University of Exeter, University of South Dakota, University of Exeter Plasticity in embryonic heart rates in cooperative chestnut-crowned babblers

Thermal Tolerance

- P1-163** Toxopeus J, Kostal V, Sinclair BJ; Western University, Czech Academy of Sciences Metabolomics and transcriptomics of freeze tolerance acclimation in the spring field cricket, *Gryllus veletis*
- P1-164** Medina-Baez OA, Navarro AJ; University of Puerto Rico, University of Maryland, College Park Which species is better equipped for climate change? Thermal limits in two widely distributed salamanders
- P1-165** St. Martin J, Stoehr A, Aalbers S, Sepulveda C, Bernal D; University of Massachusetts Amherst, University of Massachusetts Dartmouth, Pflieger Institute of Environmental Research Thermodynamic equilibrium in free-swimming swordfish
- P1-166** Kawarasaki Y, Welle AM, Elnitsky MA; Gustavus Adolphus College, Mercyhurst University Oxygen consumption during the induction of rapid cold-hardening in isolated muscle of flesh fly, *Sarcophaga bullata*
- P1-167** Hizon B, Strand E, Alves S, Lane J, Denny MW, Dowd WW; Loyola Marymount University, Hopkins Marine Station of Stanford University Effects of acute and chronic salinity changes on thermal tolerance in the tidepool copepod *Tigriopus californicus*
- P1-168** Chan KYK, Ng TPT, Ngo J, Williams GA; Hong Kong University of Sci. and Tech., The University of Hong Kong Taking the heat: High thermal tolerance of larval and adult mangrove snails
- P1-169** Torson AS, Nash SA, Yocum GD, Rinehart JP, Bowsher JH; North Dakota State University, USDA-ARS The long winter: Oxidative stress and chill injury in the alfalfa leafcutting bee, *Megachile rotundata*
- P1-170** Drolet J, Vezina F; Universite du Quebec a Rimouski Testing the myth of humid versus dry cold: Birds don't care
- P1-171** Murillo A, Boreham D, Wilson J, Somers C, Manzon R; University of Regina, Northern Ontario School of Medicine, McMaster University The heat shock response of round whitefish
- P1-172** Strand E, Hizon B, Gleason LU, Dowd WW; Loyola Marymount University Plasticity of thermal tolerance and growth rates in juvenile mussels (*Mytilus californianus*)

Best Student Poster – DCB

- P1-173** Weiss TM, Jung S, Socha JJ; Virginia Tech
Variable force production during water-based jumps by the frog *Euphlyctis cyanophlyctis*
- P1-174** Travis K, Grace M, Ford J, Decker S, Huber D; The University of Tampa, National Oceanic and Atmospheric Administration, University of South Florida
Structural mechanics of cookiecutter shark jaws
- P1-175** Laurence-Chasen JD, Ramsay JB, Brainerd EL; Brown University, Westfield State University
XROMM analysis of prey processing in a stingray, *Potamotrygon motoro* (Elasmobranchii: Batoidea)

Paleobiology

- P1-176** Hoffmann S, Krause DW, Hu Y; NYIT College of Osteopathic Medicine, Denver Museum of Nature & Science, Stony Brook University
First postcranial skeleton of a gondwanatherian mammal: Reconstructing posture and locomotion
- P1-177** Bui H, Curry Rogers K, Rogers R; Macalester College
Pathological vertebrae in sauropod dinosaurs from the upper cretaceous maevarano formation of Madagascar
- P1-178** Tsai HP, Middleton KM, Holliday CM; Brown University, University of Missouri
The cartilage cone of archosauromorphs: Implications for hip loading and femoral ossification
- P1-179** Early CM, Witmer LM; Ohio University
Inferring vision-related neuroanatomy and behavior from the brain endocasts of birds

Evolutionary Morphology

- P1-180** Hllesciak MT, Stayton CT; Bucknell University
Analysis of evolutionary patterns and rates of sexual size dimorphism and sexual shape dimorphism in turtles
- P1-181** Sedlmayr JC, Schachner ER, Kley N, Gignac PM; LSUHSC-SOM, Stony Brook School of Medicine, Oklahoma State University Center for Health Sciences
Evidence of a pineal gland in crocodylia
- P1-182** Conith AJ, Crumpton N, Kamilar JM, Dumont ER; University of Massachusetts Amherst, University College London
The role of phenotypic integration in the evolution of cranial morphological disparity in moles (*Talpidae: Mammalia*)
- P1-183** Benitez LM, Jones KE, Pierce SE; Harvard University
Vertebral anatomy and Locomotor Evolution in Mammals: A Geometric Morphometric Approach
- P1-184** Vander Linden A, Hedrick BP, Kamilar JM, Dumont ER; University of Massachusetts, Amherst
Three-dimensional morphology of the atlas vertebra in relation to ecology in primates, rodents, and relatives
- P1-185** Corbin KM; Stony Brook University
Turbinal variation in *Lontra canadensis*
- P1-186** Hillenius WJ, Smith TD, Rehorek SJ; College of Charleston, Slippery Rock University
Variation in the route of the tetrapod nasolacrimal duct: The long and short of it
- P1-187** Mangalam M, Fragaszy DM, Roles LKR; University of Georgia
Wild bearded capuchin monkeys outperform humans in cracking nuts
- P1-188** Kaplan SA, Powers AK, Gross JB; University of Cincinnati
Understanding the origin of cranial bone fragmentation: Live-fluorescent imaging across *Astyanax mexicanus* Development
- P1-189** Hayes MM, Armbruster JW, Summers AP; Auburn University, University of Washington
Comparative morphology of the African small barbs, *Enteromius*
- P1-190** Bohn CE, Staab KL; McDaniel College
Characterization of connective tissue linkages among cranial bones in largemouth bass and the functional relevance during suction feeding
- P1-191** Schoolman PT, Staab KL; McDaniel College
Cranial morphology of the pearly lanternfish, *Myctophum nitidulum*
- P1-192** Palmer RM, Staab KL; McDaniel College
Not all cypriniform jaw ligaments are equal: The functional morphology of kinethmoid ligaments and their role in premaxillary protrusion
- P1-193** Mohr RA, Cox TC, Sisneros JA; University of Washington, Seattle, Seattle Children's Research Institute
Sexually dimorphic swim bladders suggest an adaptation for enhanced sound pressure detection in the plainfin midshipman fish (*Porichthys notatus*)
- P1-194** Laniyan AA, Staab KL; McDaniel College
The composition of Meckel's cartilage in the *Gambusia affinis* jaw: Is there histological evidence for intramandibular bending?

P1-195 Pascual S, Wortham JL; University of Tampa

A comparison of form and function: Grooming appendage setal morphology and grooming behaviors of the blue crab (*Callinectes sapidus*) and stone crab (*Menippe mercenaria*) (Crustacea: Decapoda: Brachyura)

Muscle

P1-196 Penning DA, Moon BR; Missouri Southern State University, University of Louisiana at Lafayette

Identifying the mechanisms of predation: *In Vivo* measurements of force and endurance in epaxial muscles of kingsnakes (*Lampropeltis holbrooki*) and one of their prey snakes (*Pantherophis obsoletus*)

P1-197 Hillard CJ, Penning DA, Moon BR; University of Louisiana at Lafayette, Missouri Southern State University

Quantitative effects of body temperature on snake strike performance: New insights into the elastic-recoil hypothesis

P1-198 Beechko A, Azizi M, Garland T, Horner A; California State University, San Bernardino, University of California, Irvine, University of California, Riverside

Changes in muscle properties as a function of age and training in mice

P1-199 Chukwueke CS, Libby T, Sponberg S; Georgia Institute of Technology, University of California, Berkeley

Muscle's non-linear perturbation responses depend on underlying stride frequency

P1-200 Moran CJ, Ellerby DJ, Trueblood LA, Gerry SP; Fairfield University, Wellesley College, La Sierra University

Locomotor muscle kinematics and physiology of polyphenic bluegill

P1-201 Cooper AN, Cunningham CB, Morris JS, Potts WK, Carrier DR; University of Utah

Muscle mass distribution and social dominance in male house mice

P1-202 Adity R, Nishikawa KIISA; Northern Arizona University

The effect of prior shortening on residual force enhancement after stretch

P1-203 Whitney CD, Nishikawa KC, Daley MA; Northern Arizona University, Flagstaff, Royal Veterinary College, University of London

Predicting in vivo muscle force in running guinea fowl using a muscle model based on the winding filament hypothesis

P1-204 Nishikawa K, Tahir U, Rivera D; Northern Arizona University

Modeling ex vivo muscle activation may improve force predictions in a winding filament muscle model

P1-205 Camp AL, Astley HC, Horner AM, Roberts TJ, Brainerd EL; Brown University, University of Akron, California State University, San Bernardino

Fluoromicrometry: Using X-ray video to measure the *in vivo* muscle dynamics of animal behaviors

P1-206 Collias AA, Konow N, Tijs C, Biewener AA; University of Massachusetts Lowell, Harvard University

Muscle fiber length change in rat medial gastrocnemius in the stance phase of galloping

P1-207 Coughlin DJ, Shuman JL, Bradley MA, Coughlin D; Widener University

Thermal acclimation and gene expression in rainbow smelt, *Osmerus mordax*

Biomaterials

P1-208 Aiello BR, Hardy AR, Olsen AM, Cherian C, Ahn SE, Hale ME, Westneat MW; University of Chicago

The impact of fin ray morphology on pectoral fin flexural stiffness in labriform swimmers

P1-209 Ankheliy MV, Wainwright DK*, Lauder GV; Harvard University

Diversity of placoid scale structure in sharks: Surface roughness and 3D morphology

P1-210 Testagrose CT, Hoffmann SL, Porter ME; Florida Atlantic University

Anatomy and flexural stiffness of shark pectoral fins in an ecomorphological context

P1-211 Kennedy EBL, Patel RG, Uyeno TA, Clark AJ; College of Charleston, Valdosta State University

Material properties of hagfish skins under equibiaxial and nondestructive uniaxial tension

P1-212 Jimenez YE, Brainerd EL, Summers AP; Brown University, University of Washington

Comparative biomechanics of the defensive dorsal fin spine in filefishes and triggerfishes

P1-213 Uyeno TA, Clubb BL, Perez CP, Clark AJ; Valdosta State University, College of Charleston

The biomechanics of looseness in hagfish skins

P1-214 Patel RG, Kennedy EBL, Uyeno TA, Clark AJ; College of Charleston, Valdosta State University

Comparative biomechanics of hagfish skins

P1-215 Kay DI, Erickson GM, Kuhn-Hendricks SM; Florida State University

Evolution of mineralized dental tissue material properties

P1-216 Kisare SA, Crane RL, Patek SN; Duke University, Stanford University

3D printed models reveal morphological features that cue mantis shrimp strike locations

P1-217 McConkey RP, Ingle DN, Porter ME; Florida Atlantic University

Viscoelastic properties of mineralized shark vertebrae

- P1-218** Long JH, Ewoldt R, Porter ME; Vassar College, University of Illinois, Urbana-Champaign, Florida Atlantic University Morphological computation: Adjustable mechanical control in structures with non-linear viscoelasticity
- P1-219** Dickerson D, Maie T*; Lynchburg College Evaluation of correlation between material properties of the vertebrae and predator escape performance in yellow perch, *Perca flavescens*
- P1-220** Galloway KA, Grubich JR, Porter ME; Florida Atlantic University, The Field Museum of Natural History To bend a lionfish spine: Mechanical properties of fin spines of *Pterois volitans*
- P1-221** Taft NK, Taft BN, Diamond KM, Schoenfuss HL, Blob RW; University of Wisconsin Parkside, Carthage College, Clemson University, St. Cloud State University Mechanical specializations of the fin rays in waterfall-climbing gobiid fishes
- P1-222** Ivanina AV, Falfushynska HI, Sokolova IM*; University of North Carolina at Charlotte, I.Ya. Horbachevsky Ternopil State Medical University, University of Rostock Biom mineralization-related specialization of hemocytes and mantle tissues of the pacific oysters *Crassostrea Gigas*
- P1-223** Roer RD, Dillaman RM; University of N.C. Wilmington Silicon – potential role in postmolt calcification in the blue crab *Callinectes sapidus*
- P1-224** Rankin AR, Taylor JRA; UC San Diego The effects of reduced pH on decorator crab calcification and behavior
- P1-225** Austin CE, Stapp CS, Garcia A, Gunther KL, Zulueta SA, Barrios AS, Hoese WJ, Paig-Tran EM; California State University Fullerton Regional variance in the material properties of blacktip poacher (*Xeneretmus latifrons*) scales: A biomechanical inspiration for puncture-resistant armor
- P1-226** Yang X, Wang Y, Kenaley CP, Wainwright DK, Liu H, Guan J, Wen L; Beihang University, Harvard University The contribution of soft tissue and rigid spinules to the adhesive ability of remoras (*Echeneis Naucrates*)
- P1-226.5** Ma Y, Ren HL, Ning JG, Zhang PF; Beijing Institute of Technology A study on the chordwise deformation and its influence on the aerodynamic performance of a hovering honeybee coupled-wing
- P1-227** Sande LM, Zhang C, Pometto S, Beard CE, Aprelev P, Adler PH, Kornev KG; Clemson University Role of saliva on galea bending and self-repair of the lepidopteran proboscis
- P1-228** Laurent CM, Schneider P, Dyke GJ, Boardman RP, Palmer C, Cook RB, De Kat R; University of Southampton, University of Debrecen Lamina layup varies around and along bird feather shafts
- P1-229** Kuhn-Hendricks SM, Erickson GM, Norell MA; Florida State University, American Museum of Natural History Enamel microstructural changes in equids conferred damage tolerance through controlled fracture and damage localization
- P1-230** Byrnes G, Allen JJ, Lim NTL, Cheney JA; Siena College, Brown University, National Institute of Education, Royal Veterinary College Structural properties of the gliding membrane of the colugo (*Galeopterus variegatus*)
- P1-231** Biria A, Mandre S, Venkadesan M; Yale University, Brown University Stress concentration at the ligament-bone interface
- P1-232** Smolinsky AN, Middleton KM; University of Missouri, Columbia The effects of muscle- and impact-dominated loading on femoral cross-section morphology and mineral apposition in young outbred mice

Adhesion

- P1-233** Stark AY, Palecek AM*, Argenbright CW, Bernard C, Brennan AB, Klittich MR, Niewiarowski PH, Dhinojwala A; The University of Louisville, The University of Akron, University of Florida, The University of Akron, University of Florida, The University of Akron, The University of Akron, The University of Akron Gecko adhesion on wet and dry rough substrates
- P1-234** O'Donnell MK, Deban SM; University of South Florida Who needs toe pads? Climbing in plethodontid salamanders
- P1-235** Gamel K, Flammang BE; New Jersey Institute of Technology Bioinspired, long-term, reversible adhesion
- P1-236** Flammang BE, Beckert M, Anderson EJ, Nadler JH; New Jersey Institute of Technology, Georgia Tech, Grove City College, Georgia Tech Research Institute Morphology and mechanics of remora adhesion
- P1-237** Moberly IT, Moon BR; University of Louisiana at Lafayette The contributions of setae to gripping force and locomotor stability in an arboreal lizard (*Furcifer oustaletii*)

Locomotion: Aquatic

- P1-238** Marques I, Clifton GT, Biewener AA; State University of Campinas, Harvard University Foot shape variation within foot-propelled swimming birds

- P1-239** Ding Y, Ming TY, Goldman DI; Beijing Computational Science Research Center, Georgia Institute of Technology Transition of torque pattern in undulatory locomotion due to wave number variation
- P1-240** Hijazi T, Stayton CT; Bucknell University Can common morphological proxies for drag accurately predict the hydrodynamic performance of turtle shells?
- P1-241** Velázquez CCS, Berg O, Muller UK, Tsukimura B; California State University Fresno Swimming behavior of the shore crab larva *Carcinus maenas*: The kinematics and particle image velocimetry
- P1-242** Keeffe RM, Diamond KM, Lagarde R, Ponton D, Bertram RS, Schoenfuss HL, Blob RW; University of Massachusetts, Amherst, Clemson University, Hydrô Réunion, UMR Entropie, St. Cloud State University Comparative waterfall climbing kinematics of goby fishes from Hawai'i and Réunion: Are recently evolved behaviors less variable?
- P1-243** Stevens LM, Mayerl CJ, Hall G, Rivera G, Vance JT, Porter MM, Blob RW; Clemson University, Creighton University, College of Charleston Testing the effects of keels on stability and maneuverability in aquatic turtles
- P1-244** Baker JA, Shen Y; Clark University The effect of tannins on swimming performance of threespine stickleback
- P1-245** Seth D, Flammang B, Lauder G, Tangorra J; Drexel University, New Jersey Institute of Technology, Harvard University Perturbation Studies to investigate compliance modulations in the caudal fin of a bluegill sunfish
- P1-246** Rubin AM, Diamond KM, Schoenfuss HL, Blob RW; Clemson Univ, St Cloud State Univ Assessing the impacts of environmental contaminants on escape behavior in the migratory stream goby *Sicyopterus stimpsoni*
- P1-247** Adams DA, Gallagher EE, Gough WT, Tennett KT, Fish FE; West Chester University Passive spanwise flexibility of harbor porpoise flukes: Equivalence of dorsal and ventral flexion
- P1-248** Fish FE, Williams TM; West Chester University, University of California, Santa Cruz Chordwise flexibility of bottlenose dolphin flukes during static exercise
- P1-249** Jamison MP, Burnette MF, Ashley-Ross MA; Wake Forest University Big fins make for bad jumps in male *Betta splendens*
- P1-250** Carter AM, Dodson P, Hsieh ST; University of Pennsylvania, Temple University Vertebral function in obstacle crossing behaviors in *Polypterus senegalus*
- P1-251** Maia A, Parrish A, Hammock K, Favata CA; Eastern Illinois University Median fin function, morphology and development in basal bony fishes
- P1-252** Ackerly KL, Mitrofanov I, Sanford CP, Krahe R, Chapman LJ; McGill University, Hofstra University The relationship between body morphology and swim performance among mormyrid elephant nose fishes
- P1-253** Hamlet CL, Tytell ED, Fauci LJ, Hoffman KA; Bucknell University, Tufts University, Tulane University, University of Maryland, Baltimore County A computational model of a swimming lamprey driven by a central pattern generator with proprioceptive feedback
- P1-254** Warren SM, Hoffmann SL, Kazemi A, Porter ME; Florida Atlantic University Do you even lift? Experimental investigation of the effect of head morphology on lift force generation in sharks

Locomotion: Flight

- P1-255** Lohmann AC, Hedrick TL; University of North Carolina at Chapel Hill Intra and interspecific chase dynamics in wild, freely behaving dragonflies
- P1-256** Phillips N, Nakata T, Walker SM, Bomphrey RJ*; Royal Veterinary College, Chiba University, Oxford University Aerodynamic imaging by nocturnal mosquitoes
- P1-257** Parsons ZM, Rachocki L, Oyen KJ, Jardine LE, Lozier JD, Dillon ME; University of Wyoming, University of Alabama Geographic variation in bumblebee flight morphology suggests aerodynamic limitations on upslope range shifts
- P1-258** Yu S, Khandelwal P, Gardner H, Hedrick T; University of North Carolina at Chapel Hill Continuous aerodynamic pitch perturbation of hawkmoths
- P1-259** Chang E, Lentink D; Stanford University How pigeon-inspired morphed wings affect glide performance in turbulence
- P1-260** Khandelwal PC, Hedrick TL; University of North Carolina at Chapel Hill The short and long of gliding
- P1-261** Whitehead JG, Socha JJ; Virginia Tech A kinematic study of how mallards land on water
- P1-262** Clark CJ, Mistick E; UC Riverside Hummingbird wing trill production over a range of flight speeds
- P1-263** Ingersoll R, Lentink D; Stanford University How hummingbirds lift bodyweight during hovering flight

- P1-264** Williams M, Jackson BE; Longwood University
Field 3D kinematics of unsteady flight in wild blue jays
- P1-265** Rader JA, Hedrick TL; University of North Carolina at Chapel Hill
Flight performance of vultures across an elevation gradient
- P1-266** Weger M, Klein A, Wagner H; RWTH Aachen, University of Bonn
Particle Image velocimetry measurements on model of barn owl serrations in laminar and unsteady flow
- P1-267** Boerma DB, Rummel AD, Breuer KB, Schunk C, Swartz SM; Brown University
Complex aerial rotations decrease landing impact force in bats
- P1-268** Rehm JC, Cheney JA, Breuer KS, Swartz SM; Brown University, Royal Veterinary College
The function of wing membrane muscles in bats
- P1-269** Vejdani HR, Boerma DB, Swartz SM, Breuer KS*; Brown University
Dynamical modeling of hovering in insects, hummingbirds, and bats
- P1-270** Hightower BJ, Ingersoll R, Chin DD, Lawhon C, Haselsteiner AF, Lentink D; Stanford University
Design and analysis of aerodynamic force platforms for free flight studies

Feeding

- P1-271** Peterson AN, McHenry MJ; University of California, Irvine
The kinematics of predation by the red lionfish (*Pterois volitans*)
- P1-272** Bernstein Z, Sundaram S, Baliga VB, Mehta RS; Pacific Collegiate High School, Monta Vista High School, University of California, Santa Cruz
Assessing the convergence of feeding kinematics in labrid cleaner fishes
- P1-273** Bolla V, Summers AP, Paig-Tran EWM; California State University, Fullerton, University of Washington
Biomimetic gill raker models demonstrate non-contact prey retention via vortical filtration in mobulid fishes
- P1-274** Lomax JJ, Brainerd EL; Brown University
Investigating the potential contribution of the sternohyoid muscle to suction power production in striped surfperch, *Embiotoca lateralis*
- P1-275** Kabir R, Avery N, Shaik M*, Hall M, Berg O, Müller U; California State University, Fresno
Prey size selectivity in *Utricularia vulgaris*
- P1-276** Straznickas BN, Jaeckle WB; Illinois Wesleyan University
Feeding on the unseen: Ingestion and assimilation of bacteriophages by *Brachionus plicatilis* (Rotifera)
- P1-277** Potvin J, Werth AJ; Saint Louis University, Hampden-Sydney College
Oral cavity hydrodynamics and drag production in Balaenid Whale suspension feeding
- P1-278** Storch JS, Hernandez LP; The George Washington University
Network analysis of modularity within the cypriniform trophic apparatus: A simulation study
- P1-279** Jensen MM, Saladrigas AH, Bennett AE, Goldbogen JA; Stanford University, Santa Catalina School
Three-dimensional morphology and flow characteristics of baleen
- P1-280** Hidalgo F, Munoz E, Bhardwaj E, Shaik M, Berg O, Muller UK; California State University Fresno
Comparing the suction flow of bladderwort across species to explore the effect of trap size and morphology
- P1-281** Hall MR, Berg O, Müller U; California State University, Fresno
Trap size and age affect capture success in the carnivorous plant *Utricularia vulgaris*
- P1-282** Segall M, Herrel A, Godoy-Diana R; MNHN, ESPCI
Does morphological convergence of the head enhance prey capture performance in aquatically foraging snakes?
- P1-283** Clemmensen SF; University of Tennessee, Knoxville
Mechanical stress and plasticity in the Blackbelt cichlid
- P1-284** Kane EA, Roeder MM, Derue ML; Georgia Southern University, Colorado State University
Swimming while feeding in fishes: What do guppies tell us about the roles of specialization and local adaptation?
- P1-285** Woody CA, Stinson CM, Deban SM; University of South Florida
Elastic recoil mechanism in the tongue-projection of the gold-striped salamander, *Chioglossa lusitanica*
- P1-286** Minczuk KE, Leviyeva J, Oufiero CE; Towson University
Interspecific variation in the strike kinematics and feeding behavior of praying mantises
- P1-287** Skates DI, Ball N, Eisey RM, Lappin AK, Owerkowicz T; CSUSB, RWR, CPP
Cranial shape and bite force are not affected by death-roll feeding behaviour in the American alligator
- P1-288** Bartlam-Brooks HLA, Roskilly K, Buse C, Lowe JC, Bennitt E, Hubel TY, Wilson AM; The Royal Veterinary College, ORI, University of Botswana
Determining water intake in wild Plain's zebra (*Equus quagga*)
- P1-289** Parker AK, McHorse BK, Pierce SE; Harvard University
Habitat partitioning in monodactyl and tridactyl fossil horses of North America

Friday Schedule of Events

Events take place in the New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H)

EVENT	TIME	LOCATION
Registration	7:00 AM – 4:00 PM	Hall A Foyer
Speaker Ready Room	7:00 AM – 5:00 PM	Room 230
Poster Session 2 Set Up	7:00 AM – 8:00 AM	Exhibit Hall C
Coffee Break AM/PM	9:30 AM – 10:30 AM	Exhibit Hall C
Exhibit Hall Open	9:30 AM – 5:30 PM	Hall C
Poster Session 2 Even Numbers Viewing	3:30 PM – 4:30 PM	Exhibit Hall C
Poster Session 2 Odd Numbers Viewing	4:30 PM – 5:30 PM	Exhibit Hall C
Poster Session 2 Teardown	5:30 PM – 6:00 PM	Exhibit Hall C
SPECIAL LECTURE		
Bern Lecture	7:00 PM – 8:00 PM	Room 208/209/210
AMS Lecture	7:30 PM – 8:30 PM	Room 215/216
SYMPOSIA ORAL PRESENTATIONS		
S4: Evolutionary Impacts of Seasonality	7:50 AM – 3:30 PM	Room 206
S5: With a Little Help from My Friends: Microbial Partners in Integrative and Comparative Biology	8:00 AM – 3:30 PM	Room 208/209
S6: Integrating Cognitive, Motivational and Sensory Biases Underlying Acoustic and Multimodal Mate Choice	8:00 AM – 3:30 PM	Room 207
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 37: Sexual Selection I	8:15 AM – 9:45 AM	Room 210
Session 38: Huey Award – DEE Best Student Presentation	8:00 AM – 9:45 AM	Room 211-213
Session 39: Complementary to S3 - Molecular and Neuroendocrine Approaches to the Study of Evolutionary Tradeoffs: Food, Sex, Stress, and Longevity	8:00 AM – 9:30 AM	Room 214
Session 40: Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences I	8:00 AM – 9:45 AM	Room 215-216
Session 41: DCB Best Student Presentation	8:00 AM – 9:30 AM	Room 217-218
Session 42: Cardiovascular Physiology	8:15 AM – 9:45 AM	Room 219
Session 43: Biogeography and Phylogeography I	8:00 AM – 9:45 AM	Room 220
Session 44: Behavioral Endocrinology	8:00 AM – 9:45 AM	Room 221
Session 45: Behavioral Ecology I	8:00 AM – 10:00 AM	Room 222
Session 46: Sensory Biology - Vision I	8:15 AM – 10:00 AM	Room 223
Session 47: Evo-devo of Early Metazoans: Insights From Cnidarians, Sponges and Spiralian	8:00 AM – 10:00 AM	Room 224
Session 48: Lightning Talks	10:30 AM – 11:50 AM	Room 210
Session 49: Ecological Mechanics	10:15 AM – 11:45 AM	Room 211-213
Session 50: Complementary to S2 – The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity, or Performance	10:00 AM – 12:00 PM	Room 214
Session 51: Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences II	10:15 AM – 12:00 PM	Room 215-216
Session 52: Biomaterials III – Fluid Interactions	10:00 AM – 11:45 AM	Room 217-218
Session 53: I Dig Your Tail!	10:15 AM – 11:30 AM	Room 219
Session 54: Biogeography and Phylogeography II	10:15 AM – 11:30 AM	Room 220
Session 55: Comparative Endocrinology	10:15 AM – 11:45 AM	Room 221

Friday Schedule of Events

Continued

Session 56: Behavioral Ecology II	10:30 AM – 12:00 PM	Room 222
Session 57: Sensory Biology - Vision II	10:30 AM – 12:00 PM	Room 223
Session 58: Metamorphosis, Life Cycles and Regeneration	10:30 AM – 12:00 PM	Room 224
Session 59: Digestion and Excretion Physiology	1:30 PM – 3:15 PM	Room 210
Session 60: Fluids and Flow II	1:30 PM – 3:30 PM	Room 211-213
Session 61: Complementary to S8 - Integrative Life History of Whole-Organism Performance	1:30 PM – 3:30 PM	Room 214
Session 62: Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences III	1:30 PM – 3:15 PM	Room 215-216
Session 63: BioRobotics	1:30 PM – 3:15 PM	Room 217-218
Session 64: Mechanics of Ventilation and Circulation	1:30 PM – 3:30 PM	Room 219
Session 65: Biogeography and Phylogeography III	1:30 PM – 3:15 PM	Room 220
Session 66: Evolutionary Morphology I	1:30 PM – 3:15 PM	Room 221
Session 67: Parental Behavior	1:45 PM – 3:15 PM	Room 222
Session 68: Evolutionary Ecology I	1:30 PM – 3:15 PM	Room 223
Session 69: DEDB Best Student Presentations	1:30 PM – 3:30 PM	Room 224
COMMITTEE & BOARD MEETINGS		
Advisory Committee	7:00 AM – 8:00 AM	Room 228/231
Broadening Participation Committee Meeting	7:00 AM – 8:00 AM	Room 229
SICB Division Secretaries	12:00 PM – 1:30 PM	Room 231
Educational Council	12:00 PM – 1:30 PM	Room 229
Student Support Committee	8:00 PM – 10:00 PM	Room 229
BUSINESS MEETINGS		
AMS Luncheon/Business Meeting	12:00 PM – 1:30 PM	Room 225/226
TCS Business Meeting	5:45 PM – 6:30 PM	Room 225
DCE Meeting	5:45 PM – 6:30 PM	Room 214
DIZ Meeting	5:45 PM – 6:30 PM	Room 219
DPCB Meeting	5:45 PM – 6:30 PM	Room 220
DVM Meeting	5:45 PM – 6:30 PM	Room 215/216
WORKSHOPS AND PROGRAMS		
Public Affairs Committee Workshop	12:00 PM – 1:30 PM	Room 214
Workshop S5: “Incorporating the Microbiome into Integrative & Comparative Biology”	12:00 PM – 1:30 PM	Room 208-209
Journal of Experimental Zoology Workshop: “Publishing Pointers for Students and Postdocs”	12:00 PM – 1:30 PM	Room 220
SOCIAL EVENTS		
DCE/DEDE Social	8:00 PM – 10:00 PM	Room R02/R03

Friday Program Symposia

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

7:50 AM – 3:30 PM Symposium S4 Room 206

Evolutionary Impacts of Seasonality

Chairs: Caroline Williams, Greg Ragland

7:50 am	S4-1	Ragland GJ, Williams CM; U Colorado, Denver, UC Berkeley	Introduction to evolutionary impacts of seasonality symposium
8:00 am	S4-2	Cheviron ZA, Stager M, Swanson DL; University of Montana, University of South Dakota	Comparative transcriptomics of seasonal phenotypic flexibility in three species of North American resident songbirds
8:30 am	S4-3	Kriegsfeld LJ, Jennings KJ, Manon C, Cho H, Mason AO, Keller M; University of California, Université de Tours	Seasonal control of reproductive function by two, complementary RFamide peptides
9:00 am	S4-4	Sheldon KS; University of Tennessee, Knoxville	The impact of temperature variation on physiology and distributions of tropical and temperate ectotherms
9:30 am	S4-5	Buckley LB, Arakaki A, Kharouba HM, Kingsolver JG; University of Washington, Seattle, University of Ottawa, University of North Carolina, Chapel Hill	Insect development, thermal plasticity and fitness implications in changing, seasonal environments

10:00 am Coffee Break Exhibit Hall

10:30 am	S4-6	Humphries MM, Menzies AK, Studd EK; McGill University	The seasons of things and the purposes of time: Seasonal variation in morphology, metabolism, and behaviour in boreal endotherms
11:00 am	S4-7	Varpe Ø; University Centre in Svalbard	Life history adaptations to seasonality
11:30 am	S4-8	Hereford J; University of California, Davis	Physiological and phenological correlates of the seasonal niche in a C3-C4 intermediate

12:00 pm Lunch Break

1:30 pm	S4-9	Rajpurohit S, Turcotte M, Petrov D, Levine J, Schmidt P*; University of Pennsylvania, ETH Zurich, Stanford University	Rapid adaptation to seasonality in <i>Drosophila</i>
2:00 pm	S4-10	Visser ME, Verhagen IC, Ramakers J, Laine VN, Gienapp P; Netherlands Institute of Ecology	The evolution of mechanisms underlying seasonal timing of avian reproduction
2:30 pm	S4-11	Donohue K, Edwards B, Burghardt L; Duke University	Interpreting variation in dormancy and germination time under diverse seasonal conditions
3:00 pm	S4-12	Williams CM, Ragland GJ; U California, Berkeley, U Colorado, Denver	Evolutionary impacts of seasonality: Synthesis and directions forward

3:30 pm Coffee Break Exhibit Hall

8:00 AM – 3:30 PM Symposium S5 Room 208/209

With a Little Help from My Friends: Microbial Partners in Integrative and Comparative Biology

Chairs: Kevin Kohl, Denise Dearing

8:00 am	S5-1	Moreau CS; Field Museum of Natural History	The diversity and function of gut bacteria in herbivorous ants
8:30 am	S5-2	Kohl KD, Brooks AW, Brucker RM, Van Opstal E, Bordenstein SR; Vanderbilt University, Harvard University	Phyllosymbiosis: An eco-evolutionary framework for relationships and functional effects of microbial communities across hosts
9:00 am	S5-3	Petersen JM; University of Vienna	Friends with unexpected benefits: New discoveries on the roles and functions of marine chemosynthetic symbioses
9:30 am	S5-4	McKenzie VJ, Song SJ, Amato KR, Delsuc F, Metcalf JL, Sanders JG, Knight R; University of Colorado, Northwestern University, Université Montpellier, Colorado State University, University of California San Diego	The effects of captivity on the vertebrate microbiome

10:00 am Coffee Break Exhibit Hall

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10:30 am	S5-5	Carey HV, Assadi-Porter FM; University of Wisconsin-Madison	Seasonal remodeling of the host-microbe symbiosis in hibernation
11:00 am	S5-6	Sanders JG, Song SJ, Metcalf J, Amato K, Delsuc F, McKenzie V, Knight R; University of California San Diego, Colorado State University, Northwestern University, University of Montpellier, University of Colorado Boulder	The evolution of the tetrapod gut microbiome
11:30 am	S5-7	Dearing MD, Kohl K; University of Utah, Vanderbilt University	Beyond fermentation: Gut microbes reduce toxicity of herbivore diets
12:00 pm	Lunch Break		
1:30 pm	S5-8	Archie EA, Tung J, Blekhman R, Barreiro L, Grieneisen L, Alberts SC, Altmann J; University of Notre Dame, Duke University, University of Minnesota, University of Montreal, Princeton University	Socially structured gut microbiomes in wild baboons
2:00 pm	S5-9	Knutie SA, Wilkinson CL, Kohl KD, Rohr JR; University of South Florida, Vanderbilt University	Early-life disruption of host microbiota reduces later-life resistance to infections
2:30 pm	S5-10	Phillips CD, Hanson JD, Wilkinson JE, Koenig L, Rees E, Webala P, Kingston T; Texas Tech University, RTL Genomics, Maasai Mara University	Microbiome structural and functional incongruence across host dietary niche space
3:00 pm	S5-11	Suzuki TA, Phiifer-Rixey M, Ferris KG, Chavez A, Martins FM, Nachman MW; University of California, Berkeley, Monmouth University, University California, Davis, Ohio State University, Australian National University	Gut microbiome and Bergmann's rule in natural populations of house mice
3:30 pm	Coffee Break		Exhibit Hall

8:00 AM – 3:30 PM Symposium S6 Room 207

Integrating Cognitive, Motivational and Sensory Biases Underlying Acoustic and Multimodal Mate Choice

Chairs: Kathleen Lynch, Scott MacDougall-Shackleton

8:00 am	S6-1	Lynch KS; Hofstra University	Understanding receiver biases in reproductive contexts
8:30 am	S6-2	Forlano PM; CUNY Brooklyn College and Graduate Center	Roles for dopamine in peripheral auditory sensitivity and motivation for mate localization in a vocal fish
9:00 am	S6-3	Hoke KL, Shizuka D, Hebets EA, Hoke K; Colorado State University, University of Nebraska Lincoln	Viewing social behavior through the lens of neural circuitry for target-action selection
9:30 am	Coffee Break		Exhibit Hall
10:00 am	S6-4	Choleris E, Kavaliers M; University of Guelph, University of Western Ontario	Neurobiology of mate choice and social recognition in rodents
10:30 am	S6-5	Sockman KW, Lyons SM; University of North Carolina, Chapel Hill	How song experience affects female mate-choice, male song, and monoaminergic activity in the songbird auditory telencephalon
11:00 am	S6-6	Riters LV; University Wisconsin, Madison	Female motivational state and the rewarding properties of hearing male courtship song
11:30 am	S6-7	Burmeister SS; University of North Carolina	The preoptic area as a gatekeeper to mate choice in frogs
12:00 pm	Lunch Break		
1:30 pm	S6-8	Taylor RC, Hunter KL; Salisbury University / Smithsonian Tropical Research Institute	Timing is everything: Audio-visual integration of signals in the túngara frog
2:00 pm	S6-9	Rodriguez-Saltos CA; Emory University	Before songbirds are senders, they are receivers
2:30 pm	S6-10	Tomaszycki ML, Atchley D, Tomaszycski M; Lafayette College, Wayne State University	Nonapeptides, vocal communication, and social relationships
3:00 pm	S6-11	Phelps SM, Giglio E, Burkhard T; University of Texas at Austin	Sing out loud: A signaler's perspective on condition dependence
3:30 pm	Coffee Break		Exhibit Hall

Friday Program Morning Sessions

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

8:15 AM – 9:45 AM Session 37 Room 210

Sexual Selection I

Chair: Paul N. Joseph

8:15 am	37-1	Joseph PN, Sasson DA, Emberts Z, Miller CW; University of Florida	Making the best of a bad situation: Males that lose a morphological weapon grow larger testes
8:30 am	37-3	Kimmitt AA, Dietz SL, Reichard DG, Ketterson ED; Indiana University, Bloomington, Florida State University, Ohio Wesleyan University	Male mate preference may reinforce population divergence in seasonally sympatric species
8:45 am	37-4	Koch RE, Hill GE; Auburn University	Exploring the role of carotenoid pigments in immune and antioxidant function using carotenoid – and ornament-free birds
9:00 am	37-5	O'Brien DM, Boisseau R, Somje U, Duell M, Emlen DJ; University of Montana, University of Florida, Arizona State University	The metabolic costs of animal weapons
9:15 am	37-6	Somjee U, Miller CW, Duell M, Somjee U; University of Florida	The hidden costs of sexually selected weapons in the heliconia bug (<i>Leptoscelis tricolor</i>)
9:30 am	37-7	Robertson JM, Nava RA*, Kaiser K, Vega A; California State University, Northridge, San Diego State University, Pomona College, University of Costa Rica, San Jose	Local standard of beauty: Non-clinal assortative mating along a red-eyed treefrog cline

9:45 am Coffee Break Exhibit Hall

8:00 AM – 10:00 AM Session 38 Room 211-213

Huey Award – DEE Best Student Presentation

Chair: Mike Sears

8:00 am	38-1	Carter AW, Tuberville TD, Paitz RT, Bowden RM; Illinois State University, University of Georgia	Are heat waves key to understanding TSD in nature?
8:15 am	38-2	Gilbert AL, Miles DB; Ohio University	Natural selection on thermal preference and performance over a rapid timescale
8:30 am	38-3	Kahl AF, Johnson MA, Cox RM; University of Virginia, Trinity University	Both pre- and postcopulatory selection shape the evolution of sperm morphology across <i>Anolis</i> lizards
8:45 am	38-4	Wright RM, Kenkel CD, Bay LK, Matz MV; University of Texas, Austin, Australian Institute of Marine Science	Tradeoffs in a Great Barrier Reef coral, <i>Acropora millepora</i> : Can corals adapt to simultaneous stressors?
9:00 am	38-5	Seroy SK, Grünbaum D; University of Washington	Impacts of ocean acidification on growth and inducible defenses in a marine bryozoan
9:15 am	38-6	Griffiths JS, Kelly MW, Hellberg ME; Louisiana State University	Intraspecific variation in the response of the coral, <i>Balanophyllia elegans</i> , to future ocean acidification
9:30 am	38-7	Riddell EA, Carlo MA, Apanovitch EK, Sears MW; Clemson University	Potential responses to climate change are improved by physiological acclimation of water loss
9:45 am	38-8	Flores DV, Janzen FJ; Iowa State University	Epigenetic inheritance and predisposition to sex in temperature-dependent sex determination

10:00 am Coffee Break Exhibit Hall

8:00 AM – 9:30 AM

Session 39

Room 214

Complementary to S3 – Molecular and Neuroendocrine Approaches to the Study of Evolutionary Tradeoffs: Food, Sex, Stress, and Longevity

Chairs: Jeremy Brozek, Carolyn Bauer

8:00 am	39-1	Amunugama K, Jiao L, Olbricht GR, Walker C, Huang Y-W, Nam P, Hou C*; Missouri University of Science and Technology	Cellular oxidative damage is more sensitive to biosynthetic rate than to metabolic rate: A test of the theoretical model on hornworms (<i>Manduca sexta</i> larvae)
8:15 am	39-2	Zera AJ; University of Nebraska	New insights on the roles of juvenile hormone, ecdysteroids and insulin-like peptides as regulators of wing polymorphism
8:30 am	39-3	Bauer CM, Graham JL, Abolins-Abols M, Heidinger BJ, Ketterson ED, Greives TJ; North Dakota State University, Indiana University	Early breeding female dark-eyed Juncos (<i>Junco hyemalis</i>) have shorter telomeres
8:45 am	39-4	Swanson EM, Snell-Rood EC; University of Minnesota - Twin Cities	The evolution of hormonal control of life histories: A case study with juvenile hormone
9:00 am	39-5	Verhulst S; University of Groningen	Telomeres and life histories; Where are we now and where are we going?
9:15 am	39-6	Brozek JM, Schneider JE, Rhinehart E; Lehigh University, Susquehanna University	Food restriction of mothers during gestation alters offspring growth and adult behavior in Syrian hamsters (<i>Mesocricetus auratus</i>)

9:30 am

Coffee Break

Exhibit Hall

8:00 AM – 9:45 AM

Session 40

Room 215-216

Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences I

Chair: Ashlee Rowe

8:00 am	40-1	Hudson DM, Cardona LF, Cortes Munar JS, Phillips G, Smith Q, Rocha MH; Atlanta Metropolitan State College, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Georgia State University	Spatial competition between the native Colombian freshwater crab, <i>Neostrengeria macropa</i> , and the invasive red-clawed crayfish, <i>Procambarus clarkii</i>
8:15 am	40-2	Anderson KM, Heldt KA, Mungia P, Russell B, Harley CDG, Connell SD; University of British Columbia, University of Adelaide, Hong Kong University	Factorial manipulation of CO ₂ and temperature on algal-herbivore pair demonstrates that changes in herbivore population size will drive species interaction not <i>per capita</i> effects
8:30 am	40-3	Nourabadi N, Nishiguchi MK; New Mexico State University	Fitness consequences of pH adaptation in an experimentally evolved beneficial symbiosis
8:45 am	40-4	Lonthair JK, Hwang PP, Esbaugh AJ; University of Texas Marine Science Institute, Academia Sinica	Impacts of elevated CO ₂ exposure to early life stages of two estuarine species with differing life histories
9:00 am	40-5	Sundin J, Clark TD, Amcoff M, Mateos-González F, Raby GD, Binning SA, Roche DG, Speers-Roesch B, Jutfelt F; Uppsala University, University of Tasmania, CSIRO Agriculture and Food, University of Texas, Austin, University of Windsor, University of Neuchâtel, Univ. of New Brunswick, Saint John, Norwegian Univ. of Science and Technology, Trondheim	Temperate and coral reef fishes show negligible physiological and behavioral responses to elevated CO ₂
9:15 am	40-6	Penrod LM, Turingan RG; Florida Institute of Technology	Thermally Induced shift in feeding mode may contribute to the invasion success of lionfish, <i>Pterois volitans</i>
9:30 am	40-7	Nelson JA, Rieger KJ, Nelson J; Towson University	Urban fish: Can their physiology tell us about the future of fishes faced with climate change?

9:45 am

Coffee Break

Exhibit Hall

DCB Best Student Presentation

Chair: Melina Hale

8:00 am	41-1	<i>Chin DD, Lentink D; Stanford University</i>	How birds direct impulse to minimize the energetic cost of foraging flight
8:15 am	41-2	<i>Yeaton IJ, Ross SD, Socha JJ; Virginia Tech</i>	The kinematics and stability of flying snakes during transient glides
8:30 am	41-3	<i>Clifton GT, Biewener AA; Concord Field Station, Harvard University</i>	Robotic loon quantifies swimming force generation
8:45 am	41-4	<i>Gear ME, Ditsche P, Motley MR; University of Washington, University of Alaska, Anchorage, Friday Harbor Laboratories</i>	Development of a material constitutive model for killer whale and harbor porpoise
9:00 am	41-5	<i>Clittich MR, Wilson MC, Bernard C, Rodrigo RM, Keith AJ, Niewiarowski PH, Dhinojwala A; University of Akron</i>	Too soft to stick: Influence of substrate modulus on gecko adhesion
9:15 am	41-6	<i>Durston NE, Wan X, Liu JG, Windsor SP; University of Bristol, Imperial College London</i>	High resolution three-dimensional surface measurements of birds of prey in gliding flight

9:30 am

Coffee Break**Exhibit Hall****Cardiovascular Physiology**

Chairs: Benjamin Dubansky, Lewis Deaton

8:15 am	42-1	<i>Bury A, Niedojadlo J, Cichorń M, Sadowska ET, Speakman JR, Bauchinger U; Jagiellonian University, University of Aberdeen</i>	Differential relationship between metabolic rates and hematological variables in exercised and non-exercised birds
8:30 am	42-2	<i>Herndon CJ, Uzelac I, Astley HC, Fenton FH; Georgia Institute of Technology, University of Akron</i>	Voltage and calcium dynamics in alligator hearts in comparison to mammals
8:45 am	42-3	<i>Deaton LE; University of Louisiana at Lafayette</i>	Effects of biogenic amines on isolated ventricles of the Atlantic ribbed mussel, <i>Geukensia demissa</i> , and the Northern quahog, <i>Mercenaria mercenaria</i>
9:00 am	42-4	<i>Nelson D, Stieglitz J, Hoenig R, Mager E, Benetti D, Grosell M, Crossley II D; University of North Texas, University of Miami</i>	Cardiovascular function of sub-adult cobia (<i>Rachycentron canadum</i>) during exercise following crude oil exposure
9:15 am	42-5	<i>Dubansky B, Burggren W; University of North Texas</i>	Ventricular pressure in larval precocial and altricial teleost fishes exposed to environmental contaminants
9:30 am	42-6	<i>Gabler MK, Gay DM, Westgate AJ, Koopman HN; University of North Carolina, Wilmington</i>	Microvascularity and nitrogen solubility of the adipose tissue of diving tetrapods

9:45 am

Coffee Break**Exhibit Hall****Biogeography and Phylogeography I**

Chair: David Jacobs

8:00 am	43-1	<i>Albert JS, Schoolmaster DR, Tagliacollo VA, Duke-Sylvester SM; University of Louisiana at Lafayette, US Geological Survey, Universidade Federal do Tocantins</i>	Barrier displacement on a neutral landscape: Towards a theory of continental biogeography
8:15 am	43-2	<i>Oberski JT, Boyer SL, Sharma PP; University of Wisconsin, Madison, Macalester College</i>	India as a "biotic ferry": Systematics and biogeography of the harvestman family assamiidae
8:30 am	43-3	<i>Jacobs DK, Dolby GA, Hechinger R, Lorda J, Ellingson R, Findley L; UCLA, Scripps Institute, UCSB, CIAD, Guaymas</i>	Sea-level cycles generate glacial age refugia on subtropical coasts

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8:45 am	43-4	<i>Kraemer AC, Parent CE, Kraemer A; University of Idaho, Moscow</i>	Life on a sinking ship: Morphological Diversification through island ontogeny
9:00 am	43-5	<i>Li Y, Bernardino AF, Halanych KM; Auburn University, Universidade Federal do Espírito Santo</i>	Recruitment patterns of deep-sea wood-boring bivalves (<i>Xylophagidae</i> , <i>Mollusca</i>) inferred from SNP data
9:15 am	43-6	<i>Galaska MP, Mahon AR, Santos SR, Halanych KM; Auburn University, Central Michigan University</i>	Crossing the divide: Impact of an open ocean barrier on brittle star (<i>Astrofoma agassizii</i>) phylogeography
9:30 am	43-7	<i>Collins EE, Halanych KM, Mahon AR; Central Michigan University, Auburn University</i>	Phylogeography of <i>Nymphon australe</i> (Pycnogonida, Nymphonidae) populations in the Southern Ocean
9:45 am	Coffee Break		Exhibit Hall

8:00 AM – 9:45 AM Session 44 Room 221

Behavioral Endocrinology

Chairs: Michelle Beck, Kendra Sewall

8:00 am	44-1	<i>Beck ML, Davies S, Sewall KB; Virginia Tech</i>	Does melanin-based coloration signal quality in song sparrows? Associations between melanin, hormones, condition, and behavior
8:15 am	44-2	<i>Welklin JF, Lantz SM, Boersma JP, Schwabl HG, Webster MS; Cornell University, Tulane University, Washington State University</i>	The role of androgens in mediating social environment and ornament expression in an Australian songbird
8:30 am	44-3	<i>Bentz AB, Niederhuth C, Carruth L, Navara KJ; University of Georgia, Athens, GA, Georgia State University, Atlanta, GA</i>	The mechanistic role of maternal hormones in programming offspring aggression
8:45 am	44-4	<i>Sewall KB, Davies S; Virginia Tech</i>	Neural activation in response to playback differs between urban and rural song sparrows
9:00 am	44-5	<i>Cabrera-Álvarez M, Battesti M, Swaney WT, Reader SM; McGill University, Liverpool John Moores University</i>	Grouping behaviour in guppies after intracranial nonapeptide administration
9:15 am	44-6	<i>Müller MS, Vyssotski AL, Yamamoto M, Yoda K; Nagoya University, University of Zurich/ETH Zurich</i>	Fight-or-flight responses in a free-living seabird consistently differ between individuals, vary with body condition and are dominated by a decrease in parasympathetic activity
9:30 am	44-7	<i>Rosvall KA, Buechlein A, Peterson MP, George EM, Tang H, Rusch D, Ketterson ED; Indiana University</i>	Transcriptional mechanisms linking prior social challenges and future phenotype
9:45 am	Coffee Break		Exhibit Hall

8:00 AM – 10:00 AM Session 45 Room 222

Behavioral Ecology I

Chair: Peter Zani

8:00 am	45-1	<i>Langkilde T, Robbins TR, Dewitt G, Hook M, Jacobs A, McGinley S; Penn State University, University of Nebraska, Omaha</i>	Why does the Mexican jumping bean jump?
8:15 am	45-2	<i>Zani PA, Thomas AA; University Wisconsin, Stevens Point</i>	Daily emergence in crevice-dwelling lizards during winter is related to temperature, not light
8:30 am	45-3	<i>Delaney DM, Warner DA; Iowa State University, Auburn University</i>	Density of adult lizards (<i>Anolis sagrei</i>) and time of day influence how juveniles orient themselves on perches
8:45 am	45-4	<i>Rusch TW, Angilletta MJ; Arizona State University</i>	Competition for thermal resources between male lizards altered thermoregulatory behavior and hormone levels
9:00 am	45-5	<i>Nielsen ME, Mappes J; University of Arizona, University of Jyväskylä</i>	Interactions between color and behavior for aposomatic and thermoregulatory functions in a caterpillar
9:15 am	45-6	<i>Hayden MJ, Onthank K; Walla Walla University</i>	Thermal preference in the smoothskin octopus (<i>Muusoctopus leioderma</i>)
9:30 am	45-7	<i>Harbison CW, Boughton RM, Shine PJ, Magiera AL; Siena College</i>	Thermo-orientation influences ectoparasite navigation and microhabitat selection on hosts

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9:45 am **45-8** Baiocchi TB, Choe DH, Dillman AR; University of California, Riverside Entomopathogenic nematode host-seeking behavior and attraction to naïve and infected hosts

9:45 am **Coffee Break** **Exhibit Hall**

8:15 AM – 10:00 AM Session 46 Room 223

Sensory Biology – Vision I

Chair: Mike Bok

8:15 am **46-1** Steck M, Roncalli V, Cieslak M, Lenz P, Christie A, Porter M; University of Hawaii at Manoa, PBRC Characterization of phototransduction genes in *Alima pacifica* (Crustacea, Stomatopoda)

8:30 am **46-2** Faggionato D, Pairett AN, Serb JM*; Iowa State University Expression and spectral analysis of eleven opsins reveals astonishing photochemical diversity in the scallop *Argopecten irradians* (Mollusca: Bivalvia)

8:45 am **46-3** McCulloch KJ, Briscoe AD; University of California, Irvine Spectral tuning in *Heliconius* butterflies following loss of a second UV photoreceptor

9:00 am **46-4** Gumm JM, Carleton KL, Mendelson TC; Stephen F. Austin State University, University of Maryland, College Park, University of Maryland, Baltimore County Genetic mechanisms underlying variation in visual systems of freshwater fishes in the genus *Etheostoma*

9:15 am **46-5** Leach WB, Peres R, Reitzel AM; University of North Carolina, Charlotte, University of Hawaii Cancer Center Diel lighting impacts on behavior and opsin expression in a Coastal cnidarian

9:30 am **46-6** Williams CT, Barnes BM, Yan L, Buck CL; Northern Arizona University, University of Alaska Fairbanks, Michigan State University Entraining to the polar day: Circadian rhythms in Arctic ground squirrels

9:45 am **46-7** Brandley N, Caves E; Colorado College, Duke University Visual acuity in birds: Effects of behavior, ecology, and morphology

9:45 am **Coffee Break** **Exhibit Hall**

8:00 AM – 10:00 AM Session 47 Room 224

Evo-devo of Early Metazoans: Insights From Cnidarians, Sponges and Spiralian

Chair: Amanda Kahn

8:00 am **47-1** Mitchell JM, Nichols SA; University of Denver Roles of the vinculin family proteins in the sponge *Ephydatia muelleri*

8:15 am **47-2** Servetnick M, Steinworth B, Babonis L, Simmons D, Salinas-Saavedra M, Martindale MQ; University of Washington Bothell, University of Florida Cas9-mediated excision of *brachyury* in *Nematostella vectensis* disrupts development of the pharynx, organization of endoderm, and patterning of the oral-aboral axis

8:30 am **47-3** Presnell JS, Browne WE; University of Miami, Smithsonian National Museum of Natural History Kruppel-like factor function in the ctenophore *Mnemiopsis leidyi* suggests an ancient role in endoderm development

8:45 am **47-4** Kahn AS, Leys SP; University of Alberta Energetics and the evolution of the glass sponge electrical coordination system

9:00 am **47-5** Bastin BR, Khindurangala LR, Schneider SQ; Iowa State University Tektin evolution and conservation of ciliary function in a spiralian model system

9:15 am **47-6** Speck HP, Burgess B, Williams D, Jacobs DK; University of California, Los Angeles Tip-links, usher syndrome and the origin of Metazoan mechanotransduction

9:30 am **47-7** Salinas-Saavedra M, Martindale MQ; University of Florida Understanding animal cell polarity: Insights from early embryogenesis of the ctenophore *Mnemiopsis leidyi*

9:45 am **47-8** Mah JL, Leys SP; University of Alberta Using RNAseq to probe the pre-neural character of the sponge sensory system

9:45 am **Coffee Break** **Exhibit Hall**

Lightning Talks

Chair: Benjamin Perlman

10:30 am	48-1	Baron M, Hosoi A, Williams CD, Daniel TL*; Massachusetts Institute of Technology, University of Washington	Flow in the lattice of myofilaments
10:40 am	48-2	Perlman BM, Li CY, Ashley-Ross MA, Earley RL; Wake Forest University, University of Alabama, Tuscaloosa	Exercise induces sex change in an amphibious fish
10:50 am	48-3	Revzen S; University of Michigan, Ann Arbor	When do locomotor appendages get complicated?
11:00 am	48-4	Corn KA, Bemis WE; University of California, Davis, Cornell University	Tooth microstructure, development, and replacement in the sharpnose sevengill shark, <i>Heptranchias perlo</i>
11:10 am	48-5	Kajjura SM, Berquist RM, Meredith TL, Frank LR; Florida Atlantic University, University of California San Diego	Diffusion tensor magnetic resonance microscopy reveals novel olfactory system neural organization in the atlantic stingray, <i>Dasyatis sabina</i>
11:20 am	48-6	Hedrick TL, Warrick DR, Biewener AA, Crandell KE, Tobalske BW; University of North Carolina at Chapel Hill, Oregon State University, Harvard University, University of Cambridge, University of Montana	Prey captures by freely behaving barn swallows
11:30 am	48-7	Katz HR, Hale ME; University of Chicago	Characterizing the transition from axial to limb-based startle through metamorphosis in the frog <i>Xenopus laevis</i>
11:40 am	48-8	Mendelson JR, Li TD, Riedo E, Goldman DJ; Zoo Atlanta, CUNY Advanced Science Research Center, Georgia Institute of Technology	Functional significance of the derived morphology of ventral-scale nanostructure in the sidewinder

11:50 am **Lunch Break****Ecological Mechanics**

Chairs: Maya deVries, Emily Carrington

10:15 am	49-1	Carrington E, George M, Hayford H, Newcomb L, Friedman C, Jefferds I; University of Washington, Penn Cove Shellfish LLC	All washed up? Mussel survival in the face of ocean warming and acidification
10:30 am	49-2	Devries MS, Raza A, Webb SJ, Taylor JRA; UC San Diego	Is smashing always a success? How a smashing mantis shrimp consumes both hard-shelled and soft-bodied prey
10:45 am	49-3	Pittoors NC, Leonard JBK; Northern Michigan University	Effects of pH and temperature on the harpacticoid <i>Tisbe biminiensis</i> growth, survivorship, and morphology
11:00 am	49-4	Dobkowski KA, Crofts SB; University of Washington, New Jersey Institute of Technology	Material properties of juvenile bull kelp (<i>Nereocystis luetkeana</i>) across an ontogenetic series
11:15 am	49-5	Burnett NP, Koehl MAR; University of California, Berkeley	Kelp epifauna depend on and affect kelp structure and growth
11:30 am	49-6	Kuhn AA, Darnell MZ; The University of Southern Mississippi	Long-term effects of temperature on growth and maturation rates in blue crabs (<i>Callinectes sapidus</i>)

11:45 am **Lunch Break****Complementary to S2 – The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity, or Performance**

Chair: Monique Ladds

10:00 am	50-1	Jaromin E, Sadowska ET, Koteja P; Jagiellonian University	Monoamine reuptake inhibitors alter exercise performance in bank voles selected for high swimming-induced aerobic metabolism
10:15 am	50-2	Serota MW, Williams TD; Simon Fraser University	Individual variation in activity patterns of chick-rearing birds using an automated radio telemetry system

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10:30 am	50-3	<i>Ladds MA, Slip DJ, Harcourt RG; Marine Predator Research Group, Taronga Conservation Society Australia</i>	Intrinsic and extrinsic influences on the metabolic rates of three species of Australian otariid
10:45 am	50-4	<i>Groom DJE, Toledo MCB, Powers DR, Tobalske BW, Welch KC*, Welch K; University of Toronto Scarborough, University of Taubate, George Fox University, University of Montana</i>	The scaling of mechanochemical efficiency of hovering hummingbirds
11:00 am	50-5	<i>Bagheri H, Vajrjala S, Taduru V, White SX, Lee D, Pazouki A, Emady HN, Marvi H; Arizona State University, California State University</i>	Locomotion on wet granular media
11:15 am	50-6	<i>Yap KN, Dick MF, Guglielmo CG, Williams TD; Simon Fraser University, University of Western Ontario</i>	Effects of experimental manipulation of hematocrit on flight performance
11:30 am	50-7	<i>Goldstein JG, Carloni J, Kibler RD; Wells National Estuarine Research Reserve (NOAA), New Hampshire Fish & Game</i>	A fishery in flux: Claw removal and its impacts on survivorship, behavior, and physiological stress in Jonah crab <i>Cancer borealis</i>
11:45 am	50-8	<i>Cespedes AM, Lailvaux SP; University of New Orleans</i>	Long legs, big heads: Sex-specific multivariate morphology -> performance relationships in <i>Anolis carolinensis</i>
12:00 pm	Lunch Break		

10:15 AM – 12:00 PM **Session 51** **Room 215-216**

Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences II

Chairs: Roger Anderson, Christopher Thawley

10:15 am	51-1	<i>Eshafie SJ; University of California, Berkeley</i>	Can we infer the ecology of fossil lizard groups using extant variables and our knowledge of past climate change?
10:30 am	51-2	<i>Anderson RA, Anderson R; Western Washington University</i>	Patterns of climate-related body condition among desert lizards differing in food acquisition modes
10:45 am	51-3	<i>Thawley CJ, Battles AC, Moniz HA, Merritt A, Kolbe JJ; University of Rhode Island</i>	Lizards in the big city: Impacts of urbanization on morphology, thermal preference, and parasitism in <i>Anolis</i> Lizards
11:00 am	51-4	<i>Hicks JJ, Belabut DM, Algar AC; University of Nottingham, University of Malaya</i>	Plantations induce ecological niche shifts in a tropical lizard
11:15 am	51-5	<i>McEntire KD, Maerz JC; University of Georgia, Athens</i>	How habitat structure and behavior moderate salamander sensitivity to climate
11:30 am	51-6	<i>Tanner RL, Armstrong EJ, Sousa WP, Stillman JH; University of California, Berkeley, San Francisco State University</i>	Locally adapted <i>Phyllaplysia taylori</i> populations in Central California show higher thermal plasticity potential
11:45 am	51-7	<i>Oyen KJ, Herndon JD, Strange JP, Lozier JD, Dillon MD; University of Wyoming, Utah State University, University of Alabama</i>	Common garden experiments reveal local adaptation in critical thermal limits of bumblebees (Apidae, <i>Bombus</i>) over short geographic distances

12:00 pm Lunch Break

10:00 AM – 11:45 AM **Session 52** **Room 217-218**

Biomaterials III – Fluid Interactions

Chairs: George Lauder, Laura Matloff

10:00 am	52-1	<i>Ren Z, Di Santo V, Hu K, Yuan T, Lauder GV, Wen L; Beihang University, Harvard University</i>	Understanding fish linear acceleration using an undulatory bio-robotic model with soft fluidic elastomer actuated median fins
10:15 am	52-1	<i>Matloff L, Lentink D; Stanford University</i>	Shape changing wings: How birds move their feathers to create aerodynamic wing planforms
10:30 am	52-3	<i>Stowers AK, Lentink D; Stanford University</i>	Wrist bones are important in pigeon wing morphing

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10:45 am	52-4	<i>Wainwright DK, Fish FE, Lauder GV, Ingersoll S, Williams TM, St. Leger J; Harvard University, West Chester University, University of California, Santa Cruz, SeaWorld, San Diego</i>	How smooth is a dolphin?
11:00 am	52-5	<i>Battista NA, Miller LA; University of North Carolina, Chapel Hill</i>	To flow or not to flow: Effects of resonant driving and damping on valveless pumping
11:15 am	52-6	<i>Yanagitsuru YR, Akanyeti O, Liao JC; Whitney Laboratory for Marine Bioscience</i>	Head Shape in Fishes Influences the Detection of Vortices
11:30 am	52-7	<i>Lauder GV, Thornycroft PJM, Khan M, Wainwright DK, Anderson EJ, Wen L, Alvarenga J, Aizenberg J; Harvard University, Grove City College, Beihang University</i>	Bioinspired lubricant-infused surfaces enhance aquatic locomotion

11:45 am Lunch Break

10:15 AM – 11:30 AM	Session 53	Room 219
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I Dig Your Tail!

Chair: Chris Clemente

10:15 am	53-1	<i>Clemente CJ, Cooper CE, Withers PC, Freakley C, Singh S, Terrill P; University Of the Sunshine Coast, Curtin University, University of Western Australia, University of Queensland</i>	The private life of echidnas: Using accelerometry and GPS to examine field biomechanics and assess the ecological impact of a widespread, semi-fossorial monotreme
10:30 am	53-2	<i>Crisp LM, Lee DV; University of Nevada, Las Vegas</i>	Everyone digs: Burrowing biomechanics of pocket gophers, kangaroo rats, and pocket mice
10:45 am	53-3	<i>Patel A, Fisher C, Stocks B, Nicolls F, Boje E; University of Cape Town</i>	Tracking the cheetah tail and spine using animal-borne cameras and a wireless sensor network
11:00 am	53-4	<i>Matherne ME, Zhou Y, Cockerill K, Hu DL; Georgia Institute of Technology</i>	Swishing tails shoo flies
11:15 am	53-5	<i>Haney WA, Sueda S, Clark AJ, Uyeno TA; Valdosta State University, Texas A&M University, College of Charleston</i>	3D analysis of knotting in hagfish

11:30 pm Lunch Break

10:15 AM – 11:30 AM	Session 54	Room 220
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Biogeography and Phylogeography II

Chair: Katherine Silliman

10:15 am	54-1	<i>Burns M, Hedin M, Tsurusaki N; San Diego State University, Tottori University</i>	Population genomics and geographical parthenogenesis in Japanese harvestmen (<i>Opiliones, Sclerosomatidae</i>)
10:30 am	54-2	<i>Michaelides S, While G, Uller T; University of Rhode Island, University of Tasmania, Australia, Lund University</i>	Colonization, genetic diversity and fitness-related consequences in non-native populations of <i>Podarcis muralis</i> in England
10:45 am	54-3	<i>Moody KN, Blum MJ, Blob RW, Ptacek MB; Tulane University, Clemson University</i>	Connectivity matters: Integrating genomics with models of dispersal and selection yields new insights into population divergence in a Hawaiian waterfall-climbing goby
11:00 am	54-4	<i>Silliman K, Eernisse D, Walter R; University of Chicago, California State University Fullerton</i>	Population genomics and phylogeography of the olympia oyster
11:15 am	54-5	<i>Gaffney AM, McCormick JJ, Mermier CM, Witt CC; University of New Mexico</i>	Elevational replacement hummingbird species exhibit differing physiological responses to experimental hypobaria

11:30 am Lunch Break

Comparative Endocrinology

Chairs: Kathleen Hunt, Kyle Selcer

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| 10:15 am | 55-1 | <i>Hunt KE, Lysiak NS, Moore MJ, Seton RE, Robbins J; N Arizona University, New England Aquarium, Woods Hole Oceanographic Institution, College of the Atlantic, Center for Coastal Studies</i> | Multiple steroid and thyroid hormones detected in Baleen from seven whale species |
| 10:30 am | 55-2 | <i>Clay TA, Treglia ML, Steffen MA, Trujano-Alvarez AL, Bonett RM; University of Tulsa</i> | Transcriptomics of salamander tail tips reveal potential biomarkers of stress |
| 10:45 am | 55-3 | <i>Ashton SE, Parker MR; James Madison University</i> | Sexual dimorphism in expression of steroid hormone receptors in garter snake skin |
| 11:00 am | 55-4 | <i>Holden KG, Gangloff EJ, Bronikowski AM; Iowa State University</i> | Preparing for winter dormancy: Early-life experience affects condition, metabolism, and hormonal response to cold temperatures in the checkered garter snake, <i>Thamnophis marcianus</i> |
| 11:15 am | 55-5 | <i>Watts HE, Robart AR; Loyola Marymount University</i> | The role of photoperiod in stimulating facultative migration |
| 11:30 am | 55-6 | <i>Uraco AM, Hornak J, Selcer KW*; Duquesne University</i> | Distribution of the enzyme steroid sulfatase in mouse (<i>Mus musculus</i>) and frog (<i>Xenopus laevis</i>) tissues |

11:45 am Lunch Break**Behavioral Ecology II**

Chair: Victoria Cussen

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| 10:30 am | 56-1 | <i>Cussen VA, Cornelius JM, Hahn TP; University of California, Davis, Eastern Michigan University</i> | Using stable isotopes to elucidate habitat use and movement magnitude of nomadic passerines |
| 10:45 am | 56-2 | <i>Kemberling AA, Darnell MZ; University of Southern Mississippi</i> | Regional migration patterns of mature female blue crabs in the Gulf of Mexico |
| 11:00 am | 56-3 | <i>MacPherson M, Jahn A, Taylor CAZ; Tulane University, Universidade Estadual Paulista</i> | Convergent evolution on the morphology of migration within an entire songbird genus (<i>Tyrannus</i>) |
| 11:15 am | 56-4 | <i>English PA, Nocera JJ, Green DJ; Simon Fraser University, University of New Brunswick</i> | Of moths and moon: Complicated phenological mismatch in a nocturnal aerial insectivore |
| 11:30 am | 56-6 | <i>McCain SC, Kopelic S, Staudhammer C, Earley RL; The University of Alabama, Tuscaloosa</i> | A brackish water specialist that prefers freshwater: The case of the mangrove rivulus fish |

11:45 am Lunch Break**Sensory Biology – Vision II**

Chair: Tom Cronin

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| 10:30 am | 57-1 | <i>Theobald JC, Currea P; Florida International University</i> | Larval feeding affects visual acuity and sensitivity in adult fruit flies |
| 10:45 am | 57-2 | <i>Zamore SA, Bochiccio L, Socha JJ; Virginia Tech</i> | Visual acuity of flying snakes: Behavioral responses to optokinetic stimuli |
| 11:00 am | 57-3 | <i>Long SM, Jakob EM; University of Arizona, University of Massachusetts</i> | Variation in morphology and organization of the secondary eye optic neuropils across the order of araneae |
| 11:15 am | 57-4 | <i>Schweikert LE, Grace MS; Duke University, Florida Institute of Technology</i> | Visual anticipation of new photic environments by the developing retina of the Atlantic tarpon (<i>Megalops atlanticus</i>) |
| 11:30 am | 57-5 | <i>Didion JE, Layne JE; University of Cincinnati</i> | Behaviorally assessing the spectral sensitivity of the Atlantic sand fiddler crab, <i>Uca pugnator</i> |

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11:45 am **57-6** Crowe-Riddell JM, Lillywhite HB, Partridge JC, Sanders KL; University of Florida, University of Western Australia, University of Adelaide Tail photoreception: Investigating a novel sensory system in Australian sea snakes

12:00 pm Lunch Break

10:30 AM – 12:00 PM Session 58

Room 224

Metamorphosis, Life Cycles and Regeneration

Chairs: Christy Schnitzer, Bailey Steinworth

10:30 am **58-1** Schnitzler CE, Nguyen AD, Koren S, Gornik SG, Plickert G, Buss L, Phillipy A, Mullikin JC, Cartwright P, Nicotra ML, Frank U, Baxevanis AD; University of Florida, NUI-Galway, University of Cologne, Yale University, NISC, NHGRI, NIH, University of Kansas, University of Pittsburgh Comparative genomics of *Hydractinia* and *Hydra*

10:45 am **58-2** Siebert S, Cazet J, Juliano CE; University of California, Davis Piwi-piRNA pathway function in somatic stem cells of hydra

11:00 am **58-3** Moss ND, Maslakova SA; University of Oregon Regeneration in the pilidium

11:15 am **58-4** Steinworth BM, Martindale MQ; University of Florida Whitney Laboratory Homeobox genes in the upside-down jellyfish *Cassiopea xamachana*

11:30 am **58-5** Zhang P, Gold DA, Jacobs DK; UCLA DNA methylation across life history stages of jellyfish *Aurelia* (Cnidaria, Scyphozoa)

11:45 am **58-6** Nedved BT, Freckelton M, Hadfield MG; University of Hawaii at Manoa Bacterial genomes and larval settlement: Are predictions possible?

12:00 pm Lunch Break

Friday Program Afternoon Sessions

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

1:30 PM – 3:15 PM Session 59

Room 210

Digestion and Excretion Physiology

Chairs: Donovan German, Katherine Rott

1:30 pm **59-1** Herrera MJ, Heras J, German DP; University of California, Irvine Digestive specialization in the family stichaeidae: Molecular underpinnings and potential for plasticity

1:45 pm **59-2** Wehrle BA, Tadic Z, Krajnovic M, Chernoff K, Herrel A, German DP, Wehrle B; University of California, Irvine, University of Zagreb, NOAA, CNRS/MNHN Comparative nutrient digestibility between insectivorous and rapid-evolving herbivorous Italian wall lizards

2:00 pm **59-3** Rott KH, Caviedes-Vidal E, Karasov WH; University of Wisconsin, Madison, Universidad Nacional de San Luis & CONICET Activity of intestinal enzymes responds to multiple dietary signals in birds

2:15 pm **59-4** Stannard HJ, McAllan BM, Raubenheimer D; University of Sydney Macronutrient intake in carnivorous marsupials

2:30 pm **59-5** German DP, Heras J; University of California, Irvine Dietary specialization on the molecular level: Comparative transcriptomics of prickleback fishes (*Stichaeidae*) with different diets

2:45 pm **59-6** O'Mara MT, Wikelski M, Voigt CC, Ter Maat A, Pollock HS, Burness GP, Desantis LM, Dechmann DD; University Konstanz, Leibniz Inst. Zoo & Wildlife Research, University Illinois, Trent University Counter strategies to high metabolic rates and rapid changes in energy expenditure in frugivorous bats

3:00 pm **59-7** Plakke MS, Lombardo JB, Pacella GI, Meslin C, Clark NL, Morehouse NI; University of Pittsburgh Investigating digestive properties of reproductive proteases in a female butterfly

3:15 pm Break

Exhibit Hall

1:30 PM – 3:15 PM	Session 60	Room 211-213
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Fluids and Flow II

Chairs: Stacy Farina, Andrew Dickerson

1:30 pm	60-1	Dial TR, Brainerd EL; Brown University	Effects of feeding performance on the limits of guppy offspring size
1:45 pm	60-2	Farina SC; Harvard University	Virtual fish gills: Computational modeling to examine hydrodynamic trade-offs in gill microstructures
2:00 pm	60-3	Koehl MAR, Murphy E, Hadfield MG; University of California, University of Virginia, University of Hawaii	Effects of algal overgrowth on water flow into and out of coral reefs
2:15 pm	60-4	Katija K, Sherman AD, Sherlock RE, Robison BH; Monterey Bay Aquarium Research Institute	Giant larvaceans: Differences in tail kinematics lead to enhanced filtration rates in mucus houses
2:30 pm	60-5	Smith N, Ghosh R, Dickerson AK; University of Central Florida	Citrus jets
2:45 pm	60-7	Jacobs C, Holzman R; Tel Aviv University, Israel	The diversity of suction feeding performance across teleosts: A PIV Study with 16 species
3:00 pm	60-8	Edwards DD, Moore PA; Bowling Green State University	Don't be such a drag: A lycorias (<i>Perlidae</i>) body posture changes with increasing water velocity and respect to individual body shape

3:15 pm	Break	Exhibit Hall
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1:30 PM – 3:30 PM	Session 61	Room 214
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Complementary to S8 – Integrative Life History of Whole-Organism Performance

Chairs: Sarah McMenamin, Tommy Norin

1:30 pm	61-1	McMenamin SK, Carter C, Cooper J, Nazaire C, Khalid A; University of Massachusetts, Lowell, Washington State University, Tri Cities	Thyroid hormone integrates craniofacial development and feeding kinematics in zebrafish
1:45 pm	61-2	Norin T, Metcalfe NB; University of Glasgow, United Kingdom	Plasticity, performance, and pace of life: Individual differences in physiological and behavioural flexibility towards daily changes in temperature and oxygen availability
2:00 pm	61-3	Smith GD, Durso AM, Angilletta MJ, Denardo DF, French SS; Utah State University, Arizona State University	Assessing the protein and metabolic costs of a trade-off between reproduction and immunity
2:15 pm	61-4	Gangloff EJ, Sparkman AM, Bronikowski AM; Iowa State University, Westmont College	Individual heterogeneity in behaviour and physiology affects fitness in the garter snake <i>Thamnophis elegans</i>
2:30 pm	61-5	Breuner CW, Berk SA; The University of Montana	Testing the fitness effects of glucocorticoids within a resource framework
2:45 pm	61-6	Jaumann S, Snell-Rood E; University of Minnesota	Nutritional stress decreases fecundity and choosiness in a butterfly
3:00 pm	61-7	Treidel LA, Clark RM, Williams CM; UC Berkeley	The effect of diet nutrient composition on development and life history traits of a wing polymorphic cricket, <i>Gryllus lineaticeps</i>
3:15 pm	61-8	Oufiero CE; Towson University	Changes in the functional morphology of a praying mantis feeding strike across ontogeny and between the sexes

3:30 pm	Break	Exhibit Hall
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1:30 PM – 3:15 PM	Session 62	Room 215-216
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Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences III

Chairs: Sarah Humfeld, Ofir Levy

1:30 pm	62-1	Humfeld SC, Grunert B; University of Missouri, Michigan Technological University	Climate change unlikely to impact sexual communication in a widely-distributed treefrog
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1:45 pm	62-2	<i>Danner RM, Coomes CM, Derryberry EP; University of North Carolina, Wilmington, Tulane University</i>	High ambient temperatures reduce cognitive and motor performance of an endotherm
2:00 pm	62-3	<i>Levy O, Dayan T, Porter WP, Kronfeld-Schor N; Arizona State University, Tempe, Tel Aviv University, University of Wisconsin, Madison</i>	Time as an ecological resource: Can diurnal animals compensate for climate change by nocturnal activity?
2:15 pm	62-4	<i>Powers DR, Langland KM, Wethington SM, Tobalske BM, Powers SD, Graham CH; George Fox University, Hummingbird Monitoring Network, University of Montana, Stony Brook University</i>	Impact of climate change on thermoregulation during hovering in hummingbirds
2:30 pm	62-5	<i>Merrill L, Chiavacci S, Santymire R, Haussmann M, Paitz R, Barger A, Benson TJ; University of Illinois, Urbana-Champaign, Lincoln Park Zoo, Bucknell University, Illinois State University</i>	Parental investment, phenotypic correlations, and landscape: Understanding the role of habitat in shaping wild bird phenotypes
2:45 pm	62-6	<i>Ouyang JQ, De Jong M, Matson KD, Haussmann MF, Meerlo P, Visser ME, Spoelstra K; University of Nevada, Reno</i>	Restless roosts: Light pollution affects physiology and behavior in a free-living bird
3:00 pm	62-7	<i>Zollinger S, Dorado Correa A, Heidinger BJ, Brumm H; Max Planck Inst. for Ornithology, North Dakota State University</i>	The effect of traffic noise exposure on telomeres varies with developmental stage

3:15 pm **Break** **Exhibit Hall**

1:30 PM – 3:15 PM **Session 63** **Room 217-218**

BioRobotics

Chairs: Jessica Lee, Kaushik Jayaram

1:30 pm	63-1	<i>Lee JS, Fearing RS, Cho KJ, Full RJ; University of California, Berkeley, Seoul National University, South Korea</i>	Crickets jumping from diverse substrates inspire leg design in a millirobot
1:45 pm	63-2	<i>Porter MM, Ravikumar N, Hall G, Holt JD, Kapadia A, Walker ID, Neutens C, Adriaens D; Clemson University, Ghent University</i>	Mechanical evolution of adaptive designs in biomimetic 3D-printed structures and robots
2:00 pm	63-3	<i>Wang Y, Yang X, Chen Y, Kenaley CP, Liu H, Guan J, Wainwright DK, Wood RJ, Wen L*; Beihang University, Harvard University</i>	A bio-robotic remora (<i>Echeneis naucrates</i>) adhesive disc: Design, fabrication and function
2:15 pm	63-4	<i>Jusufi A, Vogt DM, Wood RJ, Lauder GV; Harvard University</i>	Undulatory swimming performance and body stiffness modulation in a soft robotic fish
2:30 pm	63-5	<i>Wolf Z, Jusufi A, Vogt D, Wood R, Lauder G; Harvard University</i>	Integration of soft robotic actuators to investigate body-caudal-fin swimming in fishes
2:45 pm	63-6	<i>Jayaram K, Goldberg B, Doshi N, Wood RJ; Harvard University</i>	Towards rapid running at resonance using HAMR, a biologically-inspired robotic platform
3:00 pm	63-7	<i>Hubicki CM, Aguilar JJ, Kim AH, Ames AD, Goldman DI; Georgia Institute of Technology</i>	Manipulation of grain-scale mechanics improves robot jumping performance

3:15 pm **Break** **Exhibit Hall**

1:30 PM – 3:30 PM **Session 64** **Room 219**

Mechanics of Ventilation and Circulation

Chairs: Melissa Kenny

1:30 pm	64-1	<i>Farmer CG; University of Utah</i>	Pulmonary aerodynamic valves: Form, function, evolution
1:45 pm	64-2	<i>Capano JG, Moritz S, Brainerd EL; Brown University</i>	Comparison of 3D rib kinematics during breathing in the Argentine black and white tegu, <i>Salvator merianae</i> , and green iguana, <i>Iguana iguana</i>
2:00 pm	64-3	<i>Cieri RL, Moritz S, Brainerd EL; University of Utah, Brown University</i>	Ventilatory rib kinematics in the savannah monitor, <i>Varanus exanthematicus</i> : An XROMM study

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2:15 pm	64-4	<i>Kenny MC, Giarra MN, Rogers PS, Barnes A, Socha JJ; Virginia Tech, Breckenridge Middle School</i>	How temperature influences the viscosity of hornworm hemolymph
2:30 pm	64-5	<i>Aprelev P, Kenny M, Socha J, Kornev K; Clemson University, Virginia Tech</i>	Rheological behavior of insect hemolymph on macro-, micro-, and nano-scales
2:45 pm	64-6	<i>Salcedo MK, Hoffman J, Combes SA, Mahadevan L; Harvard University, UC Davis</i>	Wing vein networks across insect orders: Examining hierarchical network structure and hemolymph flow
3:00 pm	64-7	<i>Adjerid K, Pendar H, De Vita R, Socha JJ; Virginia Tech</i>	Predicting the mechanical response of (<i>Zophobas morio</i>) tracheal tubes to hemolymph pressure
3:15 pm	64-8	<i>Ko Y, Pendar H, Socha JJ; Virginia Tech</i>	Kinematic analysis of gut movements in the beetle <i>Zophobas morio</i> reveals linkages to circulation and respiration
3:30 pm	Break		Exhibit Hall

1:30 PM – 3:15 PM **Session 65** **Room 220**

Biogeography and Phylogeography III

Chair: Kirt Onthank

1:30 pm	65-1	<i>Coppenrath CM, Lasala J, Meersohn N, Baldwin J; Florida Atlantic University</i>	Characterizing the foraging ecology and migratory movements of Atlantic leatherback turtles (<i>Dermochelys coriacea</i>) via stable isotope analysis and mitochondrial DNA
1:45 pm	65-2	<i>Stewart ND, Mastromonaco GF, Ward UT, Burness G; Trent University, Toronto Zoo</i>	The effect of island life on the morphology and stress physiology of white-footed mice
2:00 pm	65-3	<i>Crickenberger S, Wetthey DS; University of South Carolina</i>	Do temperature and competition interact to set a range limit?
2:15 pm	65-4	<i>Onthank KL, Onthank K; Walla Walla University</i>	Late to the party or noticing the wallflower? Story of an apparent deep water octopus living in shallow water
2:30 pm	65-5	<i>Cahill AE, Pearman JK, Borja A, Carugati L, Carvalho S, Danovaro R, Dashfield S, David R, Feral J-P, Olenin S, Siaulys S, Somerfield P, Trayanova A, Uyarra MC, Chenuil A; Aix Marseille Université, King Abdullah University of Science and Technology, AZTI, Università Politecnica delle Marche, Plymouth Marine Laboratory, Klaipeda University, Bulgarian Academy of Sciences</i>	Community composition of hard-bottom macroinvertebrates in seven regional seas as measured using traditional and metabarcoding methods
2:45 pm	65-6	<i>Lau CL, Jacobs DK; University of California, Los Angeles</i>	Water extraction and loss of species distinction in a Colorado Delta endemic silverside fish— <i>Colpichthys hubbsi</i>
3:00 pm	65-7	<i>Carlo MA, Sears MW; Clemson University</i>	Eastern fence lizards (<i>Sceloporus undulatus</i>) exhibit inter-annual nest site fidelity and intra-annual variation in nest site selection

3:15 pm **Break** **Exhibit Hall**

1:30 PM – 3:30 PM **Session 66** **Room 221**

Evolutionary Morphology I

Chair: Adam Summers

1:30 pm	66-1	<i>Rivera G; Creighton University</i>	An examination of the relationship between locomotor mode and patterns of fore—and hindlimb symmetry in semiaquatic freshwater turtles (<i>Family: Emydidae</i>)
1:45 pm	66-2	<i>Jamniczky HA, Le A, Barry TN, Rogers SM; University of Calgary</i>	Variation in a suite of armour phenotype traits reveals a complex response to selective pressure in threespine stickleback (<i>Gasterosteus aculeatus</i>)
2:00 pm	66-3	<i>Baliga VB, Mehta RS; University of California, Santa Cruz</i>	Size and shape in independent evolutions of cleaning in the Labridae and Gobiidae
2:15 pm	66-4	<i>Frederich B, Santini F, Konow N, Lecchini D, Alfaro ME; University of Liège, Associazione Italiana per Studio Biodiversita', UMass., Lowell, CRIOBE, Moorea, University of California, Los Angeles</i>	Patterns of body size and shape diversification in marine angelfishes (<i>Pomacanthidae</i>)

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2:30 pm	66-5	<i>Meachen JA, Bitterman KM, Thompson ME, Brannick AL; Des Moines University, Idaho Museum of Natural History, University of Washington</i>	Identity of ice age Idaho wolves
2:45 pm	66-6	<i>Stocker MR, Zhao LJ, Nesbitt SJ, Wu WC, Li C; Virginia Tech, Zhejiang Museum of Natural History, Canadian Museum of Nature, Institute of Vertebrate Paleontology and Paleoanthropology</i>	A short-snouted, middle Triassic phytosaur may indicate salt-water tolerance is ancestral for Archosauria
3:00 pm	66-7	<i>Brandt R, Warner DA; Auburn University</i>	Maternal and genetic additive effects on sprint speeds and morphological traits variation of offspring lizards
3:15 pm	66-8	<i>Summers AP, Conway KW, Buser TJ, Hayes MM, Pfeifferberger JA, Summers A; University of Washington</i>	CT scanning all the fishes...techniques and a progress report
3:30 pm	Break		Exhibit Hall

1:45 PM – 3:15 PM **Session 67** **Room 222**

Parental Behavior

Chair: Eva Fischer

1:45 pm	67-1	<i>Fischer EK, Roland AB, Coloma LA, Tapia EE, O'Connell LA, Fischer E; Harvard University, Centro Jambatu, Ecuador</i>	Convergent mechanisms of parental care: A poison frog perspective
2:00 pm	67-2	<i>Gray BL, Ward MV, Williams KA, Miles DB; Ohio University</i>	Sex-specific differences in provisioning behavior in the Hooded Warbler (<i>Setophaga citrina</i>)
2:15 pm	67-3	<i>Poo S, Chuang M-F, Kam Y-C, Poo S; Memphis Zoo, Tunghai University</i>	Predation risk and nest site value determine male guarding behavior and reproductive success
2:30 pm	67-4	<i>Hope SF, Durant SE, Hallagan JJ, Beck ML, Kennamer RA, Hopkins WA; Virginia Tech, Oklahoma State University, University of Georgia</i>	The effect of clutch size on incubation behavior and within-nest egg temperature variation
2:45 pm	67-5	<i>Smiley KO, Adkins-Regan E; Cornell University</i>	The effects of bromocriptine and reproductive experience on prolactin and parental behavior in the zebra finch
3:00 pm	67-6	<i>Naylor MF, Grindstaff JL; Oklahoma State University</i>	Males on birth control: Effects of α -ethinylestradiol on parental care and nesting success in zebra finches
3:15 pm	Break		Exhibit Hall

1:30 PM – 3:15 PM **Session 68** **Room 223**

Evolutionary Ecology I

Chair: Jeanine Refsnider

1:30 pm	68-1	<i>Courant J, Secondi J, Bereziat V, Herrel A; Centre National de la Recherche Scientifique, Université d'Angers</i>	Resources allocated to reproduction decrease at the range edge of an expanding population of an invasive amphibian
1:45 pm	68-2	<i>Kucera AC, Westneat DF, Heidinger BJ; North Dakota State University, University of Kentucky</i>	Telomere dynamics and lifetime fitness: A longitudinal study in free-living house sparrows
2:00 pm	68-3	<i>Byle J, Cruz A, Cohen M, Roscow R; University of Colorado Boulder</i>	Brood parasitism: The host-parasite relationship of a Lake Tanganyikan cichlid and a cuckoo catfish
2:15 pm	68-4	<i>Refsnider JM, Carter SE, Clifton IT, Siefker AD, Streby HM, Vazquez TK; University of Toledo</i>	Plasticity in behavioral thermoregulation by lizards on an elevational gradient: A reciprocal transplant experiment
2:30 pm	68-5	<i>Steele AL, Warner DA; Auburn University</i>	Sex-specific effects of incubation temperature on morphology, performance, and growth in a lizard with environmental sex determination
2:45 pm	68-6	<i>Goepfner SR, Luttbeg B; Oklahoma State University</i>	Impacts of food restriction and predator cue exposure on individual and offspring shell morphology in the pond snail <i>Physa acuta</i>

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3:00 pm **68-7** *Gifford ME, Robinson CD, Clay TA; University of Central Arkansas, University of Tulsa* The influence of invasive fire ants on survival, space use, and patterns of natural selection in juvenile lizards

3:15 pm **Break** **Exhibit Hall**

1:30 PM – 3:30 PM **Session 69** **Room 224**

DEDB Best Student Presentations

Chairs: Greg Davis, Yui Suzuki

- 1:30 pm **69-1** *Laslo M, Hanken J; Harvard University* Expression of thyroid hormone receptors and deiodinases in the direct-developing frog *Eleutherodactylus coqui*
- 1:45 pm **69-2** *Evans K, Waltz B, Tagliacollo V, Chakrabarty P, Albert J; University of Louisiana at Lafayette, Louisiana State University* Modularity begets brachycephaly: Repeated patterns of neurocranial evolution in Neotropical electric fishes
- 2:00 pm **69-3** *Palmquist KH, Davidson BJ; Swarthmore College* Ion flux controls left-right heart and gut asymmetry in *Ciona intestinalis*
- 2:15 pm **69-4** *Wu L, Lambert JD, Hiebert LS, Maslakova SA, Klann M, Seaver EC, Passamaneck YJ, Bastin BR, Chneider SQ; University of Rochester, University of Oregon, University of Florida, University of Hawaii, Iowa State University* Spiralian-specific genes in ciliary bands
- 2:30 pm **69-5** *Johnson AB, Fogel NS, Lambert JD; University of Rochester* How the mollusk shell margin controls shell shape
- 2:45 pm **69-6** *Fisher CR, Jockusch EL; University of Connecticut* Comparative transcriptomics support the wing gene cooption hypothesis for the origin of the novel treehopper helmet
- 3:00 pm **69-7** *Setton EVW, Sharma PP; University of Wisconsin-Madison* Conservation of *Sp6-9* function in patterning prosomal appendage fate in the spider *Parasteatoda tepidariorum*
- 3:15 pm **69-8** *Criswell KE, Coates MI, Gillis JA; University of Chicago, University of Cambridge* The evolutionary and embryonic origins of the gnathostome vertebral skeleton

3:30 pm **Break** **Exhibit Hall**

7:00 PM – 8:00 PM **BERN** **Room 208/209/210**

Bern Lecture *Crews D; University of Texas at Austin* We have soiled our nest: Now what?

7:30 PM – 8:30 PM **AMS** **Room 215/216**

AMS Lecture *Sosik HM; Woods Hole Oceanographic Institution* Life in the plankton, stories from automated submersible microscopy and flow cytometry

FRIDAY POSTER SESSION P2

Exhibit Hall C, 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

Complementary to S1 – Indirect Effects of Global Change: From Physiological and Behavioral Mechanisms to Ecological Consequences

- | | | |
|--------------|--|--|
| P2-19 | Woodard LW, Dame J, Wack CL; Chowan University | Salinity stress effects on development and behavior in <i>Xenopus laevis</i> |
| P2-20 | Hudson DM, Thompson JF, Phillips G*, Rocha MH; Atlanta Metropolitan State College, Universidad Nacional de Colombia Instituto de Ciencias Naturales sede Bogota | Behavioral effects of salinity changes to the Colombian freshwater crab, <i>Neostrengeria macropa</i> |
| P2-21 | Lam EK, Gunderson AR, Paganini AW, Tsukimura B, Stillman JH; San Francisco State University, California State University, Fresno | Predicting mechanisms that control reproductive fitness under warming by correlating neural physiology and avoidance behavior in the porcelain crab, <i>Petrolisthes cinctipes</i> |
| P2-22 | Souther JL, Gunderson AR, Paganini AW, Tsukimura B, Stillman JH; San Francisco State University, California State University, Fresno | The effects of increased temperature and density on <i>Petrolisthes cinctipes</i> individuals within populations |
| P2-23 | Salas HK, Gunderson AR, Sayavong N, Stillman JH, Tsukimura B; California State University, Fresno, Romberg Tiburon Center | Effects of thermal stress on vitellogenin levels in the hemolymph of the anomuran crab <i>Petrolisthes cinctipes</i> |
| P2-24 | Mayol M, Iyengar EV; Muhlenberg College | Climate change and stress-eating slugs: Comparative responses of an invasive and native species |
| P2-25 | Carr GM, Podolsky RD; Northwestern University, College of Charleston | Effects of elevated CO ₂ on encapsulated development in 14 gastropod species |
| P2-26 | Redak C, Pechenik J, Pires A; Kenyon College, Tufts University, Dickenson College | Effects of larval and juvenile experience of acidification on shell performance in a gastropod |
| P2-27 | Pierce NT, Navarro MO, Gaasterland T, Burton RS; University of California, San Diego, University of Alaska Southeast | Effect of low pH and low oxygen conditions on developmental gene expression and hatching of <i>Doryteuthis opalescens</i> embryos |
| P2-28 | Liguori AL; Stony Brook University | Multigenerational responses to lowered pH in the copepod <i>Tigriopus californicus</i> |
| P2-29 | Miner MR, Gothmann AM, Gagnon AC; Western Washington University, University of Washington | Effects of carbonate chemistry on calcification in the orange cup coral, <i>Balanophyllia elegans</i> |
| P2-30 | Carter AL, Bodensteiner BL, Iverson JB, Milne-Zelman CL, Mitchell TS, Refsnider JM, Warner DA, Janzen FJ; Iowa State University, Earlham College, Aurora University, Auburn University, University of Toledo | Modeling the incubation microclimate to predict implications of responses to climate change for a thermally-mediated trait |
| P2-31 | Beans AL, Duell ME, Harrison JF; Arizona State University | Thermal tolerance varies with body size in orchid bees |
| P2-32 | Jardine LJ, Parsons Z, Oyen KJ, Strange JP, Dillon ME; Oklahoma City University, University of Wyoming, USDA ARS | Sex differences in chill coma recovery times of bumblebees (<i>Bombus vosnesenskii</i>) reared in common-garden conditions |
| P2-33 | Litchfield JE, Tobalske BW, Powers SD*, Powers DR; George Fox University, University of Montana | Do near-field changes in surface temperature provide evidence for physiological control of heat dissipation during flight in hummingbirds? |
| P2-34 | Zollinger S, Dorado Correa A, Goymann W, Brumm H; Max Planck Institute for Ornithology | Effects of experimental traffic noise exposure on stress physiology, immune function, and reproductive success in birds |
| P2-35 | Swanda RV, Voss MA*; Syracuse University | The effects of ambient light on the disruption of endocrine and neurobiological mechanisms that control glucose homeostasis |

Complementary to S6 – Integrating Cognitive, Motivational and Sensory Biases Underlying Acoustic and Multimodal Mate Choice

- P2-36** D'Amelio BP, Gahr M, Adreani N, Trost L, Klumb M, Ter Maat A; Max Planck Institute for Ornithology
From auditory recognition to motivation, a journey into unlearned vocalizations of zebra finches
- P2-37** Kelley MD, Mendonca MT; Auburn University
Reproductive behavior patterns and sensory perception in gopher tortoises
- P2-38** Perelmuter JT, Sisneros JA, Forlano PM; CUNY Graduate Center, University of Washington
Dopaminergic modulation of hearing in the plainfin midshipman fish
- P2-39** Petersen CL, Klein TLW, Kingsbury MA, Hurley LM; Indiana University, Bloomington
Regionally distinct activity in the dorsal raphe during mouse courtship: A potential link between the SBN and auditory processing?
- P2-40** Ghahramani ZN, Timothy M, Varughese J, Arafa F, Sisneros JA, Forlano PM; CUNY Graduate Center, CUNY Brooklyn, University of Washington
Forebrain dopamine neurons are preferentially responsive to advertisement calls in sneaker male midshipman fish
- P2-41** Kessler BJ, Elias DO; University of California, Berkeley
Do you have have to turn on the red light? The effects of lighting and substrate on the courtship success of a North American jumping spider

Sexual Systems and Sexual Selection

- P2-43** Borrelli ST, Chandler C; State University of New York at Oswego
Assessment of sex chromosome influence on sexual dimorphism of the terrestrial isopod *Trachelipus rathkei*
- P2-44** Pascas JA, Chandler CH; State University of New York at Oswego
Testing for the prevalence of *Wolbachia* in two terrestrial isopod species (*Porcellio laevis* and *Trachelipus rathkei*)
- P2-45** Chung AK, Reedy AM, Cox CL, Cox RM; Georgia Southern University, University of Virginia
Testosterone, energetics, and the regulation of a social and sexual signal in brown anoles
- P2-46** Pierre-Pierre EN, Congdon ER*, Johnson MA; Bethune-Cookman University, Trinity University
Gender differences in tail autotomy in Anolis lizards
- P2-47** Ge ZY, Schwartz TS, Hill GE; Auburn University
Exploring the genetic basis of red feather pigmentation in house finch (*Haemorhous mexicanus*)
- P2-48** Hall HR, Kahrl AF, Johnson MA; Trinity University, University of Virginia
Sexual selection in anolis lizards: An analysis of sperm and testis morphology
- P2-49** Harwood AL, Hickey MG, Podolsky RD; College of Charleston
An experimental test of sexual selection for large male size in pycnogonids
- P2-50** Robinson CD, Gifford ME; University of Central Arkansas
The use of a colorful morphological signal as a status symbol in the prairie lizard, *Sceloporus consobrinus*

Molecular Evolution

- P2-51** Davis KM, Harper GR; Hendrix College
Comparison of contortrostatin genes in the five subspecies of copperhead
- P2-52** Harper GR; Hendrix College
Evolution of the phospholipase a2 venom gene in the five subspecies of copperheads (*Agkistrodon contortrix*)
- P2-53** Aguilar MA, Oakley TH; University of California, Santa Barbara
Target practice: Challenges of targeted gene capture of highly conserved genes
- P2-54** Sombatsaphay V, Reitzel AM; UNC Charlotte
Structural and functional characterization of aquaporins from early diverging animal phyla
- P2-55** Selcer KW; Duquesne University
Evolution of a disorganized protein region: Variation in the phosphovitin amino acid composition of avian vitellogenins
- P2-56** Silliman K, Hurt C, Indorf J, Browne W; University of Chicago, Tennessee Tech University
Rate of DNA mutations across the genome of *Alpheus* snapping shrimp
- P2-57** Menzel KG, Renn SCP, Ritz A; Reed College
Analysis of copy number variation across African cichlid genomes

Evo-Devo: Morphogenesis/Organogenesis/Regeneration

- P2-58** Guiffre CM, Douglas DC, Hulbert AC, Mitchell TS, Hall JM, Warner DA; Auburn University
Noninvasive heart rate detection of *Anolis sagrei* embryos using a digital egg monitoring system
- P2-59** McFadden JG, Hathaway DA, Siegwald PA, Byrum CA; College of Charleston
The sea urchin embryo: When and where are nuclear transport proteins transcribed in early development?
- P2-60** Shoemaker AK, Setton EVW*, Sharma PP; University of Wisconsin-Madison
Differential expression of *dachshund* in epipod and telopod derivatives suggests non-homology of crustacean gills and spider spinnerets
- P2-61** Snyder N, Dickerman L, Schwalbe M, Labuhn M, Singh A, Reed W, Kittilson J; North Dakota State University
Melatonin and receptor signaling: Investigating roles in chicken embryo development
- P2-62** Maan A, Cass AN, Tulenko FJ, Davis MC; Kennesaw State University, Monash University
Early establishment of molecularly distinct skeletal compartments in paddlefish fins
- P2-63** Rock AN, Stephenson TQ, Dubuc TQ, Martindale MQ; University of Florida
The cnidarian hox gene *anthox6a* controls the site of gastrulation in the sea anemone, *Nematostella vectensis*
- P2-64** Fodor ACA, Lowe EK, Brown CT, Swalla BJ; University of Washington, Stazione Zoologica Anton Dohrn Naples, University of California Davis
VASA expression shows unusual variation in the tailless ascidian *Molgula occulta*
- P2-65** Holmquist E, Tulenko FJ, Kigundu G, Cass AN, Davis MC; Kennesaw State University, Monash University
Fin-folds and autopods share a conserved *Shh-Gremlin-Fgf* regulatory network
- P2-66** Hall C, Rodriguez M, Wei A, Wictor E, Gazi A, Garcia J, Gentile G, Rivera A, Hill A; University of Richmond, University of Pacific
Secreted frizzled related protein is a putative downstream target of PaxB in the freshwater sponge, *Ephydatia muelleri*
- P2-67** Kornegay B, Cramer J, Pohlmann D, Gomez F, Mark L, Hall C, Siraliev-Perez E, Walavalkar NM, Sperlazza MJ, Prokop JW, Hill A, Williams DC; University of Richmond, Virginia Commonwealth University, University of North Carolina, Hudson Alpha Institute for Biotechnology
Methylation and chromatin remodeling complex from sponges to humans
- P2-68** Dappa-Fombo SE, Holmquist E, Davis MC; Kennesaw State University
Regenerative capacity in the paired fins of the American paddlefish *Polyodon spathula*
- P2-69** Kahn AS, Leys SP; University of Alberta
Spicule and flagellated chamber formation in a growth zone of *Aphrocallistes vastus*
- P2-70** Lanza AL, Seaver EC; University of Florida
The organizing role of TGF beta signaling in axis formation of the annelid *Capitella teleta*
- P2-71** Zogbaum LILY, Albertson C; Bryn Mawr College, University of Massachusetts
Genetic basis of cichlid pharyngeal jaw divergence: A microhabitat perspective

Complementary to S4 – Evolutionary Impacts of Seasonality

- P2-74** Gonzalez-Gomez PL, Echeverria V, Estades CF, Perez JH, Krause JS, Wingfield JC; University of California, Davis, Universidad de Chile
Timing of life history stages and endocrine mechanisms in seasonal versus aseasonal environments
- P2-75** Przybylska AS, Wojciechowski MS, Jefimow M; Nicolaus Copernicus University
Behavior of photo-responding Siberian hamsters is not consistent among seasons
- P2-76** Zajic DE, Podrabsky JE; Portland State University
The role of γ -aminobutyric acid in anoxic and desiccated annual killifish embryos
- P2-77** Wojciechowski MS, Przybylska AS, Nowakowska A, Jefimow M; Nicolaus Copernicus University, Poland
Seasonally heterothermic rodent increases antioxidant defense in winter, while oxidative stress remains constant
- P2-78** Larivee ML, Boutin S, McAdam A, Humphries MM; Government of Yukon, University of Alberta, University of Guelph, McGill University
Plasticity in resting metabolic rate in response to food availability in free-living North American red squirrels
- P2-79** Derrickson EM; Loyola University Maryland
The relationship between seasonality and growth rate within the rodentia
- P2-80** Lukens K, Wagner T, Riggs, Podrabsky E; Portland State University
In situ hybridization as a localization technique for miRNA in *Austrofundulus limnaeus* cell culture

Comparative Endocrinology

- P2-81** Bauer CM, Graham JL, Greives TJ; North Dakota State University
Hypothalamic-pituitary-adrenal axis regulation differs between fall and spring migration
- P2-81.5** Englen K, Renn SCP, O'Rourke CF; Washington State University, Reed College
Amalgamating metabolic regulation and maternal care in an African cichlid fish
- P2-82** Deadmond A, Zou E*; Nicholls State University
Which house-keeping gene is most stably transcribed during the molting cycle of the blue crab, *Callinectes sapidus*?
- P2-83** Wrobel ER, Molina E, Khan NY, Pusch EA, Navara KJ, Mendonca MT; University of Georgia, Auburn University
Quantification of ARs in the germinal disc region of the hen
- P2-84** Elkins EA, Lema SC; California Polytechnic State University, San Luis Obispo
Identification of a vasopressinase/oxytocinase-like LNPEP enzyme in a teleost fish
- P2-85** Daab C, Smith A, Shyamal S*, Durica DS; Univ of Oklahoma
Vitellogenesis and limb regeneration over the molt cycle in the cherry shrimp, *Neocardinia deticulata*, a proposed crustacean transgenic model
- P2-86** Dudley EM, Davis JE, Bianchi L, Clelland IJ, Ray A; Radford University
An examination of food consumption and the production of nutrient rich frass by *Gromphadorhina portentosa* colonies treated with royal jelly
- P2-87** Gaudreault BN, Das S, Mykles DL; Colorado State University, Fort Collins
Expression of ecdysteroid responsive nuclear receptors in limb regenerates of the decapod crab *Gecarcinus lateralis*
- P2-88** Schneider KA, Shewade LH, Buchholz DR, Schneider K; University of Cincinnati
Characterization of a corticosterone response gene in *Xenopus Tropicalis*
- P2-89** Wang VR, Saito A*, Suzuki Y; Wellesley College
Transcriptional regulation of ecdysteroid biosynthesis in the tobacco hornworm, *Manduca sexta*
- P2-90** Agosto LM, Helm BR, Holthusen J, Torson AS, Yocum GD, Greenlee KJ, Bowsher JH; University of Central Florida, North Dakota State University, USDA-ARS
Hacking the solitary bee: Connecting hormonal dynamics with underlying molecular mechanisms during development
- P2-91** McDonald I, Sarwar P, Suzuki Y; Wellesley College
The role of ventral veins lacking in reproduction and embryogenesis in *Oncopeltus fasciatus*
- P2-92** Paitz RT, Gillard MA, Bowden RM; Illinois State University
Do moms put enzymes into eggs to protect embryos from exposure to environmental chemicals?
- P2-93** Mogus JP, Amato CM, McCoy KA; East Carolina University
Characterization of sex hormone binding protein alpha-fetoprotein production during natural sexual differentiation and endocrine disruption
- P2-94** Shyamal S, Guruacharya A, Das S, Mykles DL, Durica DS; University of Oklahoma, OK, Colorado State University, CO
A transcriptomic approach examining crustacean Y organ molt cycle regulation via the mTOR signaling pathway

Stress

- P2-95** Koch N, Wilcoxon TE; Millikin University
Effects of simulated tadpole tail predation on post-metamorphic performance in Cuban tree frogs (*Osteopilus septentrionalis*)
- P2-96** Richter MM, Ashley NT, Cooper LN; Western Kentucky University
A polar day's-worth of stress – circadian variation of adrenocortical responses to stress in arctic-breeding passerine birds
- P2-97** Wright RM, Page CA, Matz MV; University of Texas, Austin, Mote Tropical Research Laboratory
Physiological effects of microfragmentation to propagate coral stock for reef restoration
- P2-98** Smith GD, French SS, Zani PA; Utah State University, University of Wisconsin-Stevens Point
Local adaptation of the hypothalamic-pituitary-adrenal axis in lizards in response to a predator
- P2-99** Strom MK, Ebensperger LA, Nowak K, Calhoun K, Taig-Johnston MR, Hetteña A, Romero LM, Bauer CM, Abbot P, Hayes LD; University of Tennessee-Chattanooga, Pontificia Universidad Católica de Chile, Tufts University, Pace University, North Dakota State University, Vanderbilt University
Are ectoparasites or their bacterial communities correlated with the endocrine stress response in degus (*Octodon degus*)?
- P2-100** Van Kesteren F, Westrick SE, Boutin S, Humphries M, Lane J, McAdam A, Palme R, Dantzer B; University of Michigan, University of Alberta, McGill University, University of Saskatchewan, University of Guelph, University of Veterinary Medicine
Effects of maternal stress on oxidative signaling status of offspring in wild red squirrels

- P2-101** Demoranville KJ, Bohannon K, Carter W, Douglas L, Pierce B, McWilliams SR; University of Rhode Island, Sacred Heart University
- P2-102** Brandes S, McDowell KP, Peters MC, Folts SL, Davis JE; Radford University
- P2-103** Wurtz MC, Cussen VA, Cornelius JM; Eastern Michigan University, University of California, Davis
- P2-104** Lattin CR, Gallezot J, Carson RE; Yale University
- P2-105** Polett ME, Gifford ME; University of Central Arkansas
- P2-106** Kaunisto S, Ferguson LV, Sinclair BJ; University of Western Ontario
- P2-107** Austin SH, Lang A, MacManes M, Calisi RM; University of California, Davis, University of New Hampshire
- P2-108** Forsburg ZR, Kim DS, Gabor CR; Texas State University
- P2-109** Bennett DJ, Johnson EE, Wenker ES, Decavel-Bueff E, Davidson BA, Malisch JL; The Claremont Colleges, University of Montana, St. Mary's College of Maryland
- P2-110** Falso PG, Marshall LV, Gustafson KL, Falso MS, Shidemantle GI, Zajac JM; Slippery Rock University
- Oxidative status in the European starling in response to the manipulation of dietary fatty acids, dietary antioxidants, and exercise
- Does nestling quality vary between urban and rural habitats in eastern bluebirds (*Sialia sialis*)?
- The effects of elevated corticosterone on social learning in red crossbills (*Loxia curvirostra*)
- Availability of dopamine D2 receptors in striatum predicts behavioral response to captivity in a wild songbird
- The influence of maternal stress on phenotypic variation in *sceloporus consobrinus*
- Can we predict the impacts of multiple stressors on insects in a changing climate?
- The hypothalamic-pituitary-gonadal transcriptome of the rock dove, and its response to stress
- Is artificial light at night a stressor for Barton Springs salamander, *Eurycea sosorum*?
- Acute stress and hyperglycemia in white-crowned sparrows
- Stress physiology in a model amphibian following exposure to a neonicotinoid pesticide

Behavior and Reproduction

- P2-111** Chen HY, Kang BJ, Wilder MN; JIRCAS
- P2-112** Lemaster MP, Lutterschmidt DI; Western Oregon University, Portland State University
- P2-113** Corder KR, Stormshak F; Oregon State University
- P2-114** Bock SL, Lema SC; Cal Poly, San Luis Obispo
- P2-115** Webber MA, Johnson MA; Trinity University, San Antonio
- P2-116** Perez JH, Wingfield JC, Ramenofsky M; University of California, Davis
- P2-118** Cheesman SC, Mournighan DT, Carruth LL; Georgia State University
- P2-119** Vernasco B, Ryder TB, Horton BM, Moore IT*; Virginia Tech, Smithsonian, Millersville University
- The involvement of red pigment-concentrating hormone (RPCH) in female reproduction in whiteleg shrimp (*Litopenaeus vannamei*)
- Estrogen influences pheromone production in garter snakes
- Activation of rapid signaling by estrogen in the ovine endometrium
- Temperature influences on reproductive endocrinology of the estuarine sheepshead minnow (*Cyprinodon variegatus*)
- Brain vs. brawn: Hormonal mechanisms of behavior in caribbean anoles
- Endocrine regulation of autumn migration: A role for thyroid hormones?
- Singing in different social contexts alters song rate in male zebra finches housed with female partners
- Individual variation in testosterone and cooperative behavior in a neotropical lekking bird, the wire-tailed manakin

Reproductive Behavior

- P2-120** Egan AN, Drymon JM, Daly-Engel TS; University of West Florida, University of South Alabama
- P2-121** Lange EC, Hughes KA; Florida State University
- P2-122** Ikagawa RM, Kahn PC, Larsen EM*, Fowler-Finn KD, Boyer SL; Macalester College, St Louis University
- P2-123** Nolan-Tamariz MA, Iyengar VK; Villanova University
- P2-124** Jacquez AA, Sasson DA, Ryan JF; Whitney Laboratory for Marine Bioscience
- Multiple paternity variation over time of the atlantic sharpnose shark (*Rhizoprionodon terraenovae*)
- The effects of social environment on male alternative tactics
- Catch her while you can: Increased mating activity as the season progresses in an Eastern North American harvestman, *Leiobunum ventricosum* (Arachnida, Opiliones, Eupnoi)
- Forceps and foreplay: Sexual selection in the maritime earwig, *Anisolabis maritima*
- Reproductive behaviors in the simultaneous hermaphrodite *Mnemiopsis leidyi* (Ctenophora) with implications on the rate of self-fertilization

- P2-125** Mady R, Smith D, Oufiero C; Towson University
Are the athletic ones the handsome ones? Part I: Linking female preference to aerobic locomotor performance in *Xiphophorus montezumae*
- P2-126** Smith D, Mady R, Oufiero C; Towson University
Are the athletic ones the handsome ones? Part II: Linking female preference to anaerobic locomotor performance in *Xiphophorus montezumae*
- P2-127** Restrepo LF, Rice MA, Ophir AG; Cornell University
Mechanisms of monogamy: Modeling dynamics of paternity and promiscuity in prairie voles (*Microtus ochrogaster*)
- P2-128** Bertucci EM, Graham JL, Needham KB, Pearson AA, Greives TJ; Northern Michigan University, North Dakota State University
Early rising females pair with less sexy social mates in the dark-eyed junco (*Junco hyemalis*)
- P2-129** Jones JA, Boersma J, Enbody E, Karubian J; Tulane University, Washington State University
Ecological determinants of phenotypic divergence in female coloration of papuan fairywrens
- P2-130** Troy S; University of Texas at Austin
Temperature and nestling development: Temporal variations in *Zonotrichia leucophrys oriantha* feeding frequency
- P2-131** Langager MM, Bridge ES, Elderbrock EK, Schoech SJ; University of Memphis, University of Oklahoma
Effect of sex-specific food supplementation and corticosterone on parental behavior in Florida scrub-jays (*Aphelocoma coerulescens*)
- P2-132** Philson CS, Xu A, Ellery M, Ray A, Foltz SL, Davis JE; Radford University
The PASSER Project: Development of micro-computer enabled feeders and nest boxes for songbird ecobehavioral research
- P2-134** Bacheller SK, Orourke CF, Renn SC; Reed College
Gut turnover: An evolutionary adaptation to mouthbrooding in *Astatotilapia burtoni*
- P2-135** Engeln KA; Reed College
Integrated physiological and behavioral phenotypes of maternal fitness
- P2-136** Gardner S, Grider S, Campbell P; Oklahoma State University
Effects of disrupted genomic imprinting on maternal behaviors in an interspecific mouse cross
- P2-137** McDonald KL, Grindstaff JL, Campbell P; Grinnell College, Oklahoma State University
Candidate genes for reproductive timing in female Eastern bluebirds (*Sialia sialis*)
- P2-138** Driscoll RMH, Hurd PL, Renn SCP; Reed College, University of Alberta
Evidence for aromatase gene and enhancer methylation in *P. pulcher*, a cichlid species with environmental sex determination

Behavioral Ecology II

- P2-139** Anderson S, Cruz P, Folks N, Johnson M, Loubriel D, Niedzialek O, Perez M, Travis D, Gonzalez V, Hranitz J, Barthell J*; University of Kansas, Montclair State University, University of Texas at El Paso, Dickinson College, University of Puerto Rico at Rio Piedras, Bard College, Boston University, Bloomsburg University, University of Central Oklahoma
Mark-recapture studies of pollinator species on the Greek Island of Lesbos
- P2-140** Defino R, Sprayberry J, Dillon M; Muhlenberg College, University of Wyoming
Flowering phenology in subalpine meadows of Grand Teton National Park
- P2-141** Loubriel Grajales D, Johnson M, Niedzialek O, Perez Torres M, Melendez A, Alemán Ríos J, Mosier A, Abramson C, Giray T, Barthell J, Gonzalez V, Agosto Rivera J; University of Puerto Rico at Rio Piedras, Dickinson College, Oklahoma State University, University of Central Oklahoma, University of Kansas
Analysis of convolvulaceae circadian rhythm and systropha visitation rates
- P2-142** Perez M, Melendez A, Oskay D, Agosto J; UPR, NKU
The role of a protein diet on the survival and ontogeny of circadian rhythm in *apis mellifera*
- P2-143** Panyi AJ, Lillis A, Mooney TA; University of Southern Mississippi, Woods Hole Oceanographic Institution
Light effects on individual behavior and sound production by snapping shrimp, *Alpheus heterochaelis*
- P2-144** Brooks CAC, McGuire LP, Boyles JG; Southern Illinois University, Texas Tech University
Effects of artificial lighting on bat activity in forested and agricultural habitats
- P2-145** Butler JM, Maruska KP; Louisiana State University
Underwater anthropogenic noise impacts aggressive interactions in a territorial African cichlid fish
- P2-146** Martinez V, Taub E, Freeman A; Adelphi University
The native *Eurypanopeus depressus* mud crab is more inhibited by malathion exposure than the invasive *Hemigrapsus sanguineus* crab

- P2-147** Florey CL, Martin AL; Saginaw Valley State University
Effects of bupropion, an environmental contaminant, on a keystone aquatic species (*Orconectes rusticus*)
- P2-148** Bennice CO, Brooks WR, Rayburn AP, Hanlon RT; Florida Atlantic University, Marine Biological Laboratory
Behavioral dynamics of niche partitioning between two octopus species in a shallow coastal environment
- P2-149** Sims OC, Dearolf JL; Hendrix College, Conway AR
Swimming preference of guinea pigs
- P2-150** Davis MMA, O'Brien S; Radford University
Do mosquitofish show active behavioral preference for substrate color in their environment?
- P2-151** Milam AC, Leonard JBK; Northern Michigan University
Habitat preference of juvenile lake sturgeon in the presence of brook trout at varying densities
- P2-152** Kilvitis HJ, Hanson HE*, Thiam M, Ardia DR, Martin LB; University of South Florida, Université Cheikh Anta Diop, Franklin and Marshall College
Behavioral variation in response and habituation to novelty among range expanding house sparrows in Senegal
- P2-153** Goodchild CG, Durant SE; Oklahoma State University
Food availability and environment mediate behavioral traits of "shy" snails
- P2-154** Storks L, Leal M; University of Missouri - Columbia
A field based approach to study behavioral flexibility in *Anolis sagrei*

Sensory Biology II

- P2-155** Cockburn GD, Baldwin MW; Max Planck Institute for Ornithology
Characterizing sweet taste perception in the tataupa tinamou (*Crypturellus tataupa*) and the feral pigeon (*Columba livia*)
- P2-156** Nolan BG, Muscedere ML; Hendrix College
How do *Pheidole dentata* ant workers compensate for antennal injuries when following pheromone trails: Critical periods and odor sampling strategies
- P2-157** Legan A, Sheehan M; Cornell University
Molecular evolution of chemoreceptors in paper wasps
- P2-158** Ames AM, Murray JA; University of Washington, California State University
Ciliary-driven currents may enhance olfactory sampling in nudibranch gastropods
- P2-159** Vilchez DE, Field KE, Maruska KP; Louisiana State University
Differential expression of putative pheromone-detecting cells and receptors in the olfactory epithelium of an African cichlid fish
- P2-160** Hughes R, Cunningham GB; St John Fisher College
Embryonic exposure to scents by chickens (*Gallus gallus domesticus*) leads to heightened sensitivities
- P2-161** Leiser-Miller LB, Santana SE; University of Washington
Morphological diversity in the sensory system of neotropical leaf-nosed bats (Chiroptera: Phyllostomidae), with implications for acoustic and dietary ecology
- P2-162** Miller CH, Campbell P, Sheehan MJ; Cornell University, Oklahoma State University
Vomeroneasal receptor evolution: Transcriptomics approach to investigate signal diversity and individual recognition
- P2-163** Davis S, Satterlie RA; University of North Carolina Wilmington
Statocysts of scyphomedusae
- P2-164** Murphy CT, Martin C, French AN, Beltran RS, Burns JM, Lapsertis JM; Naval Undersea Warfare Center, University of Alaska Anchorage
Interspecies variability in pinniped vibrissal morphology and array architecture
- P2-165** Pratt B, Mohren T, Deora T, Njonge A, Daniel T; University of Washington, Seattle
Focal laser energy illuminates strain sensing in insect wings
- P2-166** Zeringue AF, Mire P; University of Louisiana at Lafayette
Hair bundle abundance in *Nematostella vectensis* is regulated by delta-notch
- P2-167** Fazal-Ur-Rehman F, Mire P; University of Louisiana at Lafayette
Investigating mechanisms of ototoxic effects on hair cells using a model sea anemone
- P2-168** Stephen C, Mire P; University of Louisiana at Lafayette
Employment of hair bundle mechanoreceptors on tentacles of the sea anemone *Nematostella vectensis* in the detection and capture of benthic prey
- P2-169** York CA, Bartol IK, Krueger PS; Virginia Wesleyan College, Old Dominion University, Southern Methodist University
Successful predator evasion by squid dependent on multiple sensory modalities throughout ontogeny
- P2-170** Patel RN, Cronin TW; University of Maryland Baltimore County
Navigating the Benthic Reef: Orientation in stomatopod crustaceans
- P2-171** Ernst DA, Lohmann KJ; University of North Carolina, Chapel Hill
Repulsive accommodations: Caribbean spiny lobsters avoid dens with strong magnets

- P2-172** Mendazona RL, Wallace NE, McKechnie MM, Torrez S, Baltzley MJ, Latham KL; Western Oregon University, Monmouth
Determining whether *Drosophila* have an innate directional preference based on the ambient magnetic field of the earth
- P2-173** McKechnie MM, Mendazona RL, Torrez S, Wallace NE, Baltzley MJ, Latham KL; Western Oregon University, Monmouth
Using artificial selection to understand directional orientation behavior in *Drosophila*
- P2-174** Rimniceanu M, Scibelli A, Trimmer BA; Tufts University
Local thermosensation in the tobacco hornworm, *Manduca sexta*

Chemical Ecology

- P2-175** Ho WW, Riffell JA; University of Washington, Seattle
Circadian emissions of floral scent in the carnivorous cobra lily (*Darlingtonia californica*)
- P2-176** Wright JE, Misra BB, Chen S, Avery ML, Kimball RT; University of Florida, USDA, APHIS, National Wildlife Research Center
Do turkey (*Cathartes aura*) and black (*Coragyps atratus*) vultures have odor signatures that could be used for social communication?
- P2-177** Jutfelt F, Sundin J*, Raby GD, Krång AS, Clark TD; Norwegian University of Science and Technology, Uppsala University, University of Windsor, University of Gothenburg, University of Tasmania, CSIRO Agriculture and Food
Two-current choice flumes for testing avoidance and preference in aquatic animals
- P2-178** Crowley-Gall A, Rollmann SM; University of Cincinnati
Effects of host availability on peripheral olfactory perception in *drosophila mojavensis*
- P2-179** Ammagarahalli B, Layne JE, Rollmann SM; University of Cincinnati, University of Cincinnati
Host plant shift alters peripheral olfactory perception and divergence of *Drosophila mojavensis* populations
- P2-180** Parker MR, Richard SA, Flores RJA, Avery ML; James Madison University, US Dept. of Agriculture - APHIS
Conspecific scent trailing and initial identification of social chemical cues in Burmese pythons
- P2-181** Voss MA, Teale S, Semler E; Syracuse University, SUNY College of Environmental Science and Forestry
To catch a thief: Do bird parasites unlock the chemical code of metabolic status to identify potential hosts?

Bioindicators and Pollution

- P2-182** Welch AM; College of Charleston
Shining a light on Prozac's effects on amphibians: Fluoxetine and its UV phototransformation products reduce growth and activity of toad tadpoles
- P2-183** Rowsey LE, Khursigara AJ, Esbaugh AJ; University of Texas, The University of Texas Marine Science Institute
Effects of sub-lethal oil exposure on predator-prey dynamics in a larval marine fish
- P2-184** Parrish SC, McCoy MW; East Carolina University
The effects of pharmaceuticals and personal care products (PPCPs) and a predator on mosquito oviposition site selection and adult recruitment
- P2-185** McClelland SJ, Bendis RJ, Woodley SK, Relyea RA; Duquesne University, University of Pittsburgh at Johnstown, Rensselaer Polytechnic Institute
Pesticide-resistant zooplankton do not buffer the effects of chlorpyrifos on amphibian neurodevelopment
- P2-186** Harris L, Carrington E; University of Washington
Impacts of microplastic on mussel filter feeding and growth
- P2-187** Hagen A, Zou E*; Nicholls State University
Triclosan stimulates the activity of the molting enzyme N-acetyl-beta-glucosaminidase in the epidermis of the fiddler crab, *Uca pugilator*
- P2-188** Guigueno MF, Karouna-Renier NK, Henry PFP, Head JA, Peters LE, Palace VP, Letcher RJ, Fernie KJ; McGill University, United States Geological Survey, Stantec Consultants, International Institute for Sustainable Development, Environment and Climate Change Canada
Identifying adverse effects on neuroanatomy of hatchling American kestrels exposed to two novel brominated flame retardants
- P2-189** Golden AM, Bonisoli-Alquati A, Mousseau T, Golden A; University of South Carolina, Louisiana State University
Developmental effects of low-dose radiation on dragonflies in Chernobyl and Fukushima
- P2-190** Gardner S, Cline G, Mwebi N, Rayburn J; Auburn University, Jacksonville State University
Developmental effects and DNA damage in spotted salamander, *Ambystoma maculatum*, larvae from exposure to of arsenic and chromium
- P2-191** Folks NY, Cruz P, Hranitz J, Barthell J, Gonzales VH; University of Texas at El Paso, Montclair State University, Bloomsburg University, University of Central Oklahoma, University of Kansas
A field test of the pollinator pesticide avoidance hypothesis in fallow agricultural fields

- P2-192** Chesko S, Wilcoxon TE, Seitz J, Nuzzo J; Millikin University, Illinois Raptor Center
Lead poisoning in Central Illinois birds of prey
- P2-193** Ciesielski NL, Furimsky MM; Westminster College - Pennsylvania
Effects of ammonium nitrate and nonylphenol on amphibian embryo development
- Biodiversity**
- P2-194** Travis DJ, Gonzalez VH; Boston University, Kansas University
Bee stratification in Western Turkey: Pan trap color, height, and habitat preferences
- P2-195** Franco RWA, Di Benedetto APM; Universidade Estadual do Norte Fluminense
Otoliths of sciaenidae fish: Comparison of composition by electron paramagnetic resonance
- P2-196** Santagata S, Mahon AR, Halanych KM; Long Island University-Post, Central Michigan University, Auburn University
Marine ectoproct communities from the Antarctic Shelf based on sea floor imaging of the Ross and Weddell Seas
- P2-197** Payne CY, Carvajal JI, Grupe B, Rouse GW; UC San Diego
A new species of sea daisy (*Xyloplax*, *Asteroidea*, *Echinodermata*)
- P2-198** Kokesh BS, Anderson LC, Engel AS; South Dakota School of Mines and Technology, University of Tennessee
Assessing the diversity of lucinid bivalves from coastal and anchialine habitats on San Salvador Island, the Bahamas
- P2-199** Fergusson R, Clancy D, Donahoe K, Cohen SC; San Francisco State University, Tufts University
Characterizing the biodiversity of botryllids
- P2-200** Beintema DP, Davis-Berg EC; Lake Forest College, Columbia College Chicago
Survey of gastropods from breidenthal biological reserve, an eastern deciduous forest in Baldwin Woods Forest Preserve in Kansas
- P2-201** Richter C, Digiulio S, Leonard J; Northern Michigan University
A herpetological survey of Virgin Islands National Park, St. John, USVI
- P2-202** Ikagawa RM, Larsen EM, Kahn PC, Anderson MD; Macalester College
Microhabitat preferences of harvestmen (*Arachnida*, *Opiliones*) in a Minnesota oak woodland
- P2-203** Higgins DJ, Kirkton SD, Waters JS; Providence College, Union College
The secret societies living within an acorn: Temnothorax ant colonies visualized with X-ray microtomography
- P2-204** Campbell AM, Korzeniecki NW, Waters JS; Providence College
The ants of Rhode Island: Species richness and spatiotemporal abundance of ants across an urban college campus
- P2-205** Bakkes DK; Onderstepoort Veterinary Institute
Gertrud Theiler Tick Museum - Standing on the shoulders of giants
- Symbiosis**
- P2-206** Voltzow J, Iyengar EV; University of Scranton, Muhlenberg College
A tale of two snails: Commensalism, parasitism, or “friends with benefits”?
- P2-207** Precopio LN, Bales KL, Williams LE; Providence College, University of California, Davis
Inter-individual variation in the gut microbiomes of titi monkey family groups
- P2-208** Matsuda SB, Gates RD; Hawaii Institute of Marine Biology
Assessing landscape variability of *Symbiodinium* across individual coral colonies (*Montipora capitata*) in Kaneohe Bay
- P2-209** Macrander J, Dimond J, Bingham B, Reitzel AM; University of North Carolina, Charlotte, Western Washington University
Dueling symbioses: An omic perspective into the sea anemone *Anthopleura elegantissima* and their zooxanthellate and zoochorellate symbionts
- P2-210** Farley GM, Adler-Ivanbrook BSR, Merz RA; Swarthmore College
Two photosynthetic symbionts differentially control light response behavior in a clonal anemone (*Anthopleura elegantissima*)
- Host, Parasite, and Pathogen Interactions and Evolution**
- P2-211** Rindorf HA, Blevins B, Caughron JE; Radford University
Phlebotomine sandfly collection and detection of *Leishmania* in Las Piedras Basin, Madre de Dios, Peru
- P2-213** Atwood AC, Davis JE, Caughron JJ, Caughron JE; Radford University
Antimicrobial properties of fungi from microhabitats with varying moisture levels within the Madre de Dios Region of Peru
- P2-214** Fassbinder-Orth C, Tran T; Creighton University
Dicistrovirus infections in honey bees (*Apis mellifera*): Establishment of an infection model

- P2-215** Warburton EM, Khokhlova IS, Kiefer D, Krasnov BR; Ben Gurion University of the Negev Effects of parasitism on host reproductive investment in a rodent–flea system
- P2-216** Stromsland K, Zimmerman LM; Millikin University Effect of parasitic infection on natural antibodies in red-eared slider turtles
- P2-217** Shannon RP, Bolek MG; Oklahoma State University Blood parasites of the herpetofauna from the Great Plains of the United States
- P2-218** Koch RW, Shannon RP, Gustafson KD, Bolek MG; Oklahoma State University Prevalence and distribution of a *Neoechinorhynchus* sp. (Phylum: Acanthocephala) infecting a new snail host (*Helisoma trivolvis*) in the Great Plains
- P2-219** Whittingham LA, Dunn PO; University of Wisconsin, Milwaukee MHC diversity and blood parasite infection in migratory and resident common yellowthroats

Host-Pathogen Population Dynamics

- P2-220** Hannah SM, Munoz JM, Mulcahy C, Fontaine C, Field C, Whoriskey S, Johnson S, Lauer A, McDonald G, Liwanag H; MLML, CSUB, TMMC, Cal Poly SLO Coccidioidomycosis in stranded marine mammals along California's coast
- P2-221** Hammond TT, Pigage HK; University of California, Berkeley, University of Colorado, Colorado Springs Environmental and endogenous factors predicting flea assemblages in two California chipmunks
- P2-222** Coleman AL, Lance S; University of Georgia Drivers of community structure and implications for diversity–disease relationships
- P2-223** Layton TE, Hopkins SR, Wojdak JM, McElmurray P; Radford University, Virginia Tech A mark-recapture study of trematode parasitism in *Helisoma trivolvis*
- P2-224** Araos HL, Bogardus RM, Chang Y, Donohue KR, Kroft KL*, Hatch KA, Hanley D; Brigham Young University, McCook Community College, National University of Taiwan, Long Island University The Columbia spotted frog (*Rana luteiventris*): Another species persisting with amphibian chytrid infection
- P2-225** Eberl R, Bair J, Chow B, Rosa-Barnette S, Sturbaum Z, Cohen CS; San Francisco State University, Santa Rosa Junior College Sea star wasting disease and *Leptasterias* spp. abundance in Central versus Northern California

Complementary to S8 – Integrative Life-History of Whole-Organism Performance

- P2-226** Reeve RE, Nestler JR; Washington State University, Walla Walla University Immune function in the sea cucumber *Parastichopus californicus* during visceral atrophy and regeneration
- P2-227** Peiman KS, Robinson BW; Carleton University, University of Guelph Trait covariation viewed through a performance paradigm lens
- P2-228** Wang AZ, Husak JF; University of St. Thomas Leptin as a potential mediator of trade-offs among performance, reproduction, and immune function in green anole lizards
- P2-229** Husak JF, Hanover AM, Ferguson HA, Lovern MB; University of St. Thomas, Oklahoma State University Maternal exercise affects egg-yolk steroids in lizards
- P2-230** Wilson RS, Clemente C, Kasumovic M; The University of Queensland, University of the Sunshine Coast, University of New South Wales Teaching evolutionary principles using games: Escape speeds, performance and life history trade-offs
- P2-231** Hunter AH, Angilletta MJ, Pavlic T, Wilson RS; The University of Queensland, Arizona State University Soccer penalties: Optimising strategies between competing agents

Complementary to S2 – The Ecology of Exercise: Mechanisms Underlying Individual Variation in Movement Behavior, Activity or Performance

- P2-232** Chivers DP, McCormick MI, Allan BJ, Mitchell MD, Ferrari MCO; University of Saskatchewan, James Cook University At odds with the group: Changes in lateralization and escape performance reveal conformity and conflict in fish schools
- P2-233** Berlin CG, Cathcart K, Dornon MK, Feldman A, Gee JK, Moran CJ, Shin S, Ellerby DJ*; Wellesley College, Fairfield University Habitat differences in bluegill sunfish swimming behavior and their relationship to intraspecific variation in performance traits
- P2-234** Gleiss AC, Potvin J*, Goldbogen JA; Murdoch University, University of St Louis, Stanford University Physical trade-offs shape the evolution of buoyancy control in sharks
- P2-235** Goldstein JG, Dubofsky EA; Wells National Estuarine Research Reserve (NOAA), New England Institute of Technology A life of rhythm and blues: Correlates and changes in activity patterns and circadian rhythms in tropical slipper lobsters
- P2-236** Carey N, Goldbogen JA; Stanford University Life's a drag: Comparative kinematics of swimming modes in anchovies and sardines

Cardiovascular Physiology

- P2-237** Reynolds Kirby A, Nelson D, Heuer R, Mager E, Stieglitz J, Grosell M, Benetti D, Crossley li DA; University of North Texas, University of Miami
Changes in cardiac mitochondrial bioenergetics after 24h of crude oil exposure in sub-adult Mahi-mahi (*Coryphaena hippurus*)
- P2-238** Rippamonti J, Crossley D; University of North Texas, University of North Texas
The impact of hypoxic incubation on cardiomyocyte function in chicken embryos
- P2-239** Krajniak KG, Steinberg M; Southern Ill Univ Edwardsville
The effect of annelid FMRFamide-related peptides on the isolated clam heart
- P2-240** Douglas T, Abrantes AA, Medler S; SUNY Fredonia
Arterial blood supply to skeletal muscles in ghost crabs
- P2-241** Miller RL, Brown CJ, Close MT, Cooper-Bailey K; Radford University
Anesthesia in terrestrial salamanders: Are all modes equal?
- P2-242** Adam KM, Clark RM, Williams CM; University of California, Berkeley
Circadian organization of hemolymph content and volume in association with juvenile hormone in a flight capable field cricket, *Gryllus firmus*

Respiratory and Acid-Base Physiology

- P2-243** Talal S, Gefen E, Ayali A; Tel Aviv University, University of Haifa - Oranim
Electromyogram of locust spiracle and abdominal muscles during discontinuous gas exchange cycles
- P2-244** Krinos AI, Ahearn GA; Virginia Polytechnic Institute and State University, University of North Florida
Effect of pH on uptake of calcium by crustacean gills
- P2-245** Shepherd HS; New College of Florida
Differential expression of two *Ciona intestinalis* V-type proton ATPase isoforms in acidic conditions
- P2-246** Smith B, Hapgood J, Gillium T, Crossley D; University of North Texas
Developmental phenotypic plasticity of ventilatory patterns and metabolic function of the American alligators (*Alligator mississippiensis*)
- P2-247** Jacobs M, Ahearn GA; University of North Florida
Effects of variable pH on calcium uptake by river white shrimp *Penaeus setiferus* gills
- P2-248** Larter KF, Rees BB; University Of New Orleans
Effects of hypoxia and euthanasia on blood and gill of the Gulf killifish, *Fundulus grandis*
- P2-249** Campbell JB, Harrison JF; Arizona State University
Variation in anoxia tolerance is not explained by the maintenance of ATP in *Drosophila melanogaster*
- P2-250** Resner EJ, Belanger BG, Hardy KM; California Polytechnic State University
Effect of oxygen limiting tidal conditions on hemolymph parameters in the giant acorn barnacle, *Balanus nubilus*
- P2-251** Ross TT, Overton JD, Kinsey ST*; University N. Carolina Wilmington
Hypoxia acclimation and β -GPA treatment lead to similar changes in cellular energy state that enhance basal metabolic rate and hypoxic exercise tolerance
- P2-252** Harmon JL, Parker G, Olsen M, Gstrein G, Vandenbrooks JM; Midwestern University, Midwestern University
Tracheolar and mitochondrial investment varies with developmental pO_2 in *Drosophila melanogaster*

Cell & Molecular Physiology

- P2-253** Janis B, Janis S, Tippery N, Yavuzcetin O, Chakraborty N, Wong M, Menze MA; University of Louisville, University of Wisconsin Whitewater, University of Michigan-Dearborn
Impact of group 3 LEA proteins on cellular structure during desiccation
- P2-254** Benrabaa SAM, Mykles DL; Colorado State University
Regulation of Halloween and ecdysone-responsive genes in molting gland of the blackback land crab, *Gecarcinus lateralis*
- P2-255** Rix AS, O'Brien KM; University of Alaska Fairbanks
Polyglutamine and glutamic acid repeats within hypoxia-inducible factor-1 α in Antarctic notothenioid fishes may alter the hypoxic response
- P2-256** Belott C, Skolik R, Menze MA; University of Louisville
LEA proteins protect *Drosophila melanogaster* cells during prolonged periods of desiccation and osmotic stress
- P2-257** Sifuentes I, Tezak B, Milton SL, Wyneken J; Florida Atlantic University
Sex determination in turtles: Is moisture playing a role?
- P2-258** Silliman RS, Loppnow TN, Deloney-Marino CR, Champagne AM; University of Southern Indiana
Effect of seasonal changes on antimicrobial defenses in the avian stratum corneum I: Changes in lipid composition with season

- P2-259** Boylan RB, Grandy E, Davis JE; Radford University
Effects of VAAM (Vespa Amino Acid Mixture) in combination with potassium cyanide in the house fly (*Musca domestica*)
- P2-260** Loppnow TN, Silliman RA, Champagne AM, Deloney-Marino CR; University of Southern Indiana
Effect of seasonal changes on antimicrobial defenses in the avian stratum corneum II: Antimicrobial activity in lipids
- P2-261** Scheffler OR, Ahearn G; University of North Florida
Disaccharide transport by lobster hepatopancreas
- P2-262** Andre B, Surmacz CA, Hranitz JM, Cakmak I, Cakmak S; Bloomsburg University, Uludag University
Sublethal stress associated with apiary treatments for *Varroa* Mites
- P2-263** Gonzalez-Rosario J, Chung D, Rees BB; University of New Orleans, University of British Columbia
Hypoxia inducible factor-1 α protein increases during hypoxic exposure of killifish
- P2-264** Voisinnet MP, Vasquez MC, Elowe C, Crocker DE, Tomanek L; Cal Poly San Luis Obispo, Sonoma State University
Proteomic response of elephant seal pups, *Mirounga angustirostris*, to prolonged fasting
- P2-265** Rifai NM, Mykles DL; Colorado State University
Characterization of cyclic nucleotide phosphodiesterases expressed in the decapod crustacean molting gland
- P2-266** Dameron MT, Clark K, Stowers SR, Mohamed A, Redmond SB; Radford University
ATP production increases with addition of varying concentrations of vespa amino acid mixture (VAAM)
- P2-267** Lopez-Ceron A, Mudron M, Mykles D; Colorado State University
Molecular response to environmental stressors in the Y-organ of *Carcinus maenas*
- P2-268** Tarrant AM, Helm RR, Salanga MC; WHOI
Visualizing the cellular redox state in the sea anemone *Nematostella vectensis*
- P2-269** Palmer R, Buckley B; Portland State University
The interactive effect of salinity and temperature in the Nile tilapia
- P2-270** Felizardo C, Hesse C, Neville N, Pettigrew-Edgren M, Remley M, Velez K, McCormick SD, Monette MY*; Western Connecticut State University, USGS Conte Anadromous Fish Research Center
Phosphorylation of the Na-K-Cl cotransporter in the gills of Atlantic salmon in response to pharmacological stimulation and seawater challenge
- P2-271** Cupp, Jr. PV; Eastern Kentucky University
Postural adjustments influence water balance in green salamanders, *Aneides aeneus*
- P2-272** Spiegel LA, Freeman AS; Adelphi University
The effect of salinity on *Loxothylacus panopei* nauplii mortality
- P2-273** Marshall CA, Ghalambor CK; Colorado State University
The effects of short- versus long-term salinity acclimation on resting metabolic rate and internal osmolality in Trinidadian swamp guppies
- P2-274** Ecay TW, Stewart JR*; East Tennessee State University
Calcium transport by the chorioallantois of *Trachemys scripta* is independent of Calbindin-D_{28K} expression
- P2-275** Skopec MM, Jensen D, Schramm K, Dearing MD; Weber State University, University of Utah
Biotransformation enzyme expression in nasal epithelium of woodrats consuming juniper
- P2-276** Mohamadzadeasl A, Khodabandeh S*; University of Tarbiat Modares
Anti-oxidant properties of sea cucumber, *Holothuria parva*, muscle peptides
- P2-277** Anderson JM, Dimario PJ, Hand SC; Louisiana State University
Expression of LEA proteins in embryos of *Drosophila melanogaster* and influence on desiccation tolerance
- P2-278** Borcar AS, Murphy MP, Hand SC; Louisiana State University, Medical Research Council Mitochondrial Biology Unit
MitoSNO and hypoxia preconditioning increase proliferation rate of mammalian cells after acute desiccation

Saturday Schedule of Events

Events take place in the New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H)

EVENT	TIME	LOCATION
Registration	7:30 AM – 3:30 PM	Hall A Foyer
Speaker Ready Room	7:00 AM – 5:00 PM	Room 230
Poster Session 3 Set Up	7:00 AM – 8:00 AM	Exhibit Hall C
Coffee Break AM/PM	9:30 AM – 10:30 AM	Exhibit Hall C
Exhibit Hall	9:30 AM – 5:30 PM	Hall C
Poster Session 3 Even Numbers Viewing	3:30 PM – 4:30 PM	Exhibit Hall C
Poster Session 3 Odd Numbers Viewing	4:30 PM – 5:30 PM	Exhibit Hall C
Poster Session 3 Teardown	5:30 PM – 6:00 PM	Exhibit Hall C
SYMPOSIA ORAL PRESENTATIONS		
S7: The Evolution of Arthropod Body Plans – Integrating Phylogeny, Fossils and Development	8:00 AM – 3:30 PM	Room 207
S8: Integrative Life-History of Whole-Organism Performance	8:00 AM – 3:30 PM	Room 206
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 70: DVM Best Student Presentations	8:00 AM – 9:45 AM	Room 208-209
Session 71: Sensory Biology - Chemoreception	8:00 AM – 9:30 AM	Room 210
Session 72: Stress I	8:00 AM – 9:45 AM	Room 211-213
Session 73: Respiration and Acid-Base Physiology	8:00 AM – 9:45 AM	Room 214
Session 74: Complementary to S4 - Evolutionary Impacts of Seasonality I	8:00 AM – 9:45 AM	Room 215-216
Session 75: Evolutionary Ecology II	8:15 AM – 9:45 AM	Room 217
Session 76: Energetics I	8:00 AM – 9:45 AM	Room 218
Session 77: Symbiotic Relationships	8:00 AM – 9:45 AM	Room 219
Session 78: Thermal Physiology I	8:15 AM – 9:45 AM	Room 220
Session 79: Communication and Agonism	8:00 AM – 10:00 AM	Room 221
Session 80: Reproductive Behavior	8:00 AM – 9:45 AM	Room 222
Session 81: Neuroethology of Locomotion	8:00 AM – 9:30 AM	Room 223
Session 82: Complementary to S11 - Low Spatial Resolution Vision: Function and Evolution I	8:00 AM – 9:45 AM	Room 224
Session 83: Flight II	10:15 AM – 11:45 PM	Room 208-209
Session 84: Locomotion: Variable Substrates	10:00 AM – 12:00 PM	Room 210
Session 85: Stress II	10:15 AM – 12:00 PM	Room 211-213
Session 86: Adhesion I	10:15 AM – 12:00 PM	Room 214
Session 87: Complementary to S4 - Evolutionary Impacts of Seasonality II	10:15 AM – 12:00 PM	Room 215-216
Session 88: Evolutionary Morphology II	10:15 AM – 11:45 AM	Room 217
Session 89: Stress Physiology I	10:15 AM – 11:45 AM	Room 218
Session 90: Morphological Variation: Ontogeny and Plasticity	10:15 AM – 11:45 AM	Room 219
Session 91: Thermal Physiology II	10:30 AM – 12:00 PM	Room 220
Session 92: Evolution and Genetics of Behavior	10:30 AM – 12:00 PM	Room 221
Session 93: Mating Systems and Strategies	10:15 AM – 12:00 PM	Room 222
Session 94: Neuroethology of Insect Flight	10:00 AM – 11:45 AM	Room 223
Session 95: Complimentary to S11 - Low Spatial Resolution Vision: Function and Evolution II	10:15 AM – 12:00 PM	Room 224
Session 96: Pollution & Bioindicators	10:30 AM – 11:45 PM	Room 225-226
Session 97: Flight III	1:30 PM – 3:00 PM	Room 208-209

Session 98: Locomotion: Obstacles and Perturbations	1:30 PM – 3:30 PM	Room 210
Session 99: Ecomorphology	1:30 PM – 3:30 PM	Room 211-213
Session 100: Adhesion II	1:30 PM – 3:15 PM	Room 214
Session 101: Complementary to S4 - Evolutionary Impacts of Seasonality III	1:30 PM – 3:00 PM	Room 215-216
Session 102: Complementary to S10 - Physical and Genetic Mechanisms for Evolutionary Novelty	1:30 PM – 3:15 PM	Room 217
Session 103: Thermal Tolerance: Coping with Extreme Temperature	1:30 PM – 3:30 PM	Room 218
Session 104: Disease and Immunity in Response to Social and Environmental Cues	1:30 PM – 3:15 PM	Room 219
Session 105: Temperature Dependent Reprogramming	1:45 PM – 2:45 PM	Room 220
Session 106: Comparative Genomics and Proteomics	1:45 PM – 3:15 PM	Room 221
Session 107: Bioacoustics	1:30 PM – 3:15 PM	Room 222
Session 108: Navigation and Orientation	1:45 PM – 3:15 PM	Room 223
Session 109: Wake Award:DPCB Best Student Presentation	1:30 PM – 3:00 PM	Room 224
Session 110: Biophysical Ecology	1:30 PM – 2:30 PM	Room 225-226
COMMITTEE & BOARD MEETINGS		
Development Committee	12:00 PM – 1:30 PM	Room 232
ICB Editorial Board	12:00 PM – 1:30 PM	Room 228
SICB Society Meeting & Awards Presentation	5:45 PM – 6:30 PM	Room 208/209/210
BUSINESS MEETINGS		
DPO's and Symposium Organizers for San Francisco Meeting	12:00 PM – 1:30 PM	Room 229
SPDAC	12:00 PM – 1:30 PM	Room 231
WORKSHOPS AND PROGRAMS		
Broadening Participation Committee Workshop: "Microaggressions: The big impact of little things"	12:00 PM – 1:30 PM	Room 214
Workshop S4: Evolutionary Impacts of Seasonality"	12:00 PM – 1:30 PM	Room 215-216
TAL-X Workshop: Using Partnership for Undergraduate Life Sciences Education (PULSE) resources to stimulate transforming STEM education at the department level	7:30 PM – 9:00 PM	Room 224
SOCIAL EVENTS		
Broadening Participation Social	8:00 PM – 10:00 PM	The Dragon's Den, Offsite
DEDB/DPCB/DIZ/DEE/AMS/TCS Social	6:30 PM – 8:30 PM	Room R06/R07
SICB Dance	9:00 PM – 11:30PM	Room R02/R03/R04
DVM/DCB Social	9:30 PM – 12:00 AM	The Maison, Offsite

Saturday 7 January 2017

Saturday Program Symposia

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

8:00 AM – 3:30 PM Symposium S7 Room 207

The Evolution of Arthropod Body Plans – Integrating Phylogeny, Fossils and Development

Chairs: Ariel Chapman, Doug Erwin

8:00 am	S7-1	<i>Pisani D; University of Bristol</i>	Problems and progresses in Ecdysozoan relationships: Do we have an emerging consensus?
8:30 am	S7-2	<i>Tweedt SM; Smithsonian National Museum of Natural History, University of Maryland, College Park</i>	Development and a model for morphology: Phylogenetic applications and the early arthropod fossil record
9:00 am	S7-3	<i>Wolfe JM; Massachusetts Institute of Technology</i>	Arthropod ontogeny and phylogeny: Perspectives from fossils and phylogenomics
9:30 am	S7-4	<i>Sharma PP; University of Wisconsin-Madison</i>	Chelicerate genomes, chelate appendages, and conquering land: A view of arachnid origins through an evo-devo spyglass

10:00 am **Coffee Break** Exhibit Hall

10:30 am	S7-5	<i>Edgecombe GD; The Natural History Museum</i>	Inferring arthropod phylogeny: Fossils and their interaction with other data sources
11:00 am	S7-6	<i>Hopkins MJ; American Museum of Natural History</i>	Trait development and evolution in trilobites
11:30 am	S7-7	<i>Ortega-Hernandez J, Janssen R, Budd GE; University of Cambridge, Uppsala University Uppsala</i>	Origin and evolution of the panarthropod head – a deep time perspective

12:00 pm **Lunch Break**

1:30 pm	S7-8	<i>Chipman AD; The Hebrew University</i>	The evolution of the gene regulatory networks that define arthropod body plans
2:00 pm	S7-9	<i>Jockusch EL; University of Connecticut</i>	Developmental and evolutionary perspectives on the origin and diversification of arthropod appendages
2:30 pm	S7-10	<i>Smith FW, Goldstein B; University of North Carolina at Chapel Hill</i>	Development and evolution of the tardigrade body plan
3:00 pm	S7-11	<i>Extavour CG; Harvard University</i>	Development and evolution of arthropod reproductive systems

3:30 pm **Coffee Break** Exhibit Hall

8:00 AM – 3:30 PM Symposium S8 Room 206

Integrative Life-History of Whole-Organism Performance

Chairs: Simon Lailvaux, Jerry Husak

8:00 am	S8-1	<i>Lailvaux SP, Husak JF; University of New Orleans, University of St Thomas</i>	Predicting life-history trade-offs in whole-organism performance
8:30 am	S8-2	<i>French SS; Utah State University</i>	Trade-offs in ecoimmunology: Costs for individuals and populations
9:00 am	S8-3	<i>Martin LB, Schrey AW, Hanson HE, Kilvitis HJ; Armstrong State University, University of South Florida</i>	The role of physiological integrators in avian range expansions
9:30 am	S8-4	<i>Bonneaud C, Richards A, Herrel A, Seebacher F, Wilson R; University of Exeter, University of Colorado, National Center for Scientific Research (CNRS), University of Sydney, University of Queensland</i>	Using multi-level transcriptomics and metabolic measures to investigate the trade-off between performance and immunity

10:00 am **Coffee Break** Exhibit Hall

10:30 am	S8-5	<i>Snell-Rood EC, Swanson EM; University of Minnesota</i>	The effect of nutrition on life-history trade-offs across species
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11:00 am	S8-6	<i>Knell RJ; Queen Mary University of London</i>	How to build a beetle: Larval environment, performance, and sexual signals
11:30 am	S8-7	<i>Hale ME, Henderson KW; University of Chicago</i>	Swimming kinematics and performance through early life history of fishes
12:00 pm	Lunch Break		
1:30 pm	S8-8	<i>Dantzer B, Swanson EM; University of Michigan</i>	Does hormonal pleiotropy constrain the independent evolution of performance and life history traits? A quantitative genetic approach
2:00 pm	S8-9	<i>Orr TJ, Garland T; University of Utah, University of California</i>	Complex reproductive traits and whole-organism performance
2:30 pm	S8-10	<i>Careau V, Wilson RS; University of Ottawa, The University of Queensland</i>	Detecting performance trade-offs using multivariate mixed models
3:00 pm	S8-11	<i>Bronikowski AM, Gangloff EJ, Schwartz TS; Iowa State University, Auburn University</i>	Life history phenotypes, metabolic performance and fitness in garter snakes with divergent life histories
3:30 pm	Coffee Break		Exhibit Hall

Saturday Program Morning Sessions

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

8:00 AM – 9:45 AM **Session 70** Room 208-209

DVM Best Student Presentations

Chair: Callum Ross

8:00 am	70-1	<i>Spainhower KB, Metz AK, Kiraly PM, Barkett EM, Thomas DR, Cliffe RN, Butcher MT; Youngstown State University, Swansea University</i>	Fiber type properties of the limb muscles of sloths (<i>Xenarthra: Pilosa</i>)
8:15 am	70-2	<i>Erb V, Lolavar A, Wyneken J; Florida Atlantic University</i>	The role of weather and sand moisture in shaping loggerhead sea turtle (<i>Caretta caretta</i>) neonate growth
8:30 am	70-3	<i>Fox CH, Summers A, Gibb AC, Bemis WE; Cornell University, Friday Harbor Laboratories, Northern Arizona University</i>	Flatfish benthic walking: A new vertebrate gait
8:45 am	70-4	<i>Frank TM, Hedrick BP, Dodson P; University of Pennsylvania, University of Massachusetts, Amherst</i>	Correlating avian hindlimb function and pelvic morphology with 2-D geometric morphometrics
9:00 am	70-5	<i>Orsbon CP, Gidmark NJ, Ross CF; University of Chicago, Knox College</i>	Form and function dynamics of the primate hyoid apparatus: The relationship between hyoid posture and muscle behavior.
9:15 am	70-6	<i>Powers AK, Kaplan SA, Gross JB; University of Cincinnati</i>	The developmental basis of cranial bone fragmentation in the blind Mexican cavefish
9:30 am	70-7	<i>Vaz DFB, Summers AP, Hilton EJ; College of William and Mary, University of Washington</i>	Systematic inferences of the post-cranial skeleton of batrachioformes
9:45 am	Coffee Break		Exhibit Hall

8:00 AM – 9:30 AM **Session 71** Room 210

Sensory Biology – Chemoreception

Chair: Jordanna Sprayberry

8:00 am	71-1	<i>Riffell JA, Lahondère C, Okubo R, Vinauger C; University of Washington</i>	Sensory basis of a mosquito-orchid pollination system
8:15 am	71-2	<i>Wolff GH, Lahondère C, Vinauger C, Arnold BY, Alzate DG, Riffell JA; University of Washington</i>	Neural basis of host preference across mosquito species
8:30 am	71-3	<i>Lutz EK, Riffell JA; University of Washington</i>	Olfactory learning in <i>Aedes aegypti</i> mosquito larvae

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8:45 am	71-4	<i>Sprayberry JDH; Muhlenberg College</i>	Investigating the fidelity of learned odor cues in bumblebees
9:00 am	71-5	<i>Hu Y, Majoris JE, Buston PM, Webb JF; University of Rhode Island, Boston University</i>	Development of the nose and internal taste buds in two species of neon gobies (<i>Elacatinus</i> spp), and their potential to facilitate navigation of pelagic larvae.
9:15 am	71-6	<i>Eiting TP, Wachowiak DM; University of Utah</i>	Effects of sniffing on olfactory bulb processing revealed by in vivo imaging from defined neuron types

9:30 am **Exhibit Hall**
Coffee Break

8:00 AM – 9:45 AM Room 211-213 **Session 72**

Stress I

Chairs: Robbert de Bruijn, Haruka Wada

8:00 am	72-1	<i>De Bruijn R, Peiman KS, Prystay TS, Philipp MA, Gilmour KM, Hinch SG, Patterson DA, Cooke SJ; Carleton University, Dalhousie University, University of Ottawa, University of British Columbia, Fisheries and Oceans Canada</i>	The stress of salmon migration: Spawn or die trying.
8:15 am	72-2	<i>Grace JK, Parenteau C, Meillere A, Froud L, Angelier F; Texas A&M University, Centre d'Etudes Biologiques de Chize, University of Rennes</i>	Stress, death and the "silver spoon": Effects of early-life stress on growth and immunity across life stages in a wild bird
8:30 am	72-3	<i>Taff CC, Vitousek MN; Cornell University</i>	Individual variation in behavior, physiology, and fitness in response to experimentally induced acute stress in wild tree swallows.
8:45 am	72-4	<i>Owen DAS, Sheriff MJ, Heppner J, Gerke H, Ensminger DC, MacLeod KJ, Langkilde T; Pennsylvania State University, Texas A&M University</i>	Hot and bothered: Maternal stress alters thermal sensitivity of metabolic rate in lizard embryos
9:00 am	72-5	<i>Krause JS, Perez JH, Meddle SL, Wingfield JC; University of California, Davis, University of Edinburgh</i>	The effects of 1, 2, 6 and 24 hours of fasting on hypothalamic-pituitary-adrenal axis function, body condition, and activity of wintering male white-crowned sparrows
9:15 am	72-6	<i>Spaan JM, Pitts N, Ezenwa VO, Jolles AE; Oregon State University, Corvallis</i>	Acute infectious diseases drive stress in a wild mammalian population
9:30 am	72-7	<i>Wada H, Finger Jr. JW; Auburn University</i>	A potential link between organismal adrenocortical responses and cellular heat shock responses

9:45 am **Exhibit Hall**
Coffee Break

8:00 AM – 9:45 AM Room 214 **Session 73**

Respiration and Acid-Base Physiology

Chairs: Alysha Cypher, Laura Enzor

8:00 am	73-1	<i>Trueblood LA; La Sierra University</i>	Hot poop: Temperature and oxygen partial pressure effects on salp physiology
8:15 am	73-2	<i>Enzor LA, Moso E, Hankins C, Barron MG; US Environmental Protection Agency</i>	The effects of elevated pCO ₂ , hypoxia and temperature on larval sheepshead minnow, <i>Cyprinodon variegatus</i> : How much stress is too much?
8:30 am	73-3	<i>Jew C, Thomsen M, Bayley M, Hicks J; University of California Irvine, Aarhus University</i>	The effects of aquatic hypercapnia on air-breathing fishes
8:45 am	73-4	<i>Sargent JC, Campbell JB, Harrison JF; Arizona State University</i>	Age-related decline of anoxia tolerance in adult <i>Drosophila melanogaster</i>
9:00 am	73-5	<i>Cypher AD, Bagatto BP; The University of Akron</i>	The hypoxic response is altered by the presence of endocrine disruptors and oil spill contaminants in danio rerio.

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9:15 am	73-6	<i>Talal S, Ayali A, Gefen E; Tel Aviv University, University of Haifa</i>	Discontinuous gas exchange does not contribute to evolved resistance to desiccation in laboratory-selected migratory locusts
9:30 am	73-7	<i>Grady KO, Bourgeon AM, Resner EJ, Cornella KN, Belanger BG, Hardy KM; California Polytechnic State University</i>	Effect of oxygen-limiting tidal conditions on muscle metabolism and structure in the giant acorn barnacle, <i>Balanus nubilus</i>
9:45 am	Coffee Break		Exhibit Hall

8:00 AM – 9:45 AM	Session 74	Room 215-216
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Complementary to S4 – Evolutionary Impacts of Seasonality I

Chair: Josiah Wagner

8:00 am	74-1	<i>Wagner JT, Singh PP, Brunet A, Minx P, Warren W, Podrabsky JE, Wagner J; Portland State University, Stanford University, Washington University</i>	Positive selection and gene family changes in a fish extremophile
8:15 am	74-2	<i>Romney ALT, Podrabsky JE; Portland State University</i>	Gene expression during development and diapause in a vertebrate extremophile
8:30 am	74-3	<i>Woll SC, Podrabsky JE; Portland State University</i>	The role of insulin-like growth factor signaling in the regulation of entrance into diapause in embryos of the annual killifish, <i>Austrofundulus limnaeus</i>
8:45 am	74-4	<i>Roberts KT, Rank NE, Dahlhoff EP, Stillman JH, Williams CM; University of California, Berkeley, Sonoma State University, Santa Clara University</i>	The effects of snow cover on overwinter physiology of a montane insect
9:00 am	74-5	<i>Przybylska AS, Wojciechowski MS, Drobnik SM, Jefimow M; Nicolaus Copernicus University, Jagiellonian University</i>	Photo-responding Siberian hamsters support the allocation model of the relationship between energy metabolism and activity
9:15 am	74-6	<i>Longo AV, Zamudio KR; University of Maryland, Smithsonian Institution, Cornell University</i>	Environmental fluctuations and host skin bacteria shift survival advantage between frogs and their fungal pathogen
9:30 am	74-7	<i>Ferguson LV, Dhakal P, Bucking C, Sinclair BJ; University of Western Ontario, York University</i>	Cold “colon”-ization: Seasonal changes in the gut microbiome of the spring field cricket, <i>Gryllus veletis</i>
9:45 am	Coffee Break		Exhibit Hall

8:15 AM – 9:30 AM	Session 75	Room 217
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Evolutionary Ecology II

Chair: Kirsty MacLeod

8:15 am	75-1	<i>Brocco French KI, Allen JD; College of William and Mary</i>	Density dependent and size specific cannibalism among juvenile echinoderms
8:30 am	75-3	<i>Cornell A, Gillespie C, Serota M, Williams TD; Simon Fraser University</i>	Introduction of new prey to a specialist predator: Diet preferences and reproductive consequences
8:45 am	75-4	<i>Moore MP, Martin RA; Case Western Reserve University</i>	Size structure of the intraguild predation community shapes the adaptive landscape of a larval dragonfly
9:00 am	75-5	<i>MacLeod KJ, Sheriff MJ, Owen DAS, Ensminger DC, Langkilde T; Pennsylvania State University</i>	Stress kills: Maternal stress reduces female survival and hatching success, but not hatchling survival, in eastern fence lizards
9:15 am	75-6	<i>Nadell CD, Ricaurte D, Drescher K, Wingreen NS, Bassler BL; Max Planck Institute of Terrestrial Microbiology, Princeton University</i>	Bacterial fortresses: The biofilm matrix and microbial community assembly
9:30 am	Coffee Break		Exhibit Hall

8:00 AM – 9:45 AM **Session 76** **Room 218**

Energetics I

Chairs: Brian Barnes, Kyle Elliott

8:00 am	76-1	<i>Powers SD, McTernan MR, Powers DR, Anderson RA; George Fox University, Western Washington University</i>	Energetic consequences for thermophilic lizards near the northern edge of the species' geographic range in the northern hemisphere
8:15 am	76-2	<i>Elliott KH; McGill University</i>	Do wild seabirds show senescence?
8:30 am	76-3	<i>Di Santo V, Kenaley CP, Lauder GV; Harvard University, Boston College</i>	A non-linear relationship between swimming metabolism and speed in a negatively buoyant batoid fish
8:45 am	76-4	<i>Latimer CE, Cooper SJ, Karasov WH, Zuckerberg B; University of Wisconsin-Madison, University of Wisconsin-Oshkosh</i>	Metabolic constraints differentially affect foraging and survival of birds in human-modified landscapes
9:00 am	76-5	<i>Cruz-Neto AP, Cabrera-Martinez LV, Otolara-Ardila A, Flores-Martinez JJ, Herrera M LG, Welch Jr KC; State University of Sao Paulo, Universidade Nacional Autonoma de Mexico, University of Toronto Scarborough</i>	The energetic costs associated with acute phase response in bats
9:15 am	76-6	<i>Baloun DE, Guglielmo CG; University of Western Ontario</i>	Energetics of migratory bats during stopover: A test of the torpor-assisted migration hypothesis
9:30 am	76-7	<i>Barnes BM, Toien O; University of Alaska Fairbanks</i>	Squirrel vs. bear: Comparing phenotypes of mammalian hibernation

9:45 am **Coffee Break** **Exhibit Hall**

8:00 AM – 9:45 AM **Session 77** **Room 219**

Symbiotic Relationships

Chair: Jingchun Li

8:00 am	77-1	<i>Macrander J, Moran Y, Reitzel AM; University of North Carolina, Charlotte, Hebrew University of Jerusalem</i>	Predators, prey, and symbionts: Sea anemones (Actiniaria) as a dynamic model for coevolution in venom
8:15 am	77-2	<i>Wolf C, Wolf S, Voisin D, Kovacs J*; John Hopkins University, Georgia State University, Spelman College</i>	Evidence of indirect symbiont conferred protection against predation in pea aphids
8:30 am	77-3	<i>Li J, Lemer S, Giribet G, Kirkendale L, Bieler R, Cavanaugh C; University of Colorado Boulder, Harvard University, Western Australian Museum, Field Museum of Natural History</i>	Seeing the light: Evolution of photosymbiosis in marine cockles
8:45 am	77-4	<i>Murphy R, Bishop CD*; St, Francis Xavier University</i>	Acquisition of green algal symbionts in egg masses of the northeastern yellow spotted salamander: Horizontal or vertical transmission, neither or both?
9:00 am	77-5	<i>Davies SW, Marchetti A, Ries J, Castillo KD; University of North Carolina, Chapel Hill, Northeastern University</i>	Effects of long-term warming and acidification on coral-algal symbiosis: A transcriptomic perspective
9:15 am	77-6	<i>Coryell RL, Nishiguchi MK; NMSU</i>	Temperature adaptation influences symbiont specificity in an experimentally evolved bobtail squid-luminous bacterium association
9:30 am	77-7	<i>Armstrong EJ, Stillman JH, Tresguerres M; University of California, Berkeley, San Francisco State University, University of California, San Diego</i>	Symbiont photosynthesis in giant clams is strongly promoted by host H ⁺ -transport

9:45 am **Coffee Break** **Exhibit Hall**

8:15 AM – 9:45 AM Session 78 Room 220

Thermal Physiology I

Chair: John VandenBrooks

8:15 am	78-1	Stoehr A, St. Martin J, Fowler A, Aalbers S, Sepulveda C, Bernal D; University of Massachusetts, Dartmouth, University of Massachusetts, Amherst, Pflieger Institute of Environmental Research	Morphological and physiological mechanisms may control whole-body heat balance in deep-diving swordfish, <i>Xiphias gladius</i>
8:30 am	78-2	Healy TM, Brennan RS, Whitehead A, Schulte PM; University of British Columbia, University of California, Davis, University of California, Davis, University of British Columbia	Contrasting patterns of latitudinal variation in thermal and hypoxia tolerance in Atlantic killifish
8:45 am	78-3	Chicoine SJ, Leonard JBK; Northern Michigan University	Effects of winter and summer thermal variability regimes on growth and metabolism in brook trout (<i>Salvelinus fontinalis</i>)
9:00 am	78-4	Ern R, Esbaugh AJ; University of Texas at Austin	Temperature, oxygen, metabolism and upper thermal niche boundaries of water-breathing ectotherms
9:15 am	78-5	Vandenbrooks JM, Le Vin Thuy J, Shiehzeadegan S, Camacho A, Telemeco R, Smith C, Angilletta MJ; Midwestern University, Arizona State University, Auburn University	Can we differentiate between the effects of hypoxia and high temperature on animal behavior and physiology?
9:30 am	78-6	Chou H, Funk D, Buchwalter D*; North Carolina State University, Stroud Water Research Center	Keep breathing: Linking respiration to thermally regulated life history outcomes in the mayfly <i>Neocloeon triangulifer</i>

9:45 am **Coffee Break** Exhibit Hall

8:00 AM – 10:00 AM Session 79 Room 221

Communication and Agonism

Chair: Mark Garcia

8:00 am	79-1	Garcia MJ, Hunter KL, Taylor RC; University of Kentucky, Salisbury University	Dueling frogs: Male Assessment of competitor's call frequency during agonistic bouts
8:15 am	79-2	Tumulty J, Bee MA; University of Minnesota, Twin Cities	Reproductive resource defense and the evolution of neighbor recognition in territorial rocket frogs
8:30 am	79-3	Ivanov BM, Murphy TG, Johnson MA; Trinity University	Green anoles, brown bodies: Does the "loser effect" influence dorsal coloration in lizards?
8:45 am	79-4	Schuppe ER, Fuxjager MJ; Wake Forest University	Longer and faster drum signals are associated with enhanced competitive ability in territorial woodpeckers
9:00 am	79-5	Green PA, Patek SN; Duke University	Mantis shrimp use ritualized sparring as an aggressive signal in escalated contests
9:15 am	79-6	Franklin AM, Donatelli CM, Tytell ED; Tufts University	Sparring stomatopods: Do colored patches signal fighting ability?
9:30 am	79-7	Wofford SJ, Moore PA; Bowling Green State University	Sense and chemosensory ability: How does blocking olfaction alter contest assessment in crayfish?
9:45 am	79-8	Fisette SD, Bussy U, Chung-Davidson Y-W, Li W; Michigan State University	Perceived competition leads to increased pheromone signaling in male sea lamprey, <i>Petromyzon marinus</i>

10:00 am **Coffee Break** Exhibit Hall

8:00 AM – 9:45 AM Session 80 Room 222

Reproductive Behavior

Chair: Thomas Small

8:00 am	80-1	Small TW, Bridge ES, Elderbrock EK, Schoech SJ; University of Memphis, University of Oklahoma	Food supplementation only improves reproductive success in higher stress-responsive Florida scrub-jays (<i>Aphelocoma coerulescens</i>)
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Saturday 7 January 2017

8:15 am	80-2	Graham JL, Cook NJ, Needham KB, Hau M, Greives TJ; North Dakota State University, Benedictine College, Max Planck Institute	Early to rise, early to breed: A role for endogenous daily rhythms in seasonal reproduction
8:30 am	80-3	Needham KB, Greives TJ; North Dakota State University	A pre-breeding energetic immune challenge delays timing of reproduction in female songbirds
8:45 am	80-4	Wilson KM, Forsgren KL, Burley NT; University of California, Irvine, California State University, Fullerton	Feather bacteria and reproductive success in the zebra finch
9:00 am	80-5	Harris RL, Drea CM; Duke University	In sickness and in health: Olfactory cues of injury and illness in lemurs
9:15 am	80-6	Zhao M, Garland T, Chappell MA, Saltzman W; University of California, Riverside	Effects of an energetic challenge on male California mice (<i>Peromyscus californicus</i>): Modulation by reproductive condition
9:30 am	80-7	Nunez CMV, Adelman JSA, Carr HA, Knight C, Rubenstein DI; Iowa State University, Princeton University	Prolonged effects of contraception management on feral horse (<i>Equus caballus</i>) reproductive physiology and behavior

9:45 am **Coffee Break** **Exhibit Hall**

8:00 AM – 9:30 AM **Session 81** **Room 223**

Neuroethology of Locomotion

Chair: Rich Satterlie

8:00 am	81-1	Tytell ED, Massarelli N, Yau A, Kiemel T, Hoffman KA; Tufts University, University Maryland, Baltimore County, University Maryland, College Park	Modeling mechanosensory proprioceptive feedback in lamprey locomotion
8:15 am	81-2	Kathman ND, Fox JL; Case Western Reserve University	Haltere and visual information processing in the central complex of the fly brain
8:30 am	81-3	Dallmann CJ, Hoinville T, Dürr V, Schmitz J; Bielefeld University	A load-based, leg-local mechanism for inter-leg coordination in insects
8:45 am	81-4	Neveln ID, Murray N, Sponberg S; Georgia Institute of Technology	Changes in centralization of control of movement as speed varies
9:00 am	81-5	Satterlie RA; University of North Carolina Wilmington	Serotonergic Innervation of wing and tail muscle by a single neuronal cluster
9:15 am	81-6	Newman SJ, Jayne BC; University of Cincinnati	Muscular mechanisms and kinematics of rectilinear locomotion in boa constrictors

9:30 am **Coffee Break** **Exhibit Hall**

8:00 AM – 9:45 AM **Session 82** **Room 224**

Complementary to S11 – Low Spatial Resolution Vision: Function and Evolution I

Chair: Lauren Sumner-Rooney

8:00 am	82-1	Allison WT; University of Alberta	Regressive evolution of the hagfish visual system: Blind but hopeful monsters
8:15 am	82-2	Chappell DR, Speiser DI; University of South Carolina	Certain chitons have hundreds of image-forming eyes, but what are they seeing?
8:30 am	82-3	Sumner-Rooney LH, Rahman I, Sigwart JD, Ullrich-Lüter E; Museum für Naturkunde, Oxford University Museum of Natural History, Queen's University Belfast	Eyes in their stars? Photoreceptor anatomy and visual behaviour in <i>Ophiocoma</i>
8:45 am	82-4	Notar JC, Gordon MS; Duke University, University of California, Los Angeles	Future directions in the whole body eye of sea urchins: Effects of phylogeny, light intensity, and spine density
9:00 am	82-5	Caves EM, Chen CC, Johnsen S; Duke University	Coarse vision isn't useless vision: Cleaner shrimp use monochromatic, low-resolution vision to detect client fish
9:15 am	82-6	Lin C, Cronin TW; University of Maryland Baltimore County	Optic lobe metamorphosis in the stomatopod crustacean <i>Alima pacifica</i>

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9:30 am	82-7	<i>Mohan U, Maitri M, Sane SP; National Centre for Biological Sciences, India</i>	Visual and mechanosensory integration by descending interneurons in hawkmoths
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9:45 am	Coffee Break		Exhibit Hall
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10:15 AM – 11:45 PM	Session 83		Room 208-209
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Flight II

Chair: Jim Usherwood

10:15 am	83-1	<i>Dial KP; University of Montana, Missoula</i>	Waxing and waning of wings during molt, growth, and secondary loss of flight in birds.
10:30 am	83-2	<i>Heers AM, Barta DE; College of Sequoias, American Museum of Natural History</i>	Early behavioral, but late anatomical, maturation in precocial ground birds: Form-function relationships during the developmental acquisition of flight
11:00 am	83-4	<i>Deetjen ME, Biewener AA, Lentink D; Stanford University, Harvard University</i>	High-speed surface reconstruction of flying birds using structured light
11:15 am	83-5	<i>Mistick EA, Clark CJ; University of California, Riverside</i>	Male hummingbirds use kinematics to control sound signaling in diving courtship display
11:30 am	83-6	<i>Graham M, Weiss T, Jayne BC, Socha JJ; Virginia Tech, University of Cincinnati</i>	Jumping as a gap-bridging strategy in flying snakes

11:45 am	Lunch Break		
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10:00 AM – 12:00 PM	Session 84		Room 210
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Locomotion: Variable Substrates

Chairs: Philip Bergmann, Jesse Young

10:00 am	84-1	<i>Bergmann PJ, Pettinelli KJ, Crockett ME, Schaper EG; Clark University</i>	The effects of granular substrate particle size and shape on sprinting in lizards
10:15 am	84-2	<i>McBrayer L, Kerouac L, McElroy E; Georgia Southern, College of Charleston</i>	Substrates and settings: Quantifying locomotor performance in functional and ecological contexts
10:30 am	84-3	<i>Naylor ER, Higham TE; University of California, Riverside</i>	Navigating rough terrain: Impacts of a substrate transition on locomotion in the namib day gecko
10:45 am	84-4	<i>Young JW, Wolfe AN, Chadwell BA; Northeast Ohio Medical University, Ohio University</i>	Arboreal locomotor performance in gray squirrels (<i>Sciurus carolinensis</i>) and new world monkeys: Implications for primate locomotor evolution
11:00 am	84-5	<i>Hunt NH, Frenberg-Mates E, Jinn J, Robin A, Jacobs LF, Full RJ; University of California, Berkeley</i>	Squirrels running on compliant branches: When to leap?
11:15 am	84-6	<i>Hubbard AM, Schiebel PE, Rieser JM, Goldman DI; Georgia Institute of Technology</i>	Force production during desert specialist snake locomotion
11:30 am	84-7	<i>Rieser JM, Schiebel PE, Goddard Z, Goldman DI; Georgia Tech</i>	A robophysical model for limbless locomotion in a heterogeneous environment
11:45 am	84-8	<i>Crandell KE, Sutton GP, Burrows M, Federle W; University of Cambridge, University of Bristol</i>	Jumping from substrates of variable compliance and mass in locusts

12:00 pm	Lunch Break		
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10:15 AM – 12:00 PM	Session 85		Room 211-213
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Stress II

Chairs: Michael Serrif, Tracy Langkilde

10:15 am	85-1	<i>Fischer DR, Chin EH, Burness G; Trent University, Simon Fraser University</i>	Effects of maternal corticosterone on the physiology, morphology and behaviour of nestling tree swallows
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10:30 am	85-2	<i>Peiman KS, Birnie-Gauvin K, Larsen M, Colborne S, Aarestrup K, Cooke SJ; Carleton University, Technical University of Denmark, University of Windsor</i>	Effects of cortisol on short and long term diet and morphology
10:45 am	85-3	<i>Telemeco RS, Langkilde T, Schwartz TS; Auburn University, Pennsylvania State University</i>	Contrasting lizard response to fire ant and heat stress using physiological and transcriptomic measures
11:00 am	85-4	<i>Ensminger D, Langkilde T, Owen D, MacLeod K, Sheriff M; Pennsylvania State University</i>	The Effect of maternal stress on maternal behavior and offspring morphology in <i>Sceloporus undulatus</i>
11:15 am	85-5	<i>Mead MS, Howey CAF, Langkilde T; The Pennsylvania State University</i>	Impacts of pH and UV-B on stress and developmental rates of wood frog <i>Lithobates sylvaticus</i> tadpoles: Implications with regard to prescribed fire
11:30 am	85-6	<i>Finger JW, Hoffman AJ, Wada H; Auburn University</i>	The effect of heat shock on constitutive and inducible heat shock proteins and corticosterone in the zebra finch
11:45 am	85-7	<i>Word KW, Wingfield JC; University of California, Davis</i>	A bird's eye view of allostasis: Cues, error, and variability in the decision to respond

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 86 Room 214

Adhesion I

Chairs: Daniel DeMartini, Petra Ditsche

10:15 am	86-1	<i>Stark AY, Yanoviak SP; University of Louisville</i>	Slippery when wet: Adhesion and running velocity of a tropical canopy ant on wet substrates
10:30 am	86-2	<i>Demartini DG, Waite JH; University of California, Santa Barbara</i>	NGS insights into marine mussel wet adhesion
10:45 am	86-3	<i>Ditsche P, Summers A; University of Washington, University of Alaska Anchorage</i>	Clingfish inspired suction cups - holding tight when it gets rough
11:00 am	86-4	<i>Arstingstall KA, Stark AY, Yanoviak SP; University of Louisville</i>	Adhesive performance of tropical canopy ants varies with substrate temperature
11:15 am	86-5	<i>Mantilla DC, Hsieh ST; Florida International University, Temple University</i>	Evaluating the role of claws and toepads during running in anole lizards
11:30 am	86-6	<i>Farrell KP, Wang Q, Elson D, Ninkovic I, Marvi H; Arizona State University</i>	Bio-inspired switchable adhesives for space applications
11:45 am	86-7	<i>Smith AM, Fung TM, Papaleo C, Reid C, Bliss JM, Wolf I, Harro C; Ithaca College, Bryant University, Brown University</i>	Transcriptome-based sequencing and mechanical measurements elucidate the energy dissipation mechanism of an unusually tough biological glue

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 87 Room 215-216

Complementary to S4 – Evolutionary Impacts of Seasonality II

Chair: Patrice Kurnath

10:15 am	87-1	<i>Duell ME, Harrison JF; Arizona State University</i>	Some don't like it hot: Variation in stingless bee flight performance as a function of air temperature
10:30 am	87-2	<i>Stager M, Cheviron ZA; University of Montana</i>	The time course of avian physiological adjustments to cold temperatures
10:45 am	87-3	<i>Allen PE, Miller CW; University of Florida, Gainesville</i>	Diet-by-temperature interactions on a sexually selected trait and sexual dimorphism
11:00 am	87-4	<i>Mikucki EE, Lockwood BL; University of Vermont</i>	Seasonal differences in diapause induction in a Vermont population of <i>Pieris rapae</i> butterflies
11:15 am	87-5	<i>Kurnath P, Beale P, Marsh KJ, Foley WJ, Dearing MD; University of Utah, Australian National University</i>	A tale of temperature and toxins: Investigating the mechanism of temperature-dependent toxicity in mammalian herbivores
11:30 am	87-6	<i>Lockwood BL, Gupta T; University of Vermont</i>	Molecular targets of thermal stress during early development in <i>Drosophila melanogaster</i>

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11:45 am	87-7	<i>Niedojadlo J, Bury A, Cichon M, Sadowska ET, Bauchinger U; Jagiellonian University</i>	Daily energy expenditure, but not self-maintenance costs, are related to hematological variables in response to temperature acclimation
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12:00 pm Lunch Break

10:15 AM – 11:45 AM Session 88 Room 217

Evolutionary Morphology II

Chairs: Andie Ward

10:15 am	88-1	<i>Stewart JR, Ecaj TW, Khambaty M; East Tennessee State University</i>	Functional complexity in the chorioallantoic membrane of corn snakes, <i>Pantherophis guttatus</i> : Specializations for calcium uptake from the eggshell
10:30 am	88-2	<i>Lepiane KL, Clark CJ; Univ of California, Riverside</i>	The evolution of silent flight in owls
10:45 am	88-3	<i>Gawne R, Nijhout HF, R; Duke University</i>	Phenotypic variation and aposematic signaling in an arctiid moth (<i>Utetheisa ornatix</i>)
11:00 am	88-4	<i>Rehorek SJ, Hillenius WJ, Thewissen JGM; Slippery Rock University, College of Charleston, NEOMED, Rootstown</i>	Comparative anatomy of the nasolacrimal apparatus: The case of a dolphin (<i>Stenella attenuata</i>)
11:15 am	88-5	<i>Borstein SR, McGee MD, Fordyce JA; University of Tennessee, Knoxville, University of Bern</i>	The evolution of diet breadth in coral reef fishes
11:30 am	88-6	<i>Ward AB, Galloway KA, Porter ME, Mehta RS; Adelphi University, Florida Atlantic University, University of California, Santa Cruz</i>	The morphological changes underlying tail tapering in an elongate group of fishes

11:45 am Lunch Break

10:15 AM – 11:45 AM Session 89 Room 218

Stress Physiology I

Chairs: Andrew Esbaugh, Julia Gauberg

10:15 am	89-1	<i>Esbaugh AJ; University of Texas at Austin, Marine Science Institute</i>	Physiological insights into ocean acidification and resilience from an estuarine-dependent teleost
10:30 am	89-2	<i>Podolsky RD; College of Charleston</i>	pH gradients in egg masses of 11 gastropod species reflect chronic exposure to acidified conditions during encapsulated development
10:45 am	89-3	<i>Gauberg J, Kelly SP; York University</i>	Effect of ion-poor water on region-specific paracellular permeability properties of rainbow trout skin
11:00 am	89-4	<i>Martin LM, Esbaugh AJ; The University of Texas at Austin</i>	Osmoregulatory plasticity during hypersalinity acclimation in a euryhaline teleost
11:15 am	89-5	<i>May MA, Bishop KD, Rawson PD; University of Maine, Husson University</i>	Linking patterns of gene expression to phenotypic responses in larval and juvenile blue mussels, <i>Mytilus edulis</i> , exposed to low salinity stress
11:30 am	89-6	<i>Das S, Durica DS, Mykles DL; Colorado State University, Fort Collins, University of Oklahoma, Norman</i>	Transcriptomic analysis of signal transduction pathways in the regulation of the crustacean molting gland

11:45 am Lunch Break

10:15 AM – 11:45 AM Session 90 Room 219

Morphological Variation: Ontogeny and Plasticity

Chairs: Andrew Stoehr, Avery Scherer

10:15 am	90-1	<i>Stoehr AM, Wojan EM, Vanwanzelee DT; Butler University</i>	Temperature, photoperiod and nutrients affect phenotypically plastic wing patterns in the cabbage white butterfly
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10:30 am	90-2	<i>Scherer AE, Bird CE, Hu X, McCutcheon M, Smee DL; Texas A&M University-Corpus Christi</i>	The cost and mechanism of an induced morphological defense in the eastern oyster <i>Crassostrea virginica</i>
10:45 am	90-3	<i>Rose CS, Cahill J; James Madison University</i>	Effects of T4 and T3 on cartilage growth and shape change in <i>Xenopus</i> tadpole
11:00 am	90-4	<i>Gaitan Daza L, Szczebak JT, Rhyne AL, Warren KS; Roger Williams University, The New England Aquarium, Roger Williams University, Rhode Island</i>	Morphological and temporal characterization of the embryonic and larval stages of the yasha goby <i>Stonogobiops yasha</i>
11:15 am	90-5	<i>Smith B, West T, Usherwood J; Royal Veterinary College, Royal Veterinary College</i>	Effects of chronic hypergravity exposure on mouse locomotor muscle and kinematics
11:30 am	90-6	<i>Maness TJ, Anderson DJ; Louisiana Tech University, Wake Forest University</i>	Developmental tradeoffs during poor rearing conditions in a seabird

11:45 am Lunch Break

10:30 AM – 12:00 PM Session 91

Room 220

Thermal Physiology II

Chair: Heath MacMillan

10:30 am	91-1	<i>Dzialowski EM, Sirsat TS; University of North Texas</i>	Influence of thyroid hormones on development of endothermy in the precocial pekin duck
10:45 am	91-2	<i>Bryant HJ, Schulte PM; University of British Columbia, Vancouver</i>	Uncoupling proteins and thermal acclimation and adaptation in Atlantic killifish, <i>Fundulus heteroclitus</i>
11:00 am	91-3	<i>Novarro AJ; University of Maryland, College Park</i>	Geographic patterns of thermal tolerance in a widespread lungless salamander
11:15 am	91-4	<i>Pollock HS, Brawn JD, Cheviron ZA; University of Illinois, Urbana-Champaign, University of Montana</i>	Testing the microclimate hypothesis: Thermal physiology does not explain population declines of understory birds in neotropical forests
11:30 am	91-5	<i>Chou H, Pathmasiri W, Sumner S, Buchwalter D; North Carolina State University, RTI International, Research Triangle Park</i>	Linking physiological mechanisms to thermally driven life history outcomes in the mayfly <i>Neocloeon triangulifer</i>
11:45 am	91-6	<i>MacMillan HA, Kelly SP, Belozeroz VE, Jonusaite S, Donini A; York University, Toronto</i>	How to minimize accidental leakage: Cold-acclimated drosophila have reduced intestinal paracellular permeability

12:00 pm Lunch Break

10:30 AM – 12:00 PM Session 92

Room 221

Evolution and Genetics of Behavior

Chair: Michele Johnson

10:30 am	92-1	<i>Johnson MA, Ivanov BM, Kircher BK; Trinity University, University of Florida, Gainesville</i>	Structure size, not behavioral use, is associated with the evolution of muscle fiber size in anole lizards
10:45 am	92-2	<i>Stein LR, Hughes KA, Hoke KL; Colorado State University, Florida State University</i>	Behavior, morphology and life history traits show extensive heterosis and parent-of-origin effects in Trinidadian guppies
11:00 am	92-3	<i>Louder MIM, Brewer MS, Spottiswoode CN, Sorenson MD, Hauber ME, Balakrishnan CN; East Carolina University, University of Cambridge, Boston University, City University of New York</i>	Genetic basis for convergent evolution of a complex behavior: Insights from avian brood parasites
11:15 am	92-4	<i>Wang ZY, Ragsdale CW; University of Chicago</i>	Maternal behavior and death in the octopus
11:30 am	92-5	<i>Cohen KL, Piacentino ML, Warkentin KM; Boston University</i>	Two types of hatching glands facilitate escape-hatching of red-eyed treefrogs across multiple contexts and developmental stages
11:45 am	92-6	<i>Abe H, Aoya D, Inoue-Murayama M; Kyoto University, Akita Prefectural Livestock Experiment Station</i>	Differently expressed genes between newborn chicks with extreme fear responses

12:00 pm Lunch Break

Mating Systems and Strategies

Chair: Susan Balenger

10:15 am	93-1	<i>Balenger SL, Grab K, Zuk M; University of Mississippi, University of Minnesota-Twin Cities</i>	Field crickets evolving in silence exhibit increased investment in alternative mating tactics
10:30 am	93-2	<i>Dolphin KE, Hoke KL; Colorado State University</i>	Lasting impacts of ancestral predation levels on courtship strategy in Trinidadian guppies
10:45 am	93-3	<i>Crocker-Buta SP, Leary CJ; University of Mississippi</i>	Bidirectionality of hormone-behavior relationships and satellite-caller dynamics in male green treefrogs: Multiple factors mediate mating tactic expression
11:00 am	93-4	<i>Assis BA, Swierk L, Langkilde T; The Pennsylvania State University, Yale University</i>	Reproductive costs of male-typical ornamentation on female lizards may be offset by increased performance
11:15 am	93-5	<i>Nash CS, Hendon JM, Daly-Engel TS; University of West Florida, The University of Southern Mississippi</i>	The impact of varying reproductive periodicity on frequency of multiple paternity in the finetooth shark, <i>Carcharhinus isodon</i>
11:30 am	93-6	<i>Bortolini JL, Bauer RT*; Universidad Nacional Autónoma de México, University of Louisiana, Lafayette</i>	Persistence of reduced androgenic glands after protandric sex change is a possible basis for simultaneous hermaphroditism in the marine shrimp <i>Lysmata wurdemanni</i>
11:45 am	93-7	<i>Sasson DA, Jaquez AA, Ryan JF; University of Florida, Lewis & Clark College</i>	To self or not to self: Reproductive strategies of the tenophore, <i>Mnemiopsis leidyi</i>

12:00 pm Lunch Break

Neuroethology of Insect Flight

Chair: Mark Willis

10:00 am	94-1	<i>Strother JA, Wu ST, Wong AM, Nern A, Rogers EM, Le JQ, Rubin GM, Reiser MB; Oregon State University, Janelia Research Campus, HHMI</i>	Origins of directional selectivity in the visual motion pathway of drosophila
10:15 am	94-2	<i>Deora T, Vardhan A, Naik S, Ghosh A, Gundiah N, Sane SP; National Centre for Biological Sciences, University of Washington, Seattle, Indian Institute of Science, University of California, Berkeley</i>	Mechanics of the wing hinge in flies
10:30 am	94-3	<i>M M, Sant HH, Poovayya M, Sane SP; National Centre for Biological Sciences, Manipal University</i>	Role of cephalic mechanosensors in flight initiation of hawkmoths
10:45 am	94-4	<i>Saxena N, Natesan D, Sane SP*; National Centre for Biological Sciences</i>	How flies determine the location of an odor source
11:00 am	94-5	<i>Jung SH, Beck J, Bhandawat V*, Bhandawat V; Duke University</i>	Independently controlled locomotor primitives underlie behavioral response to odors
11:15 am	94-6	<i>Barker RE, Sponberg S; Georgia Institute of Technology</i>	Just in time? Timing and rate encoding in the spike-resolved motor program of the hawk moth, <i>Manduca sexta</i>
11:30 am	94-7	<i>Doussot C, Bertrand OJN, Egelhaaf M; University of Bielefeld, Cluster of Excellence Cognitive Interaction Technology</i>	Active vision strategies of bumblebees during learning flights

11:45 am Lunch Break

Complimentary to S11 – Low Spatial Resolution Vision: Function and Evolution II

Chair: Todd Oakley

10:15 am	95-1	<i>Lessios N; University of Arizona</i>	Modeling spectral sensitivities of visual systems: Identification of photoreceptor arrays using electroretinograms and multi-model inference
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10:30 am	95-2	<i>Kingston ACN, Speiser DI; University of South Carolina</i>	Diverse sensory structures in the shell plates of chitons express the molecular components of rhabdomeric phototransduction
10:45 am	95-3	<i>Oakley TH, Ellis EA, Hensley NM; University of California, Santa Barbara</i>	Genetic basis of color variation in the bioluminescent signals of sea fireflies (Cypridinidae: Ostracoda)
11:00 am	95-4	<i>Sigwart JD, Sumner-Rooney LH, Rahman IA, Parkinson DY; University of California, Berkeley, Museum für Naturkunde, Oxford University Museum of Natural History, Lawrence Berkeley National Laboratory</i>	Like a hole in the head (valve)
11:15 am	95-5	<i>Donohue MW, Kingston ACN, Lin C, Cronin TW; University of Maryland, Baltimore County, University of South Carolina</i>	The location of putative brain photoreceptors in the stomatopod crustacean, <i>Neogonodactylus oerstedii</i>
11:30 am	95-6	<i>Johnsen S, Ruxton GD; Duke University, University of St. Andrews</i>	Join now! The increased visibility of large groups of aquatic and aerial organisms is far outweighed by the benefits of aggregation
11:45 am	95-7	<i>Bagge LE, Johnsen S; Duke University</i>	Anti-reflective invisibility cloak: Monolayers of spheres reduce cuticle reflectance in hyperiid amphipods
12:00 pm	Lunch Break		

10:30 AM – 11:45 PM Session 96

Room 225-226

Pollution & Bioindicators

Chair: Rebecca Calisi

10:30 am	96-1	<i>Calisi RM, Cai F; University of California, Davis, Columbia University</i>	Seasons and neighborhoods of high lead toxicity in New York City: The feral pigeon as a bioindicator
10:45 am	96-2	<i>Hau Kwan L, Kit Yu KC; Hong Kong University of Science and Technology</i>	Legacy effect of microplastic ingestion on growth and development of the slipper limpet <i>Crepidula onyx</i>
11:00 am	96-3	<i>Maboloc EA, Chan KYK; Hong Kong University of Science and Technology</i>	Direct and diet-mediated indirect effects of ocean acidification do not impact larval slipper limpet <i>Crepidula onyx</i>
11:15 am	96-4	<i>Robinson SE, Botero JM, Finger JW, Hoffman AJ, Zhang Y, Kavazis AN, Cristol DA, Wada H; Auburn University, College of William and Mary</i>	Lipid peroxidation and antioxidant capacity as indicators of oxidative stress in mercury-exposed zebra finches
11:30 am	96-5	<i>Speare L, Wollenberg M, Mandel M, Miyashiro T, Septer A*; University of North Carolina, Kalamazoo College, Northwestern University, Penn State University</i>	Squid symbionts use a molecular syringe to kill competitors
11:45 am	Lunch Break		

Saturday Program Afternoon Sessions

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

1:45 PM – 3:00 PM Session 97

Room 208-209

Flight III

Chair: Bo Cheng

1:45 pm	97-1	<i>Usherwood JR; Royal Veterinary College</i>	Physiological, aerodynamic and geometric constraints of flapping account for bird gaits, and bounding and flap-gliding flight strategies
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2:00 pm	97-3	<i>Segre PS, Dakin R, Read TJG, Straw AD, Altshuler DL*; University of British Columbia, University of Freiburg</i>	Mechanical constraints on flight at high elevation decrease maneuvering performance
2:15 pm	97-4	<i>Shepard ELC, Williamson CJ*, Windsor SP; University of Bristol, University of Swansea</i>	Adaptive flight behaviour found in urban gulls using orographic lift
2:30 pm	97-5	<i>Lentink D, Quinn DB; Stanford University</i>	From quiet laminar flow to turbulent gusts: A new wind tunnel for studying animal flight performance and control
2:45 pm	97-6	<i>Matthews M, Sponberg S; Georgia Tech</i>	Free Flight tracking in unsteady flow: Probing hawkmoth maneuverability in an artificial flower wake

3:00 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:30 PM **Session 98** **Room 210**

Locomotion: Obstacles and Perturbations

Chair: Clint Collins

1:30 pm	98-1	<i>Gart SW, Li C; Johns Hopkins University</i>	Dynamic traversal of large gaps and high bumps by cockroaches
1:45 pm	98-2	<i>Self JD, Collins CE*, McBrayer LD; Georgia Southern University, University of California, Riverside</i>	Does bipedalism confer an advantage to lizards sprinting over obstacles?
2:00 pm	98-3	<i>Astley HC, Mendelson JR, Goldman DI; University of Akron, Zoo Atlanta, Georgia Institute of Technology</i>	Side-impact collision: Obstacle negotiation mechanics in sidewinding snakes
2:15 pm	98-4	<i>Othayoth RS, Xuan QH, Li C; Johns Hopkins University</i>	Leg vibrations help cockroaches self-right using wings
2:30 pm	98-5	<i>Han Y, Luo Y, Bi J, Li C; Johns Hopkins University</i>	Body shape affects yaw and pitch motions of insects traversing complex 3-D terrains
2:45 pm	98-6	<i>Libby T, Full RJ; University of California, Berkeley</i>	Variable limb function results in similar turning behavior in lizards
3:00 pm	98-7	<i>Tucker EL, Fath MA, Hsieh ST; Temple University</i>	Compensatory strategies for traversing a drop perturbation in a bipedal, sprawled runner
3:15 pm	98-8	<i>Hsieh ST, Shamble P, Wilshin S, Hovey K, Spence AJ; Temple University, Harvard University, Royal Veterinary College</i>	Spiders “limp” to achieve a more stable gait

3:30 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:30 PM **Session 99** **Room 211-213**

Ecomorphology

Chair: Tristan Stayton

1:30 pm	99-1	<i>Wong JY, Chan BKK, Chan KYK; Academia Sinica, Hong Kong University of Science and Technology</i>	Functional morphology of barnacle nauplii: A meta-analysis of the effect of trophic modes and allometry on larval shape
1:45 pm	99-2	<i>Stayton CT; Bucknell University</i>	Methods for combining multiple multivariate performance surfaces to explain patterns of phenotypic diversification
2:00 pm	99-3	<i>Cohen K, Hernandez LP; The George Washington University</i>	Ontogeny of the filtering apparatus in silver carp (<i>H.molitorix</i>): The structure behind the invasion
2:15 pm	99-4	<i>Higham TE, Jagnandan K, Smith S, Jamniczky HA, Rogers SM; University of California, Riverside, University of Calgary</i>	The dynamics of suction feeding among marine and freshwater populations of threespine stickleback, <i>Gasterosteus aculeatus</i> : Linking kinematics and geometric morphometrics
2:30 pm	99-5	<i>Carter CB, Cooper WJ, Smith A, Rice AN, Westneat MW; Washington State University, University of Massachusetts, Amherst, Cornell University, University of Chicago</i>	The evolution of jaw protrusion mechanics is tightly linked to ecological divergence along a benthic-pelagic niche axis in damselfishes (Pomacentridae)

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2:45 pm	99-6	<i>Moen DS, Hanson DK; Oklahoma State University</i>	Functional redundancy permits morphological differences between frog ecomorphs without reducing performance
3:00 pm	99-7	<i>Herrel A, Louppe V, Simurina T, Padilla P, Moureaux C, Mikaeloff F, Claquin M, Courant J; CNRS/MNHN</i>	The evolution of locomotor performance in an invasive amphibian, <i>Xenopus laevis</i>
3:15 pm	99-8	<i>Otto AW, Rosenthal MF, Elias DO, Hatton RL; Oregon State University, University of California, Berkeley</i>	Vibrations in a spider's web

3:30 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:15 PM **Session 100** **Room 214**

Adhesion II

Chairs: Jason Nadler, Alexis Noel

1:30 pm	100-1	<i>Zachow Z, Noel A, Hu DL; Georgia Institute of Technology</i>	Earwax has properties like paint, enabling self-cleaning
1:45 pm	100-2	<i>Noel A, Martinez A, Jung H, Tsai TW, Hu DL; Georgia Institute of Technology</i>	Cat tongue velcro
2:00 pm	100-3	<i>Zhang C, Pometto S, Sande L, Beard CE, Aprelev P, Adler PH, Kornev KG; Clemson University</i>	Capillary effect of saliva on self-assembly of butterfly proboscis
2:15 pm	100-4	<i>Zhou Y, Noel A, Hu DL; Georgia Institute of Technology</i>	Sweating can improve grip in humans
2:30 pm	100-5	<i>George MN, Carrington E; University of Washington</i>	Mussels use seawater pH as a molecular trigger in the formation of byssus adhesive
2:45 pm	100-6	<i>Garner AM, Siman KE, Wright A, Niewiarowski PH; The University of Akron</i>	What goes up, must come down: The effect of running orientation on the speed of adhesive locomotion in geckos
3:00 pm	100-7	<i>Nadler JH, Beckert M; Georgia Tech Research Institute</i>	Attachment mechanics of diving beetle foreleg palettes

3:15 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:00 PM **Session 101** **Room 215-216**

Complementary to S4 – Evolutionary Impacts of Seasonality III

Chair: Danielle Levesque

1:30 pm	101-1	<i>Lisovski S, Ramenofsky M, Wingfield JC; University of California, Davis</i>	Biologically significant dimensions of seasonality
1:45 pm	101-3	<i>Verhagen IC, Gienapp P, Laine VN, Van Oers K, Mateman C, Pijl AS, Visser ME; NIOO-KNAW</i>	The physiological mechanism underlying timing of reproduction in the great tit (<i>Parus major</i>)
2:00 pm	101-4	<i>Betini GS, Griswold CK, Norris DR; University of Guelph</i>	Fitness trade-off between seasons causes multigenerational cycles in phenotype and population size
2:15 pm	101-5	<i>Powell THQ, Xia Q, Dowle E, Feder JL, Ragland GJ, Hahn DA*; University of Florida, University of Colorado - Denver, University of Notre Dame</i>	Rapid adaptation to a new seasonal regime drives genetic divergence and ecological speciation in the apple maggot fly <i>Rhagoletis pomonella</i> .
2:30 pm	101-6	<i>Chmura HE, Meddle SL, Wingfield JC, Hahn TP; University of California, Davis, University of Edinburgh</i>	Comparing the effects of a social cue on reproductive development in seasonally breeding migrant and resident female songbirds (<i>Zonotrichia leucophrys</i>)
2:45 pm	101-7	<i>Levesque DL, Landry-Cuerrier M, Larocque G, Menzies A, McGill BJ, Humphries MM; University of Maine, McGill University</i>	Embracing heterothermic diversity: An analytical approach for comparing and categorizing patterns of temperature variation in endotherms

3:00 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:15 PM Session 102 Room 217

Complementary to S10 - Physical and Genetic Mechanisms for Evolutionary Novelty

Chairs: Tetsuya Nakamura, Leslie Babonis

1:30 pm	102-1	<i>Nakamura T, Gehrke AR, Lemberg J, Szymaszek J, Shubin NH; University of Chicago, IL</i>	Digits and fin rays share common developmental histories
1:45 pm	102-2	<i>Lozier JD, Pimsler ML, Jackson JM; University of Alabama</i>	Population genomics of color pattern variation in a widespread North American bumble bee
2:00 pm	102-3	<i>Counterman BA, Van Belleghem S, Shaak SG, Yeager J; Mississippi State University, University of California, Merced</i>	Hybridization and the origin of novel warning coloration in <i>Heliconius</i> butterflies
2:15 pm	102-4	<i>Martindale MQ, Stephenson BQ, Dubuc TQ; University Florida</i>	The Hox code was present in the cnidarian-bilaterian ancestor and patterns the oral-aboral axis prior to gastrulation.
2:30 pm	102-5	<i>Conith MR, Hu Y, Webb JF, Albertson RC; UMass Amherst, University of Rhode Island</i>	TGFβ signaling is associated with the evolution of an exaggerated phenotype in East African cichlids
2:45 pm	102-6	<i>Babonis LS, Martindale MQ; University of Florida</i>	Novel cells and tissues lost: Using ctenophores to model the evolution of diversity
3:00 pm	102-7	<i>Foster SA; Clark University</i>	Distinguishing novelty from re-emergence of ancestral behavioral traits: Insights from an adaptive radiation

3:15 pm Coffee Break Exhibit Hall

1:30 PM – 3:30 PM Session 103 Room 218

Thermal Tolerance: Coping with Extreme Temperature

Chair: Zack Darnell

1:30 pm	103-1	<i>Jost JA; Bradley University</i>	AMPK activity increases in response to acute cold stress in the zebra mussel
1:45 pm	103-2	<i>Munguia P, Backwell P, Darnell MZ*; The University of Adelaide, The Australian National University, The University of Southern Mississippi</i>	Thermal constraints on microhabitat selection and mating opportunities in fiddler crabs.
2:00 pm	103-3	<i>Gleason LU, Miller LP, Winnikoff J, Somero G, Yancey PH, Dowd WW; Loyola Marymount University, San Jose State University, Hopkins Marine Station of Stanford University, Whitman College</i>	Individual thermal histories of intertidal mussels correlate with metrics of oxidative macromolecular damage and with levels of a thermoprotective osmolyte
2:15 pm	103-4	<i>Marshall KE, Anderson KM, Bernhardt JR, Brown NE, Dytneriski JK, Flynn KL, Gurney-Smith H, Konecny CA, Harley CDG; University of Oklahoma, University of British Columbia, University of Hong Kong</i>	Thermal sensitivity at constant temperatures does not predict responses under varying temperatures
2:30 pm	103-5	<i>Agosta SJ, Joshi KA, Kester KM; Virginia Commonwealth University</i>	Upper thermal tolerance differs among component species in a host-parasitoid-hyperparasitoid system
2:45 pm	103-6	<i>Jiménez Padilla Y, Lachance M-A, Sinclair BJ*; Western University</i>	The gut yeast microbiota determines insect recovery from chill coma
3:00 pm	103-7	<i>Hayford HA, Carrington E; University of Washington</i>	Performance benefits of slow migratory behavior in a predictable dynamic habitat
3:15 pm	103-8	<i>Miller LP, Dowd WW; San Jose State University, Loyola Marymount University</i>	Valve gaping behavior and body orientation of mussels in different microhabitats on wave-swept rocky shores

3:30 pm Coffee Break Exhibit Hall

1:30 PM – 3:15 PM Session 104 Room 219

Disease and Immunity in Response to Social and Environmental Cues

Chairs: Robert Srygley, Travis Wilcoxon

1:30 pm	104-1	<i>Srygley RB, Branson DH; USDA-Agricultural Research Service</i>	Predator or competitor? A Seemingly benign interaction and its effects on immune function
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Saturday 7 January 2017

1:45 pm	104-2	<i>Cornelius Ruhs E, Vezina F, Karasov W; University of Wisconsin-Madison, Universite du Quebec a Rimouski</i>	Do differing levels of food supplementation alter body composition and immune function in a wild residential bird?
2:00 pm	104-3	<i>Wilcoxon TE, Vana ER, Wrobel ER; Millikin University, Miami University-Ohio, University of Georgia</i>	Seroprevalence of antibodies against <i>Mycoplasma gallisepticum</i> and <i>Avipoxvirus</i> in nine species of birds with differential access to feeders
2:15 pm	104-4	<i>Becker DJ, Streicker DG, Altizer SA; University of Georgia, University of Glasgow</i>	Host movement ecology and feeding behavior influence how resource provisioning affects parasitism for wildlife
2:30 pm	104-5	<i>Love AC, Smith AC, Wilder SM, Durant SE; Oklahoma State University</i>	In sickness and in health: How do direct and indirect cues of infection influence pair bond maintenance?
2:45 pm	104-6	<i>Ivanina AV, Phippen BL, Oliver JD, Sokolova IM; University of North Carolina at Charlotte, University of Rostock</i>	Combination of anoxia and <i>Vibrio coralliilyticus</i> lead to immune disruption in the Eastern oyster, <i>Crassostrea virginica</i>
3:00 pm	104-7	<i>Hersh T, Dimond A, Ruth B, Lupica-Nowlin N, Buttnr J, King B, Lutton B*; Dalhousie University, Endicott College, Brown University, Salem State University, Mount Desert Island Biological Laboratory</i>	Leukocyte mobilization in <i>Leucoraja erinacea</i>
3:15 pm	Coffee Break		Exhibit Hall

1:45 PM – 2:45 PM Session 105 Room 220

Temperature Dependent Reprogramming

Chair: Luke Hoekstra

1:45 pm	105-1	<i>Hoekstra LA, Mittman E, Weber RC, Janzen FJ; Iowa State University</i>	Continuously-updated bayesian sampling to aid estimates of temperature-dependent sex ratios
2:00 pm	105-2	<i>Mitchell TS, Warner DA, Janzen FJ; Auburn, Iowa State University</i>	Do covariances between maternal behavior and embryonic physiology drive sex-ratio evolution under environmental sex determination?
2:15 pm	105-3	<i>Janzen FJ, Adams CIM, Polich RL, Weber RC; Iowa State University</i>	Does adult sex ratio influence nest-site choice in a turtle with temperature-dependent sex determination?
2:30 pm	105-4	<i>Fellous A, Labeled-Veydert T, Lescat L, Voisin AS, Locrel M, Earley RL, Silvestre F; University of Namur, University of Alabama</i>	DNA methylation reprogramming during development in the self-fertilizing mangrove rivulus, <i>Kryptolebias marmoratus</i> , and its environmental sensitivity

2:45 pm Coffee Break Exhibit Hall

1:45 PM – 3:15 PM Session 106 Room 221

Comparative Genomics and Proteomics

Chairs: Joseph Heras, Phil Grayson

1:45 pm	106-1	<i>Heras J, Chakraborty M, Emerson JJ, German DP; University of California, Irvine</i>	The monkeyface prickleback (<i>Cebidichthys violaceus</i>) genome: A source for understanding biology in a complex environment
2:00 pm	106-2	<i>Grayson P, Sackton T, Cloutier A, Clamp M, Tabin C, Edwards SV; Harvard University, Harvard Medical School</i>	Comparative genomics, epigenomics, and developmental biology uncover convergent acceleration in putative regulatory regions associated with repeated losses of avian flight
2:15 pm	106-3	<i>McCleary RJJ, Pandi BP, Jha N, Sathyan N, Kini RM; Utah State University, Vellore Institute of Technology, Indian Institute of Technology-Kanpur, University of Mumbai, National University of Singapore</i>	Surprise presence of a membrane-bound protein: Characterization of a neprilysin from the venom of the king cobra (<i>Ophiophagus hannah</i>)
2:30 pm	106-4	<i>Mika KM, Lynch VJ; University of Chicago</i>	MIR retrotransposons rewired the GATA2 regulatory network in decidual stromal cells
2:45 pm	106-5	<i>Riggs CL, Dowd W, Lefevre S, Milton S, Nilsson GE, Warren D, Podrabsky JE; Portland State University, Loyola Marymount, University of Oslo, Florida Atlantic University, Saint Louis University</i>	Extreme vertebrate anoxia tolerance and small RNA expression

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3:00 pm	106-6	<i>Schulze A; Texas A&M University at Galveston</i>	Conserved mechanisms of oxygen sensing in the bearded fireworm, <i>Hermodice carunculata</i> (Annelida: Amphinomidae)
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3:15 pm	Coffee Break		Exhibit Hall
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1:30 PM – 3:15 PM	Session 107		Room 222
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Bioacoustics

Chair: Amanda Adams

1:30 pm	107-1	<i>Adams AM, Pocock J, Smotherman M; Texas A&M University</i>	Modelling mutual suppression of sonar in groups of bats
1:45 pm	107-2	<i>Mayberry HW, Jakobsen L, Wahlberg M, Surlykke A, Ratcliffe JM; University of Toronto, Mississauga, University of Southern Denmark</i>	Echolocation in bats and porpoises hunting alone and in pairs
2:00 pm	107-3	<i>Tanner JC, Bee MA; University of Minnesota</i>	Sources of noise-induced communication errors in <i>Hyla chrysoscelis</i> , cope's gray treefrog
2:15 pm	107-4	<i>Moseley DL, Danner RM, Danner JE, Phillips J, Derryberry GE, Luther DA, Derryberry EP; George Mason University, Tulane University, UNC Wilmington</i>	Cultural selection as a mechanism of acoustic adaptation to city noise: A songbird chooses to copy less degraded songs
2:30 pm	107-5	<i>Anderson R, Niederhauser J, Dubois A, Nowicki S, Searcy W; Florida Atlantic University, University of Miami, Duke University</i>	Are song sparrow "soft songs" adapted for short-range communication?
2:45 pm	107-6	<i>Casteel ZC, Hedrick B*, Podos J; University of Massachusetts, Amherst</i>	The sound of shape: Subtle aspects of subspecific variation in the highly polytypic song sparrow
3:00 pm	107-7	<i>Lillis A, Panyi A, Mooney TA; Woods Hole Oceanographic Institution, University of Southern Mississippi</i>	Soundscape engineers: Exploring the drivers of snapping behavior by alpheid shrimp and their influence on the underwater acoustic environment

3:15 pm	Coffee Break		Exhibit Hall
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1:45 PM – 3:15 PM	Session 108		Room 223
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Navigation and Orientation

Chair: Eric Tytell

1:45 pm	108-1	<i>Steinberg DS, Leal M; University of North Carolina at Chapel Hill, University of Missouri, Columbia</i>	An unexpected case of homing in a territorial lizard
2:00 pm	108-2	<i>Kamran M, Moore ME, Moore PA; Oregon State University, Bowling Green State University, Baldwin Wallace University</i>	Owners versus renters: Comparative homing behaviors in primary and tertiary burrowing crayfish
2:15 pm	108-3	<i>Mekdara PJ, Coughlin LL, Schwalbe MAB, Tytell ED; Tufts University</i>	Learning to school again: How ablation and regeneration of the lateral line system alters schooling behavior in giant danios
2:30 pm	108-5	<i>Smith AE, Willis MA*; Case Western Reserve University</i>	Flight stability and olfactory navigation is supported by multisensory antennal inputs in the Moth <i>Manduca sexta</i> .
2:45 pm	108-6	<i>Lohmann KJ, Endres CS, Putman NF, Ernst DA, Lohmann CMF; University North Carolina, Chapel Hill, University Miami</i>	Natal homing and multi-modal navigation in sea turtles and salmon
3:00 pm	108-7	<i>Taylor BK, Lohmann KJ; Air Force Research Laboratory, University of North Carolina at Chapel Hill</i>	Validating a model for detecting the magnetic field using simulated and hardware approaches

3:15 pm	Coffee Break		Exhibit Hall
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1:30 PM – 3:00 PM Session 109 Room 224

Wake Award: DPCB Best Student Presentation

Chair: Todd Oakley

1:30 pm	109-1	<i>Kagemann C, Bright L, Gout J, Doak T, Kaltz O, Lynch M; Indiana University, Institut des Sciences de l'Evolution, Indiana University, Bloomington, IN</i>	Gene expression changes during infection of <i>Paramecium caudatum</i> by <i>Holospira undulata</i> bacteria.
1:45 pm	109-2	<i>Goodheart JA, Bazinet AL, Valdes A, Collins AG, Cummings MC; University of Maryland, College Park, California State Polytechnic University, National Oceanic and Atmospheric Administration</i>	Eat, prey, evolve: Phylogenetic relationships and diet in Cladobronchia (Gastropoda: Heterobranchia)
2:00 pm	109-3	<i>Swafford AJ, Oakley TH; University of California, Santa Barbara</i>	The speed of light: Duplication rates in opsin family evolution
2:15 pm	109-4	<i>McCraney WT, Alfaro ME; UCLA</i>	Phylogeny and diversification of gobies and their relatives
2:30 pm	109-5	<i>Jackson LM, Fernando P, Hanscom J, Balhoff JP, Mabee PM; University of South Dakota, RTI International, Research Triangle Park</i>	Automated integration of phenomics and phylogenetic data to investigate paired fin evolution across teleost fishes
2:45 pm	109-6	<i>Stiller J, Wilson NG, Rouse GW; University of California, San Diego, Western Australian Museum</i>	The covert dragon: Phylogeography of the seadragons (<i>Syngnathidae</i>) along the temperate Australian coast

3:00 pm Coffee Break Exhibit Hall

1:30 PM – 2:30 PM Session 110 Room 225-226

Biophysical Ecology

Chair: Offir Levy

1:30 pm	110-1	<i>McMahon JD, Lashley MA, Barton BT; Mississippi State University</i>	Are GUDs duds? Predation risk alters nutrient preferences in giving-up density experiments
1:45 pm	110-3	<i>Von Dassow YJ, Von Dassow M; Duke University Marine Lab</i>	Drying but not dying: How do intertidal slug embryos survive environmental fluctuations?
2:00 pm	110-4	<i>Batzel G, Maboloc EA, Grünbaum D; Friday Harbor Laboratories, Hong Kong University of Science, University of Washington</i>	Larvae of the echinoid <i>Dendraster excentricus</i> change swimming behavior to avoid low pH in columns with layers of acidified and ambient seawater
2:15 pm	110-5	<i>Ceja AY, Lam E, Abegaz MF, Souther JL, You Mak K, Gunderson A, Stillman JH, Tsukimura B; San Francisco State University, Barnard College of Columbia University, Fresno State University</i>	Ecologically modeling the distribution of an intertidal crab concerning global change

2:30 pm Coffee Break Exhibit Hall

SATURDAY POSTER SESSION P3

Exhibit Hall C, 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

Environmental Factors Affecting Host Immunity

- P3-19** Rios FM, Wilcoxon TE, Zimmerman LM; Millikin University
Does environmental concentrations of imidacloprid impact immune and nervous system development in *Rana castesbeiana*?
- P3-20** Blevins B, Caughron J, Davis JE; Radford University
In vitro investigation of antimicrobial properties of passerine nesting materials
- P3-21** Cummings CR, Khan NY, Murray M, Ellison T, Welsch CN, Hernandez SM, Navara KJ; University of Georgia
Influences of urban life and anthropogenic feeding on stress and immunity in white ibises
- P3-22** Odetunde AO, Casto JM; Illinois State University
Quit buggin' me: The effects of ectoparasite control methods on mite load and nestling phenotypes
- P3-23** Peck MR, Wilcoxon TE; Millikin University
The effect of water acidification on the growth, development, and immune defense of Cuban tree frogs, *Osteopilus septentrionalis*, and American bullfrogs, *Rana catesbeianus*, in the presence of a pathogen
- P3-24** Love CN, Webster SC, Beasley JC, Hinton TG, Byrne ME, Shamovich D, Lance SL; University of Georgia, Fukushima University, Vitebsk Region, Belarus
Chernobyl's legacy: Effects of chronic radiation exposure on carnivores from the Chernobyl exclusion zone

Immune-Based Trade-offs

- P3-25** McCarter AL, Tompkins EM, Anderson DJ, Maness TJ; Louisiana Tech University, Wake Forest University
Induction and maintenance of immunological memory in a long-lived seabird
- P3-26** Vaziri GV, Adelman JS, Vaziri G; Iowa State University
Sickness behaviors in house sparrow flocks with different prevalences of simulated infection
- P3-27** Smyth KN, Stonehill A, Caruso N, Drea CM; Duke University, Kuruman River Reserve, University of Alabama, Tuscaloosa
Consequences of prenatal androgen exposure for offspring health: An experimental study in wild meerkats
- P3-28** Schreier KC, Grindstaff JL; Oklahoma State University
Are behavioral and immunological strategies against disease repeatable in zebra finches?
- P3-28.5** Schoepf I, Schoenle L, Moore IT, Bonier F; Virginia Tech, Queen's University
Pain and gain: Does increased tolerance to a parasitic infection implicate other health parameters and carry energetic costs in a migratory passerine?

Immunity, Pathology, and Epidemiology

- P3-29** Hersh KH, Caughron JE, Caughron JJ, Davis JE; Radford University
Sangre de Drago inhibits growth of staphylococcal isolates
- P3-30** Farthing SJ, Montalvo AM, Jorgensen DD; Roanoke College
Real-time visualization of hemocyte aggregation in response to acute bacterial exposure in American lobster hemolymph
- P3-31** Esmaeili Kharyeki M, Rezaei M, Bordenave-Juchereau S, Motamedzadegan A, Khodabandeh S*; University of Tarbiat Modares, TMU, University of La Rochelle, Sari University
Investigation of antidiabetic and antioxidant activities of skipjack tuna head protein hydrolysate
- P3-32** Cox RE, Caughron JE, Davis JE; Radford University
The presence of *Erysipelothrix rhusiopathiae* in the mucoprotein coating of fish found in the Madre de Dios region of the Peruvian Amazon
- P3-33** Webb AC, Neuman-Lee LA, Watson E, French SS; Utah State University
Time course of the immune response in a non-model organism, *Thamnophis elegans*
- P3-34** Bucholz J, Cohen CS, Huey B, Erbel R, Park S; UW-River Falls, San Francisco State University, Santa Rosa Junior College
Sea star wasting disease etiology in *Leptasterias* spp
- P3-35** Taylor SJ, Gray WA, Zimmerman LM; Millikin University
In vitro synergistic bactericidal activity between antibiotics and *Trachemys scripta elegans* plasma

- P3-36** Ahrari A, Khodabandeh S*, Akhavan Niaki H; University of Tarbiat Modares, University of Babol
Anti tumoral effects of Persian Gulf puffer fish (*Chelonodon patoca*) tetrodotoxin in *Balb/c nu* mice

Systematics, Speciation, and Macroevolution

- P3-37** Kim A, Gosliner T; Las Positas College, California Academy of Sciences
Stirring up the muck: The systematics of soft-sediment fionidae (Nudibranchia: Aeolidina) from the tropical Indo-Pacific
- P3-38** Askin R, Mooi R; Colorado State University, California Academy of Sciences
The heart of the problem: Phylogenetic systematics of burrowing sea urchins in the genus *Metalia* (Echinoidea: Spatangoida)
- P3-39** McCowin MF, Rouse GW; University of California, San Diego
Iphionidae (Aphroditiformia, Annelida) from Pacific hydrothermal vents
- P3-40** Yen NK, Rouse GW; UCSD
Phylogeny, biogeography, and systematics of Pacific vent, seep, and whalefall *Parougia* (Dorvilleidae, Annelida) with 7 new species
- P3-41** Lindgren JI, Rouse GW; University of California, San Diego
Three new species of *Branchipolynoe* (Polynoidae, Annelida) from Costa Rican methane seeps
- P3-42** Laurenzano C, Schubart CD; University of Louisiana at Lafayette, Universität Regensburg
Contrasting patterns of genetic structuring in two western Atlantic fiddler crabs
- P3-43** McQuillan MA, Roth TC, Rice AM; Lehigh University, Franklin and Marshall College
Testing the role of cognitive ability as a reproductive isolating barrier
- P3-44** Lane KR, Bennett SN; Macalester College, California Academy of Sciences
The 2013 chikungunya viral outbreak in Grenada: A phylogenetic analysis of introduction and spread
- P3-45** Sasson DA, Ryan JF; University of Florida
The earliest animals did it alone: Reconstructing the ancestral reproductive state of Metazoa
- P3-46** Picciani N, Kerlin JR, Sierra NW, Cannon JT, Daly M, Ramirez DM, Oakley TH; University Of California, Santa Barbara, The Ohio State University
Cnidaria and xenacoelomorpha opsins revisited: Extended sampling corroborates the presence of several major pre-bilaterian groups
- P3-47** Lamb AD, Near TJ, Federman S, Dornburg A; North Carolina State University, North Carolina Museum of Natural Sciences, Yale University
Cradles and museums of Antarctic biodiversity
- P3-48** Santini F, Olivier D, Frederich B; Associazione Italiana per Studio Biodiversita', Université de Liège, Liège
Durophagy influences macroevolutionary patterns in porgies, seabreams and allies (Sparoidea, Percomorpha)

Complementary to S10 – Physical and Genetic Mechanisms for Evolutionary Novelty

- P3-49** Lauterbur ME, Tongasoa L, Peralta J, Jacox A, Concheiro-Guisan M, Wright PC; Stony Brook University, University of Antananarivo, John Jay College of Criminal Justice
Peeing poison: The biochemistry of bamboo lemur cyanide survival
- P3-50** Winters GC, Kohn AB, Hatfield L, Paulay K, Laux R, Polese G, Dicosmo A, Moroz LL; University of Florida, Bridgewater College, Humboldt State, University of Naples Federico II
Molecular organization of *Octopus* brains: Insight into unique memory center signaling
- P3-51** Tilden AR, Vitzthum CM; Colby College
Evolution of the timeless family of genes: Functional implications of duplications within the *Daphnia* Genus
- P3-52** Clubb BL, Clark AJ, Uyeno TA; Valdosta State University, College of Charleston
An anatomical description of the feeding apparatuses in two species of hagfish
- P3-53** Hatfield L, Winters GC, Bostwick CJ, Paulay K, Kohn AB, Moroz LL; Bridgewater College, University Florida
Deciphering the molecular identity of cells in known memory circuits
- P3-54** Glassford WJ, Dall NR, Rebeiz M; Columbia University Medical Center, University of Pittsburgh
Network co-option and individualization in the evolution of a novel morphology
- P3-55** McQueen EW, Glassford WJ, Rebeiz M; University of Pittsburgh, Columbia University
Pleiotropic genetic architecture accompanies concomitant origin of a pair of novel male and female genital structures

Evolution and Development of the Sensory Structures

- P3-56** Yuan T, McCauley DW, Yuan T; University of Oklahoma
Gliogenesis in lampreys: Insights into the evolutionary emergence of oligodendrocytes
- P3-57** Keer S, Hernandez LP; The George Washington University
Late embryonic and larval development of the cypriniform palatal organ

- P3-58** Wang W, Luttrell S, Swalla BJ; University of Washington, Seattle
Molecular analysis of neural regeneration in *Ptychodera flava*
- P3-59** Chan J, Hartley M, Baker A, Plachetzki D*; University of New Hampshire
A role for adenylate cyclase in cnidarian phototransduction
- P3-60** Sears CR, Stahl BA, Gross JB; University of Cincinnati
Potential roles for *pmela* and *tyrp1b* in pigmentation patterning in the blind Mexican cavefish, *Astyanax mexicanus*

Neuroethology

- P3-61** Mensinger AF, Rogers LJ, Van Wert JC; University of Minnesota Duluth, University of California Berkeley
Chronically Implanted micromanipulator for recording neural activity from free-swimming fish
- P3-62** Cabrera-Álvarez M, Swaney WT, Reader SM; McGill University, Liverpool John Moores University
Activation of the preoptic area during social exposure in guppies
- P3-63** Shannon MC, Butler JM, Maruska KP; Louisiana State University
Coping strategies change over time during repeated social defeat in an African cichlid fish
- P3-64** Alto SI, Strother JA; Oregon State University
Behavioral responses of zebrafish larvae to respiratory cues
- P3-65** Steele T, Zornik E; Reed College
Rapid masculinization of the vocal central pattern generator of the frog, *Xenopus laevis*
- P3-66** Barkan CL, Kelley DB, Zornik E; Columbia University, Reed College
Evolution of vocal circuits: Identifying neurons that underlie species-specific calls
- P3-67** Rosencrans RF, Perkins K, Leslie CE, Richards-Zawacki C, Gordon WC, Bazan NG, Farris HE*; LSU School of Medicine, University of Pittsburgh
Visual sensitivity and optics of nocturnal and diurnal frogs: A comparative approach
- P3-68** Green R, Rappoport R, Yeager D, Coddington E; Willamette University
Examining the structure and function of brainstem neurons involved in sensorimotor processing of clasping behavior.
- P3-69** Schumann WP, Swallow JG, Greene MJ; University of Colorado Denver
How an individual brain can lead to societal change in pavement ants (*Tetramorium caespitum*)
- P3-70** Chou A, Lin C, Cronin TW; University of Maryland, Baltimore County
Comparative neuroanatomy of the crustacean central complex
- P3-71** Gandler HI, Stanhope ME, Shea DN, Pascual MG, Yu A, Lameyer TJ, Roncalli V, Cieslak MC, Christie AE, Dickinson PS; Bowdoin College, University of Hawaii at Manoa
Intrinsic peptidergic modulation in the lobster cardiac neuromuscular system: A transcriptomic analysis of peptides and peptide receptors in cardiac ganglion and muscle
- P3-72** Boykin J, Tamvacakis AN, Katz PS; Georgia State University
Single-cell transcriptomics of homologous peptidergic neurons in nudipleura sea slugs reveals species differences in neuromodulatory and developmental gene expression
- P3-73** Bostwick CJ, Yang Q, Kohn AB, Hawkins RD, Moroz LL; University of Florida, Columbia University
Single neuron RNA-Seq reveals differential expression in neurons regulating the defensive withdrawal reflexes of *Aplysia californica*
- P3-74** Lee CA, Romanova EV, Boykins J, Katz PS, Gillette R, Sweedler JV; University of Illinois, Urbana Champaign, Georgia State University
Peptide profiling of decision network interneurons in the predatory sea-slug *Pleurobranchaea californica*
- P3-75** Hopp B, Arvidson R, Adams M, Razak K; University of California, Riverside
Arizona bark scorpion venom resistance in the pallid bat, *Antrozous pallidus*
- P3-76** Mancuso ML, Adams K, Stout JS; Fairleigh Dickinson University Metro Campus
Dopamine inhibition of activity levels in the cherry shrimp (*Neocaridina davidi*).
- P3-77** Kumro MB, Strand CR; Cal Poly State Univ, San Luis Obispo
Sex differences in cortical brain region volumes in Western fence lizards, *Sceloporus occidentalis*
- P3-77.5** Merlino LJ, Shinkle CJD, Silva J, Coddington EJ; Willamette University
Identifying the role of TRPV1 in cannabinoid mediated suppression of vasotocin endocytosis in the medullary reticular formation of *Taricha granulosa*

Behavioral Ecology III

- P3-78** Nichols J, Smith J, Jack A, Skopec MM; Weber State University
Caching and activity levels in woodrats
- P3-79** Smith RA, Dupont KR, Uhl L, Skopec MM; Weber State University
Building and caching behaviors of woodrats in a laboratory setting
- P3-80** Tiegs JM, Hoese WJ*; California State University Fullerton
From trash to treasure: The use of man-made debris as nest material by Western bluebirds (*Sialia mexicana*)

- P3-81** Wilson E, Helm BR, Royaute R, Mallinger RE, Rinehart JP, Greenlee KJ, Bowsher JH; DePauw University, North Dakota State University, USDA-ARS
Nest building 101: Nest architecture reflects behavior and ecology of *Megachile rotundata*
- P3-82** Gilchrist SL; New College of Florida
Up a tree: Comparative shell use of land hermit crabs at Cayos Cochinos, Bay Islands, Honduras
- P3-83** Gilliland SC, Pechenik JP; Tufts University
The impact of changing water temperature and salinity on shell selection by the hermit crab *Pagurus longicarpus*
- P3-84** Hulbert AC, Hall JM, Mitchell TS, Warner DA; Auburn University
Thermoregulatory patterns of non-native *Anolis sagrei* in a novel thermal environment
- P3-85** Jung J, McDaniel JG, Warkentin KW; Boston University
Ontogeny of vibration-cued escape-hatching in red-eyed treefrogs: Two reasons older embryos hatch more
- P3-86** Tippett CM, Warkentin KM*; Frostburg State University, Boston University
How not to die if its too dry: A comparison of spontaneous and dehydration-induced hatching in red-eyed treefrogs
- P3-87** Warner DA; Auburn University
Consequences of maternal nest site choice in invasive red-eared slider turtles in Portland, OR
- P3-88** Pendergast AM, Zani PA; University Wisconsin–Stevens Point
The influence of temperature on the overwintering behavior of side-blotched lizards in nature
- P3-89** Giles M, Kurnath P, Dearing MD; University of Utah
Chill out: Mammalian herbivore use of microclimates when challenged by dietary plant toxins
- P3-90** Mezebish TM, Novarro AJ; University of Maryland, College Park
Heated hunting: The impacts of temperature on the optimal foraging strategy of the eastern red-backed salamander (*Plethodon cinereus*)?
- P3-91** Coomes CM, Wilson NK, Danner RM, Derryberry EP; Tulane University, University of North Carolina Wilmington
Does thermal stress affect mate selection?
- P3-92** Nguyen K, Stahlschmidt ZR; University of the Pacific
Fighting in the heat: Effects of temperature on aggression and agonistic outcomes
- Social Behavior**
- P3-93** Deckard FM, Johnson MA; Trinity University
Muscle physiology and social behavior in caribbean anole lizards: How do muscle fiber type and size interact?
- P3-94** Murphy MA, Thompson NL, Schul J; Salisbury University, United States Geological Survey, University of Missouri
Acoustic synchrony at fast rates: A unique mechanism in the katydid, *Neoconocephalus ensiger*
- P3-95** Jaramillo MA, Webber MA, Stein CN, Johnson MA; Trinity University
Visual processing of social displays in the lizard brain
- P3-96** Ligocki IY, Maytin AK; UC Davis, Boston University
Social structure and dominance hierarchy establishment in the invasive round goby, *Neogobius melanostomus*
- P3-97** Beechum TJ, Rupp TM, Martin AL; Saginaw Valley State University, Michigan State University
The relationship between shelter density and aggression in the rusty crayfish, *Orconectes rusticus*
- P3-98** Miller S, Shukla D, Wilczynski W; Georgia State University
Effects of social hierarchy on simulated aggression and exploratory behavior in green anoles
- P3-99** Lange AP, Yang P, Mohamed A, Arteaga E, Lent DD; California State University, Fresno
Hives of the common eastern bumblebee, *Bombus impatiens*, rapidly alter their foraging patterns based on sudden changes in local flower distribution
- P3-100** Glass JR, Duell ME, Harrison JF; University of the Pacific, Arizona State University
Sensible, non-suicidal nest defense by guards of a stingless bee
- P3-101** Ramirez AF, Smith Vidaurre G, Wright TF; New Mexico State University
Lower intraspecific aggression associated with lower genetic diversity in invasive urban colonies of the rough harvester ant *Pogonomyrmex rugosus*
- P3-102** Godfrey RK, Gronenberg W; University of Arizona
Reliance on social information and trail pheromone processing in two species of dolichoderinae ants
- P3-103** Gaskin AG, Collin R; University of Idaho, Moscow, Smithsonian Tropical Research Institute
Slime trail tracking in *Nerita scabricosta*
- P3-104** Cychowski MP, Schradin C, Hayes LD; University of Tennessee at Chattanooga, Institut Pluridisciplinaire Hubert Curien
Sociality in marine mammals: A re-evaluation of what is happening beneath the surface

- P3-105** Niedzialek O, Giannoni-Guzman M, Giray T, Oskay D, Agosto-Rivera JL; Bard College, University of Puerto Rico, Namik Kemal Universitesi
Development of a method for large scale tracking and analysis of honeybee behavior
- P3-106** Miles M, Hayes LD; University of Tennessee-Chattanooga
Artiodactyl and perrisodactyl social organization: Re-evaluation and re-assessment
- P3-107** Debray RR, Formica VA, Brodie III ED; Duke University, Swarthmore College, University of Virginia
Consistency of individual activity in the context of social networks of forked fungus beetles
- P3-108** Gamboa DA, Working CL, Smith JE; Mills College
Spatial and temporal network dynamics of free-living California ground squirrels
- P3-109** Palmatary H, Akanyeti O, Liao JC; Washington and Lee University, University of Florida
Investigating collective spatiotemporal learning in adult zebrafish
- P3-110** Working CL, Singh KS, Russell ID, Gamboa DA, Smith JE; Mills College
Social mechanisms shaping individual differences in ectoparasite loads of free-living ground squirrels
- P3-111** Carrell SC, Davis JE; Radford University
The effects of juvenile hormone (JH) on the social behavior of *Leucauge venusta*, the orchard orbweaver, and *Araneus diadematus*, the cross orbweaver
- P3-113** Shukla D, Carruth LL, Wilczynski W; Georgia State University
Effects of social status on muscle glycogen content and fat storage in green anole lizards
- P3-114** Watts EF, Miller TT, Meeks EJ, Amposta JP, Foltz SL, McGlothlin JW; Virginia Tech
Population differences in aggression in brown anoles

Complementary to S9 – Session: The Development and Mechanisms Underlying Inter-Individual Variation in Pro-Social Behavior

- P3-115** Nambu WR, Rieucan G, Porter ME, Kajiura SM; Florida Atlantic University, Florida International University
Quantification of shoaling tendency and context-dependent collective behavior of blacktip sharks (*Carcharhinus limbatus*) during seasonal aggregations in Southeast Florida
- P3-116** Poole AM, Muscedere ML; Hendrix College, Conway, AR
Social resilience and behavioral flexibility in major workers of the ant *Pheidole dentata*
- P3-117** Bluher S, Reeve HK, Bluher S; Cornell University
Modeling individual investment in heterogeneous social groups
- P3-118** Leighton GM, Wang X, Gutenkunst RN, Dornhaus A; Cornell University, University of Arizona
Delimiting gene expression differences between behavioral castes in *Temnothorax rugatulus*

Animal Ecology and Shifting Abiotic Factors

- P3-119** Latimer CE, Miller C, Zuckerberg B; University of Wisconsin-Madison
Surviving the heat: Climatic drivers of northern cardinal bill morphology in space and time
- P3-120** Griffin MT, Navarro A; University of Maryland, College Park
Ecological impacts of climate change: Examining the limiting roles of rainfall and intraspecific competition on red-backed salamander foraging success
- P3-121** Apanovitch EA, Riddell EA, Birsic G, Sears MW; Clemson University
Comparing three stress responses and their time dependencies using a state-space approach for a terrestrial salamander species
- P3-122** Georges J, Logan ML, Watson CM; Midwestern State University, Stellenbosch University
Potential consequences of *Anolis cristatellus* invasion of Dominica on endemic *Anolis oculatus* populations in a dynamic thermal environment
- P3-123** Adams AM, Pinshow B; Texas A&M University, Ben-Gurion University of the Negev
Scorpions modify their behavior and burrow structure in response to the physical environment
- P3-124** Behring RS, Goforth RR, Behring R; Purdue University
Predation efficiency and reactive distance of pacific red lionfish (*Pterois volitans*) Under varied light and turbidity regimes
- P3-125** Moso EM, Enzor LA, Hankins C, Barron MG; U.S. Environmental Protection Agency
The Effects of acidification and hypoxia on the estuarine organisms *Cyprinodon variegatus* (Sheepshead Minnow) and *Americamysis bahia* (Mysid Shrimp)
- P3-126** Fisher AC, Carpenter EJ, Fisher A; San Francisco State University
Ocean acidification effects on photosynthetic symbionts in the sea anemone *Anthopleura xanthogrammica*
- P3-127** Kawano DK, George SB; University of Washington, Georgia Southern University
The effect of low salinity events on protein expression and feeding in *Pisaster* Larvae

- P3-128** *Santana Rodriguez KJ, Gaskin AF, Collin R; University of Puerto Rico at Humacao, University of Idaho, Smithsonian Tropical Research Institute* Factors influencing settlement patterns on the barnacle *Chthamalus panamensis*
- P3-129** *Bodensteiner BL, Warner DA, Iverson JB, Milne-Zelman CL, Mitchell TS, Refsnider JM, Janzen FJ; Iowa State University, Auburn University, Earlham College, Aurora University, University of Toledo* Spatial and temporal variation in nest microhabitat of a widespread reptile
- P3-130** *Sosa T, Bajor M; University of Chicago, Loyola University of Chicago* Projecting range expansions of Neotropical fishes in response to climate change
- Conservation Biology**
- P3-131** *Crain DC, Winfield ZC, Mansouri F, Usenko S, Trumble SJ; Baylor University* Determining ocean productivity via astaxanthin in whale earwax
- P3-132** *Gaillard E, Kovacs J; Spelman College* Effects of urbanization on bird biodiversity in Florida
- P3-133** *Pudalov N, Ziatek S, Jimenez AG; Colgate University* A comparative study of bird migration patterns in Madison County and the Adirondack Region using citizen science
- P3-134** *Dunn PO, Johnson JA, Morrow M, Whittingham LA; University of Wisconsin-Milwaukee, University of North Texas, US Fish & Wildlife Service* What genes are important to survival in one of America's most endangered birds?
- P3-135** *Adams CIM, Hoekstra LA, Muell MR, Janzen FJ; Iowa State University* The painted turtle (*Chrysemys picta*) as a model for environmental DNA (eDNA) monitoring of imperiled aquatic reptiles
- P3-136** *Fink AA, Veech JA; Texas State University* Analysis of dispersal, survival, and habitat selection of reintroduced Texas horned lizards (*Phrynosoma cornutum*).
- P3-137** *Goff CB, Gabor CR, Walls SC; Texas State University, US Geological Survey* Core vs. periphery: Linking environmental variables and stress with amphibian declines
- P3-138** *Fang IJ, Walters LJ; University of Central Florida* Breakpoint: Understanding how bioeroders impact intertidal oyster restoration
- P3-139** *Bell MM; Texas State University* Comparison of fine scale vegetative parameters at active and inactive Gulf Coast kangaroo rat burrow sites
- P3-140** *Kipketer AK, Gituku BC, Waigwa CM, Kipkering PS, Ng'Weno CC, Wetzel G*, Collins E, Schreiber AM; OI Pejeta Conservancy, St Lawrence University* Cattle for conservation: Bomas for improved Savannah ecosystems
- P3-141** *Rich M, Thompson CM*, Popescu VD; Ohio University* Using multi-species modeling to understand the terrestrial carnivore community composition and distribution in Southeastern Ohio
- P3-142** *Abney CJ, Eernisse DJ, Vendetti JE; California State University, Natural History Museum of Los Angeles County* How are SoCal natives? Current status of southern California helicoid land snails (*Helminthoglypta*) using historical records and DNA sequencing
- P3-143** *Nepshinsky MM, Liechty JS, Minor AK, Taylor SS, Pierce AR; Nicholls State University, Louisiana State University* Determining sex of two monomorphic seabirds at the Isles Dernieres Barrier Island refuge in Louisiana
- P3-144** *Williams JD, Ehl KM, Raciti SM; Hofstra University* Impacts of anthropogenic debris on salt marsh vegetation: Outcomes and recommendations for volunteer clean-up efforts
- P3-145** *Martin KL, Hieb KA, Roberts DA; Pepperdine University, California Department of Fish & Wildlife, NOAA, Cordell Banks National Marine Sanctuary* Beach-spawning california grunion show effects of climate change on reproduction
- Metabolism**
- P3-146** *Sandoval J, Gerson AR, McCue MD; St. Mary's University, University Mass Amherst* Dehydration causes increased reliance on protein oxidation in mice: A test of the protein-for-water hypothesis in a mammal
- P3-147** *Price ER, Sirsat TS, Sirsat SKG, Dzialowski EM; University of North Texas* A test of the membrane pacemaker hypothesis during the ontogeny of endothermy in an altricial bird
- P3-148** *Watts-Kerr CS, Secor SM; University of Alabama* Postfeeding energetics of the vinegaroon
- P3-149** *Le Pogam A, Love OP, Vezina F; Université du Québec à Rimouski, University of Windsor* Influence of body remodeling on metabolic performance of snow buntings preparing for a long distance migration towards Arctic breeding grounds

- P3-150** *Barts N, Keithline GA, Tobler M; Kansas State University* The aerobic scope of an extremophile fish and its significance for metabolic physiology in hydrogen sulfide environments
- P3-151** *Keegan A, Frederich M; University of New England* The effect of fear to be eaten by green crabs (*Carcinus maenas*) on the morphology and physiology of soft shell clams (*Mya arenaria*)
- P3-152** *Neurohr JM, Koopman HN, Ruffin TC, Caliri AW, Kinsey ST; University of North Carolina Wilmington* Standard metabolic rate is positively correlated with membrane lipid content in a variety of marine invertebrates
- P3-153** *Marks C, Nickles N, Wise T, Mavroidis S; University of Mount Union* Incubation temperature alters post-hatching temperature-specific metabolic rates in the northern bobwhite quail *Colinus virginianus*
- P3-154** *Koch R, Kelting T, McCue MD, Hatle JD; University of North Florida, St. Mary's University* Oxidation of cysteine is affected little by life-extending dietary restriction and is much lower than oxidation of the similar amino acid alanine, in lubber grasshoppers
- P3-155** *Ruffin TC, Koopman HN, Neurohr JM, Caliri AW, Kinsey ST; University of North Carolina Wilmington, University of North Carolina Wilmington, Wilmington* The relationship between standard metabolic rate and lipid content in fishes
- P3-156** *Griego MS, Desimone J, Gutierrez Ramirez M, Gerson AR; UMass Amherst* Aminopeptidase-N modulation assists lean mass anabolism during refueling in the white-throated sparrow (*Zonotrichia albicollis*)
- P3-157** *P Karki N, Colombo RE, Gaines K, Maia A; Eastern Illinois University* Effects of 17 β estradiol in the metabolism and morphology of sunfish species
- P3-158** *Alba JC, Bergstrom CA, Tamone SL; University of Alaska* Investigating metabolic rates of estuarine groundfish in habitats of varying glacial effluence
- P3-159** *Faye LE, Stillman JH; San Francisco State University, University of California, Berkeley* Salinity and temperature stressors increase metabolic and grazing rates in *Phyllaplysia taylori*
- P3-160** *Rangel R, Johnson D; California State University Long Beach* Evaluating the effects of temperature on the metabolic rate of the bluebanded goby (*Lythrypnus dalli*)

Muscle Physiology

- P3-161** *Bunge ZD, Biber J, Ferguson SB, Medler S; SUNY Fredonia* Integrating research and undergraduate education: Cloning ghost crab myosins
- P3-162** *Petersen JO, Schuppe ER, Fuxjager MJ; Wake Forest University* Evidence for specialized calcium trafficking in a muscle that controls rapid woodpeckers displays
- P3-163** *Soo EM, Dearolf JL, Thometz NM, Dunkin RC, Williams TM, Noren DP, Holt MM; Hendrix College, University of California, Santa Cruz, Northwest Fisheries Science Center, NOAA* Myosin heavy chain expression in cetecean vocal muscles
- P3-164** *Tahir U, Nishikawa KC; Northern Arizona University* Force-velocity relationship of muscle varies during isovelocity, after-loaded isotonic and cyclical muscle contractions
- P3-165** *Stupski SD, Schilder RJ; Pennsylvania State University* Age-related functional changes in the flight apparatus of the hawkmoth, *Manduca sexta*

Energetics

- P3-166** *Pigg VA, Champagne AM, Allen HC, Williams JB; University of Southern Indiana, The Ohio State University* Effects of ambient temperature on the organization of lipids of the avian stratum corneum
- P3-167** *Gee ZG, Skopec MM, Schramm K, Dearing MD; Weber State University, University of Utah* Downregulation of glutathione S-transferase may play a role in dietary specialization
- P3-168** *Pelletier G, Frederich M; University of New England* Differential stress tolerance at varying stages of the molt cycle in the juvenile european green crab, *Carcinus maenas*
- P3-169** *Logan L, Frederich M; University of New England* Differential behavior, habitat destruction, and stress tolerance in three populations of *Carcinus maenas*
- P3-170** *Yacoo KE, Dayfield DJ, Maxwell DN, Barawi KM, Abraham NK, Evans KE, Belanger RM*, Roberts-Kirchhoff ES; University of Detroit Mercy, Marygrove College* Examining atrazine accumulation and histological changes in the hepatopancreas of crayfish post-exposure
- P3-171** *Kahn PC, Cao D, Burns M, Boyer SL; Macalester College, San Diego State University* Nuptial gifts in the leiobunine harvestman (*Opiliones, Sclerosomatidae*): Nourishing treat or sensory trap?

- P3-172** *Isabella I, McCue MD; St. Mary's University*
The postabsorptive and postprandial metabolic rates of praying mantises: Comparisons across species, body masses, and meal sizes
- P3-173** *Berlow M, Derryberry E, Norris E; Tulane University*
A comparison of lethal and non-lethal sampling of avian gut microbial communities
- P3-174** *Ionescu A, Winward J, Jimenez AG; Colgate University*
The effect of aging on cellular metabolic rates in domestic dogs
- P3-175** *Winward J, Ionescu A, Jimenez AG; Colgate University*
Oxidative stress: The balance between pro/anti-oxidants, and its implications for lifespan in the domestic dog, *Canis lupus familiaris*
- P3-176** *Weston NG, Powers DR; George Fox University*
Using deuterium-enriched sucrose solution to measure the energetic importance of artificial
- P3-177** *Wass ED, Marian AD, Gerald GW; Nebraska Wesleyan University*
Scaling of speed, excess post-exercise oxygen consumption, and energetic cost of lateral undulation in cornsnakes (*Pantherophis guttatus*)
- P3-178** *Thonis AE, Ceballos RM, Tuen AA, Levesque DL; Rensselaer Polytechnic Institute, University of Arkansas, University Malaysia Sarawak, University of Maine*
Small, hot, and fuzzy - high upper critical limits and a large thermoneutral zone in a small tropical mammal
- P3-179** *Vezina F, Milbergue M; Universite du Quebec a Rimouski*
Small birds can improve thermogenic capacity without changing their muscle size
- P3-180** *Applebaum SL, Pan T-CF, Manahan DT; University of Southern California*
Differential temperature sensitivity of respiration rate, protein synthesis, and ion transport in bivalve larvae
- P3-181** *Maloiy GMO, Rugangazi BM, Rowe MF*; University of Nairobi, University of the West Indies*
Preliminary assessment of gait specific heat storage in large desert-adapted ungulates a dromedary camel and domestic donkey during submaximal treadmill exercise
- P3-182** *Tricola GM, Simons MJP, Kitaysky AS, Nisbet ICT, Lank DB, Safran RJ, Winkler DW, Thompson PM, Vleck CM, Haussmann MF; Bucknell University, University Sheffield, University Alaska, ICT Nisbet and Co., Simon Fraser University, University Colorado, Cornell University, University Aberdeen, Iowa State University*
Telomeres and maximum lifespan in birds
- P3-184** *Dickson K, Malik A, Kitagawa T, Fujioka K, Schuller K; California State University Fullerton, Flinders University, University Tokyo, National Research Institute of Far Seas Fisheries*
The transition to regional endothermy in Pacific bluefin tuna, *Thunnus orientalis*

Reproductive Physiology

- P3-185** *Brasher AL, Zhang Y, Kavazis AN, Hood WR; Auburn University*
Does relative activity prior to breeding improve mitochondrial function and oxidative damage following a reproductive event?
- P3-186** *Jennings EC, Hendershot JM, Shemas S, Ribeiro JMC, Weirauch MT, Benoit JB; University of Cincinnati, National Institute of Allergy and Infectious Diseases, Cincinnati Children's Hospital Medical Center*
RNA-seq analysis sheds light on the molecular mechanisms underlying pregnancy in the live-bearing cockroach, *Diploptera punctata*
- P3-187** *Bower ED, Tamone SL; University of Alaska Southeast*
Morphology and Reproductive physiology of the Northern spot shrimp *Pandalus platyceros* from Alaska
- P3-188** *Kallenberg MK, Zhang Y, Hyatt HW, Kavazis AN, Hood WR; Auburn University*
Reproductive effects on lipid transport capacity in liver and blood in rats
- P3-189** *Molina EM, Wrobel ER, Navara KJ, Mendonca MT; Auburn University, Georgia University*
AR concentration in the germinal disc region of the hen (*Gallus gallus*).
- P3-190** *Josefson CC, Hood WR; Auburn University*
Using phenotypic variation in the lab mouse to deduce physiological variables that correlate with life-history variation
- P3-191** *Curry JE, Navara KJ; University of Georgia*
Examining natural variation in offspring sex ratios produced by Japanese quail, *Cortunix japonica*
- P3-192** *Roberge TM, Wibbels T; University of Alabama at Birmingham*
Relative period of temperature sensitive is dependent upon specific incubation temperature

Reproduction

- P3-193** *Turner MD, Roark AM; Furman University*
Effects of phytochemical treatment on gonad development of aposymbiotic *Aiptasia pallida* anemones

- P3-194** *Giraudeau M, Ziegler AK, Ducatez S, McGraw KJ, Tschirren B, Giraudeau M; ASU* Interactive and long-term effects of yolk androgens and antioxidants in birds
- P3-195** *Francis RA, Woodward AR, Moore BC; Sewanee: The University of the South, Florida Fish and Wildlife Conservation Commission* Morphology changes in alligator phallic glans via artificial inflation
- P3-196** *Shakir RG, Granello ME, Spears DC, Moore BC; Sewanee: The University of the South* Assessing alligator phallic collagen architecture using picrosirius red staining & polarized light microscopy
- P3-197** *Malpica AM, Langerhans RB, Moore BC; Sewanee: The University of the South, North Carolina State University* Comparing two techniques of analyzing sexual dimorphic *Gambusia affinis* skeletal structure: Clearing and staining to X-Ray
- P3-198** *Sommers AS, Rogers EJ, McGuire LP; Texas Tech University, Lubbock* Phenotypic flexibility in body composition of Brazilian free-tailed bats
- P3-199** *Berlin CG, Dornon MK, Feldman A, Gee JK, Moran CJ, Ellerby DJ; Wellesley College, Fairfield University, Wellesley College* Estimating the energetic costs of sunfish nesting behavior

Ecomorphology

- P3-200** *Chang U, Allen B, Rankin CJ; University of California, Davis, Duke University, University of the Witwatersrand* Mantid hind limb morphology is related to vegetation complexity in South African savannas
- P3-201** *Baumgart SL, Westneat MW; University of Chicago* Geometric morphometric analysis of the avian wing and sternum
- P3-202** *Navon D, Olearczyk N, Albertson RC; University Massachusetts Amherst* Evaluating changes in zebrafish bone deposition rates across benthic and pelagic diets
- P3-203** *Rzucidlo CL, Moran CJ, Gerry SP; Fairfield University* Taking functional morphology to the field: Do bluegill feed differently in the wild versus the lab?
- P3-204** *Carlowicz R, Moran CJ, Gerry SP; Fairfield University* Variation in feeding behavior in polyphenic bluegill
- P3-205** *Croghan J; Ohio University* Diet and the cryptodiran skull: A 3D morphometric analysis
- P3-206** *Fulbright MF, Penning DA, Hillard CJ; University of Louisiana at Lafayette, Missouri Southern State University* Scaling of terrestrial and arboreal defensive strikes by ratsnakes
- P3-207** *Jones AJ, Orr KO, Zuelow AN, Bourdeau PE; Humboldt State University* Seasonal and spatial variation in aboral ossicle density and body shape in *Pisaster ochraceus*.
- P3-208** *Charifson DM; Stony Brook University* Phenotypic plasticity in gastropod shell microstructure: Effect of predator cues and reduced growth rates

Locomotion: Variable Substrates

- P3-209** *Wilbur JJ, Morinaga G, Bergmann PJ; Clark University* Power analysis of a novel nonlinear phylogenetic regression model
- P3-210** *Cheu AY, Bergmann PJ; Clark University* Increasing complexity of form-function relationships when considering multiple modes of locomotion
- P3-211** *Usherwood JR; The Royal Veterinary College* An introduction to the muscle–mechanical compromise framework
- P3-212** *Taylor-Burt KR, Biewener AA; Harvard University* A duck out of water: Hindlimb kinematics during aquatic vs terrestrial takeoffs in mallard ducks, *Anas platyrhynchos*
- P3-213** *Holden RA, Cheu A, Bergmann PJ; Clark University* Performance variation in basilisk lizards during different aquatic modes of locomotion
- P3-214** *Schwartz MK, Olberding JP; University of South Florida* Tradeoffs in swimming and jumping performance in aquatic and arboreal frogs

Locomotion: Terrestrial

- P3-215** *Flynn CM, Puzey JR; College of William and Mary* A comparative study of the biomechanics of coiling tendrils
- P3-216** *Gerald GW, Thompson MM, Levine TD, Wrinn KM; Nebraska Wesleyan University, Carroll University, University of Wisconsin* Leg autotomy and surface incline interactively affect speed and kinematics of pholcid spiders (*Pholcus manueli*)
- P3-217** *Ye D, Gibson JC, Suarez AV; University of Illinois at Urbana-Champaign* Jump mechanics in the ant *Gigantiops destructor* (Hymenoptera: Formicidae)
- P3-218** *Mendoza E, Azizi E, Moen DS; Oklahoma State University, University of California, Irvine* Anuran jumping performance as a consequence of changes in aponeurosis stiffness

- P3-219** Reynaga CM, Eaton C, Azizi E; University of California, Irvine Effects of substrate compliance on hindlimb kinematics of jumping Cuban tree frogs (*Osteopilus septentrionalis*)
- P3-220** Crockett ME, Bergmann PJ; Clark University Running on uneven surfaces: The effect of substrate particle size and unevenness on performance
- P3-221** Lee CY, Hunt N, Full RJ; University of California, Berkeley Rod running performance and inter-leg coordination is unchanged by inversion
- P3-222** Kinsey CT, McBrayer LD; Georgia Southern University The effect of obstacles and forelimb positions on bipedal locomotion in lizards
- P3-223** Mathew T, Mass S; SUNY New Paltz When axolotls metamorphose: The kinematics of salamanders that shouldn't walk
- P3-224** Kaczmarek EB, Summers AP, Moser ML; University of Miami, University of Washington, National Marine Fisheries Service, NOAA Burying behavior in pacific lamprey ammocoetes
- P3-225** Diaz Cruz K, Astley HC, Mendelson JR, Goldman DI; University of Puerto Rico, University of Akron, Zoo Atlanta Undulation on granular media: A robophysical investigation
- P3-226** Tingle JL, Higham TE; University of California, Riverside Morphological correlates of sidewinding locomotion in vipers
- P3-227** Moon BR, Spanghero Vicente Ferreira G, Penning DA; University of Louisiana at Lafayette, Instituto de Biociências, Letras e Ciências Exatas - UNESP/IBILCE, Missouri Southern State University High performance in a tight spot: Kingsnake pinioning pressures in simulated tunnels
- P3-228** Sumner B; Stony Brook University The evolution of the cost of walking and running in amniotes
- P3-229** Thompson NE, Demes B, Ostrofsky KR, McFarlin SC, Robbins MM, Stoinski TS, Almécija S; NYIT College of Osteopathic Medicine, Stony Brook University, The George Washington University, Max Planck Institute for Evolutionary Anthropology, Dian Fossey Gorilla Fund International Biomechanics of knuckle-walking in African apes
- P3-230** Smith B, Usherwood J; Royal Veterinary College Automated measurement of mouse kinematics and kinetics under centrifuge induced hypergravity
- P3-231** Yégian AK, Gillinov S, Tucker Y, Lieberman DE; Harvard University, University of Cambridge Why we bend our arms when we run, and evolution of arm proportions in hominins
- P3-232** Russo KA, Byrnes G; Siena College The role of arm-swing while running over uneven terrain
- P3-233** Schroeder RT, Croft JL, Bertram JEA; University of Calgary, Edith Cowan University, Cumming School of Medicine Exploring the dying art of traditional load carrying: Mechanical properties of bamboo farmworker poles in Vietnam
- P3-234** Schwartz NL, Patel BA, Garland Jr. T, Horner AM; California State University, San Bernardino, University of Southern California, University of California, Riverside The effects of selection and exercise on femur morphology in mice selected for high running
- P3-235** Zsoldos RR, Voegelé A, Valentin S, Weber A, Licka TF; University of Natural Resources and Life Sciences Vienna, University of Bonn, University of Edinburgh, University of Veterinary Medicine Vienna Comparative study on equine and ovine gluteus medius muscle activity pattern during treadmill trot
- P3-236** Etnier SA, Quilter LAS, Lyons R; Butler University Hind foot reversal in the family Sciuridae
- P3-237** Edwards EA, Su A; Cleveland State University Variation of bone microarchitecture within and among contemporaneous species of fossil horses: Feasibility
- P3-238** Regnault S, Allen V, Hutchinson JR; Royal Veterinary College Modelling the double patellae of ostriches (*Struthio camelus*), and their effects on muscle moment arms

Ontogeny, Growth, and Scaling

- P3-239** Warkentin KM; Boston University Development of red-eyed treefrog embryos: A staging table for integrative research on environmentally cued hatching
- P3-240** Rodemoyer EM, Robertson JC; Westminster College Quantifying electrosensory ampullae on the rostrum of developing paddlefish
- P3-241** Hellier RG, Robertson JC; Westminster College Quantifying electrosensory ampullae on the operculum of developing paddlefish
- P3-242** Johnson K, McClinton J, Jennings DH*; Southern Illinois University Edwardsville Immunohistochemical analysis of jaw and buccal pumping muscle development and metamorphosis in tadpoles with different feeding strategies.

- P3-243** Hedrick BP, Dodson P; University of Massachusetts, Amherst, University of Pennsylvania Assessing alligator limb architecture using geometric morphometrics: Allometry, disparity, and integration
- P3-244** Doyle JB, Arias AA, Aldana M, Bryan P, Castro A, Gonzalez E, Mejia V, Noriega M, Vega K, Membreno NA, Elsey RM, Owerkowicz T; California State University San Bernardino, Louisiana Department of Wildlife and Fisheries Cracks in eggshells impair embryonic growth in the American alligator
- P3-245** Arias AA, Doyle JB, Vega K, Mejia V, Bryan P, Aldana M, Gonzalez E, Noriega M, Membreno NA, Castro A, Elsey R, Owerkowicz T; CSUSB, UCR, Louisiana Department of Wildlife and Fisheries Effects of exogenous acetazolamide on growth and calcium flux in alligator embryos
- P3-246** Sun S, Werning S; Des Moines University Growth and scaling in male and female spectacled caiman (*Caiman crocodilus*) from Venezuela
- P3-247** Smith TD, McMahon MJ, Millen ME, Li L, Llera C, Burrows AM, Zumpano MP, Deleon VB; Slippery Rock University, Duquesne University, University of Florida, New York Chiropractic College Growth characteristics of the anterior cranial base and midface in newborn primates
- P3-248** Dubansky BH, Hoang AN; Tarleton State University Crocodylian skin as a model for studying soft tissue mineralization in human disease
- P3-249** Nochimson JM, Heslin ME, Rose CS; James Madison University Testing for phylogenetic and life history effects on the shape trajectories of salamander feeding skeleton
- P3-250** Ackles AL, Hernandez LP; George Washington University Hypertrophy of the cypriniform pharyngeal jaw: Growth patterns of branchial arches within cypriniforms and their relatives
- P3-251** Rich M, Donatelli C*, Summers A, Gibb A; Cornell University, Tufts University, University of Washington, Northern Arizona University Amp it up: Morphological and kinematic scaling in the penpoint gunnel (*Apodichthys flavidus*)
- P3-252** Seidel R, Lyons K, Blumer M, Zaslansky P, Fratzi P, Weaver JC, Dean MN; MPIKG, CSULB, MUI, Charité, Wyss Institute Ultrastructural and developmental features of the tessellated endoskeleton of elasmobranchs (sharks and rays)
- P3-253** Pfeiffenberger JA, Summers AP; Temple University, University of Washington Scaling and morphology of the armor in the northern spearnose poacher, *Agonopsis vulsa*
- P3-254** Chow B, Cohen CS; San Francisco State University Growth rates of the earliest juvenile stages of the sessile marine invertebrate: *Botrylloides violaceus*
- P3-255** Dingwall HL, Grinstein M, Capellini TD, Galloway JL; Harvard University, Massachusetts General Hospital Transcriptional changes during early postnatal tendon growth
- P3-256** Oliver JD, Pierce SE, Hautier L; Brown University, Harvard University, Université Montpellier II Development and patterning of xenarthrous morphology in the nine-banded armadillo
- P3-257** Marian AD, Wass ED, Gerald GW; Nebraska Wesleyan University Scaling of resting metabolic rates in cornsnakes (*Pantherophis guttatus*) with comparisons to other snakes varying in activity levels
- P3-258** Weber RC, Hoekstra LA, Janzen FJ; Iowa State University Modeling individual growth of a long-lived reptile *Chrysemys picta*

Ventilation and Circulation

- P3-259** Winn L, Flammang BE; New Jersey Institute of Technology Fluid dynamics of chondrichthyan egg cases
- P3-260** Korzeniecki NW, Cassidy DP, Waters JS; Providence College Metabolic dynamics: From individuals to whole colonies
- P3-261** Wagner JM, Harrison JF; Arizona State University Hypermetric scaling of spiracles in some scarab beetles
- P3-262** Schachner ER, Sedlmayr JC, Schott R, Lyson TR, Lambert M; Louisiana State University Health Sciences Center, Wildlife Rehabilitation Center of Minnesota, Denver Museum of Nature and Science, Universität Bon Pulmonary anatomy and aplasia in the common snapping turtle (*Chelydra serpentina*): Perspectives on the evolution of the cryptodiran lung
- P3-263** Johnson AS, Ellers O, Qu X, Dickinson ES, Harmon K, Armyaw A, Dickinson P; Bowdoin College The role of feedback from physiologically relevant stretches in controlling heart contraction in the American lobster, *Homarus americanus*

Sunday Schedule of Events

Events take place in the New Orleans Convention Center, unless otherwise noted as Riverside Hilton (H)

EVENT	TIME	LOCATION
Speaker Ready Room	7:00 AM – 10:00 AM	Room 230
Registration	7:30 AM – 2:30 PM	226/227 Foyer
Coffee Break AM	9:30 AM – 10:30 AM	200 Rooms Foyer
SPECIAL LECTURE		
Moore Lecture	3:45 PM – 4:45 PM	Room 208/209/210
SYMPOSIA ORAL PRESENTATIONS		
S9: The Development and Mechanisms Underlying Inter-individual Variation in Pro-social Behavior	7:45 AM – 3:30 PM	Room 206
S10: Physical and Genetic Mechanisms for Evolutionary Novelty	7:45 AM – 3:30 PM	Room 208/209
S11: Low Spatial Resolution Vision - Function and Evolution	8:00 AM – 3:30 PM	Room 207
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 111: Muscle Physiology	8:00 AM – 9:30 AM	Room 210
Session 112: Sexual Selection II	8:00 AM – 9:45 AM	Room 211-213
Session 113: Evolutionary Physiology I	8:00 AM – 9:45 AM	Room 214
Session 114: Evolutionary Morphology III	8:00 AM – 9:30 AM	Room 215-216
Session 115: Stress III	8:00 AM – 9:45 AM	Room 217
Session 116: Adaptation	8:00 AM – 9:45 AM	Room 218
Session 117: Feeding: Kinematics	8:00 AM – 9:45 AM	Room 220
Session 118: Swimming I	8:00 AM – 9:30 AM	Room 219
Session 119: Chemical Ecology	8:15 AM – 9:30 AM	Room 221
Session 120: Behavioral Ecology of Predator-Prey Interactions	8:00 AM – 9:45 AM	Room 222
Session 121: Host Immunity and Immune Responses	8:15 AM – 9:45 AM	Room 223
Session 122: Reproduction and Metabolism I	8:00 AM – 9:45 AM	Room 224
Session 123: Locomotion: At the Water's Edge	10:00 AM – 12:00 PM	Room 210
Session 124: Neuromechanics I	10:15 AM – 11:45 AM	Room 211-213
Session 125: Evolutionary Physiology II	10:15 AM – 12:00 PM	Room 214
Session 126: Evolutionary Morphology IV	10:30 AM – 12:00 PM	Room 215-216
Session 127: Stress IV	10:15 AM – 12:00 PM	Room 217
Session 128: Muscle Function: Locomotion	10:15 AM – 12:00 PM	Room 218
Session 129: Feeding: Bites and Strikes	10:00 AM – 12:00 PM	Room 219
Session 130: Swimming II	10:30 AM – 12:00 PM	Room 220
Session 131: Population Biology	10:00 AM – 12:00 PM	Room 221
Session 132: Behavioral and Ecological Toxicology	10:15 AM – 12:00 PM	Room 222
Session 133: Morphogenesis and Differentiation	10:45 AM – 12:00 PM	Room 223
Session 134: Metabolism	10:15 AM – 12:00 PM	Room 224
Session 135: Energetics II	1:30 PM – 3:15 PM	Room 210
Session 136: Neuromechanics II	1:30 PM – 3:30 PM	Room 211-213
Session 137: Evolutionary Physiology III	1:45 PM – 3:00 PM	Room 214
Session 138: Evolutionary Morphology V	1:30 PM – 3:15 PM	Room 215-216
Session 139: Developmental Endocrinology	1:30 PM – 2:45 PM	Room 217
Session 140: Muscle Function: Feeding	1:30 PM – 3:00 PM	Room 218

Session 141: Gutting it out	1:30 PM – 2:45 PM	Room 219
Session 142: Infection and Immunity Come at a Cost	1:30 PM – 3:00 PM	Room 220
Session 143: Biodiversity	1:30 PM – 3:15 PM	Room 221
Session 144: Mate Choice and Sexual Selection	1:45 PM – 3:30 PM	Room 222
Session 145: Education	1:30 PM – 3:00 PM	Room 223
Session 146: Stress Physiology II	1:30 PM – 3:00 PM	Room 224

COMMITTEE & BOARD MEETINGS

Executive Committee	7:00 AM – 9:00 AM	Magenta (H)
Public Affairs Committee	12:00 PM – 1:30 PM	Room 229

WORKSHOPS AND PROGRAMS

Workshop: “Establishing Standards for Video Data Management”	12:00 PM – 1:30 PM	Room 215-216
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SOCIAL EVENTS

Society-Wide Social in Honor of Students and Post-Docs	5:00 PM – 7:00 PM	Room R02/R03/R04
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Sunday Program Symposia

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

7:45 AM – 3:30 PM Symposium S9 Room 206

The Development and Mechanisms Underlying Inter-individual Variation in Pro-social Behavior

Chairs: Ben Dantzer, Dustin Rubenstein

7:45 am	S9-1	<i>Dantzer B; University of Michigan</i>	Introduction: What is the importance of individual variation in cooperativeness?
8:00 am	S9-2	<i>Rubenstein DR; Columbia University</i>	From individual to group-level variation in cooperative behaviors and complex societies
8:30 am	S9-3	<i>Van Cleve J; University of Kentucky</i>	Stags, hawks, and doves: Individual variation in helping in social evolution theory
9:00 am	S9-4	<i>Dornhaus A; University of Arizona</i>	Social insect colonies as individuals and groups: Development and evolution of individual differences

9:30 am Coffee Break 200 Rooms Foyer

10:00 am	S9-5	<i>Sheehan MJ; Cornell University</i>	Not all partners are equal: A role for identity signaling in generating differential cooperative behavior.
10:30 am	S9-6	<i>Saltzman W; University of California, Riverside</i>	Paternal behavior in a biparental rodent: Between- and within-animal variation
11:00 am	S9-7	<i>Smith JE, Petelle MB, Jerome EL, Cristofari H, Blumstein DT; Mills College, University of California</i>	The role of oxytocin in shaping prosocial behavior: New evidence from free-living ground squirrels and other social mammals
11:30 am	S9-8	<i>Soares MC; CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Universidade do Porto</i>	The neurobiology of cooperation: The cleanerfish swim into the spotlight

12:00 pm Lunch Break

1:30 pm	S9-9	<i>Hofmann HA, Hofmann J; The University of Texas at Austin</i>	Neural and molecular mechanisms of cooperative defense
2:00 pm	S9-10	<i>Kelly A, Ophir A; Cornell University</i>	The influence of family dynamics on developmental trajectories and modulation of social behavior in prairie voles
2:30 pm	S9-11	<i>Herb BR; Johns Hopkins University</i>	Epigenetic basis of development of social behaviors in honeybees
3:00 pm	S9-12	<i>Rehan SM; University of New Hampshire</i>	Social aggression, experience, and brain gene expression in a subsocial bee

3:30 pm Coffee Break 200 Rooms Foyer

7:45 AM – 3:30 PM Symposium S10 Room 208/209

Physical and Genetic Mechanisms for Evolutionary Novelty

Chairs: Stuart Newman, Tom Stewart

7:45 am	S10-1	<i>Newman SA, Stewart TA, Wagner GP; New York Medical College, Yale University</i>	Introduction to the symposium physical and genetic mechanisms for evolutionary novelty
8:00 am	S10-2	<i>Bhat R, Glimm T, Newman SA, Bhat R; Indian Institute of Science, Western Washington University, New York Medical College</i>	Reaction, diffusion and adhesion by lectins in limb development: Taking it up a notch
8:30 am	S10-3	<i>Sharpe J; Centre for Genomic Regulation</i>	Changing while staying the same: Self-organized patterning allows a deeply-conserved gene circuit to produce varying skeletal arrangements during limb evolution
9:00 am	S10-4	<i>Young NM; University of California, San Francisco</i>	Evolutionary integration of the amniote limb

9:30 am Coffee Break 200 Rooms Foyer

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10:00 am	S10-5	<i>Stewart TS, Noonan JP, Sanger TJ, Wagner GP; Yale University, Loyola University in Chicago</i>	The genetic basis of digit identity and evolution of the avian wing
10:30 am	S10-6	<i>Vargas AO, Ruiz-Flores M, Núñez-León D, Smith-Paredes D, Acosta Hospitaleche C, Haidr N; Universidad de Chile, Museo de La Plata</i>	The role of embryonic muscular activity in the skeletal evolution of vertebrates
11:00 am	S10-7	<i>Tran M, Tsutsumi R, Cooper KL*; University of California, San Diego</i>	Musculoskeletal integration in hindlimb evolution of the bipedal three-toed jerboa
11:30 am	S10-8	<i>Fröbisch NB, Bickelmann C, Lima G, Triepel S, Kawaguchi A, Schneider I; Museum für Naturkunde, Leibniz Institute for Evolution and Biodiversity Science, Center of Regenerative Therapies Dresden, Universidade do Para</i>	Evolution and development salamander limbs
12:00 pm	Lunch Break		
1:30 pm	S10-9	<i>Albertin CB, Ragsdale CW; University of Chicago</i>	Conservation, convergence, and novelty in <i>Octopus bimaculoides</i> embryogenesis
2:00 pm	S10-10	<i>Bartlett ME, Ayhan D, Klein H, Handakumbura P, Whipple CJ, Babbitt C; University of Massachusetts Amherst, Brigham Young University</i>	Novelty in grass flowers: Making the links between molecules and morphology
2:30 pm	S10-11	<i>Moustakas-Verho JE, Zimm R, Bentley B, Wyneken J; University of Helsinki, University of Western Australia, Florida Atlantic University</i>	Evolutionary innovations and developmental experiments in organs of skin
3:00 pm	S10-12	<i>Nijhout HF, McKenna KZ, Reed MC; Duke University</i>	The origin of novelty through the evolution of scaling relationships
3:30 pm	Coffee Break		200 Rooms Foyer

8:00 AM – 3:30 PM Symposium S11

Room 207

Low Spatial Resolution Vision – Function and Evolution

Chair: Anders Garm

8:00 am	S11-1	<i>Nilsson DE; Lund University</i>	Behavioural drive and performance continuity: The why and how in eye evolution
8:30 am	S11-2	<i>Speiser DI; University of South Carolina</i>	Function and evolution of the dispersed visual systems of bivalves and chitons
9:00 am	S11-3	<i>Bok MJ, Nilsson D-E; Lund University</i>	From many, one: Wiring the diverse distributed visual systems of fan worms
9:30 am	Coffee Break		200 Rooms Foyer
10:00 am	S11-4	<i>Garm A, Petie R, Beer S, Wentzel C, Hall M; University of Copenhagen, Australian Institute of Marine Sciences</i>	Eyes and vision in starfish
10:30 am	S11-5	<i>Stöckl A, O'Carroll D, Warrant E; Lund University</i>	Hawkmoths sacrifice spatial resolution to increase sensitivity in dim light
11:00 am	S11-6	<i>Weir PT, Dickinson MH; Caltech, Caltech</i>	Functional imaging reveals a peripheral map of skylight polarization in <i>Drosophila</i>
11:30 am	S11-7	<i>Narendra A, Kamhi JF, Sheehan Z; Macquarie University</i>	Behavioural and neural adaptations in ants for navigating in dim light
12:00 pm	Lunch Break		
1:30 pm	S11-8	<i>Thoen HH, Strausfeld N, Marshall J; University of Queensland, University of Arizona</i>	Pathways underlying colour and polarisation processing in stomatopods
2:00 pm	S11-9	<i>Stewart FJ, Kinoshita M, Arikawa K; Sokendai, Hayama</i>	Colour and motion vision in a tetrachromatic butterfly
2:30 pm	S11-10	<i>Cronin TW, Lin C; UMBC</i>	Crustacean larvae - vision in the plankton
3:00 pm	S11-11	<i>Stahl A, Cook TA, Buschbeck EK*; University of Cincinnati, Wayne State University</i>	A complex lens for a complex eye: Lens composition in diving beetle larval eyes
3:30 pm	Coffee Break		200 Rooms Foyer

Sunday Program Morning Sessions

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

8:00 AM – 9:30 AM		Session 111	Room 210
Muscle Physiology			
<i>Chairs: Ana Jimenez, Marilyn Ramenofsky</i>			
8:00 am	111-1	<i>Carter W, Cooper-Mullin C, McWilliams SR; University of Rhode Island</i>	Turnover of muscle lipids and response to exercise differ between neutral and polar fractions in a model songbird
8:15 am	111-2	<i>Tune T, Irving T, Sponberg S; Georgia Institute of Technology, Illinois Institute of Technology</i>	Microstructure of cockroach muscle provides evidence for workloop dependence on actin-myosin spacing
8:30 am	111-3	<i>Dearolf JL, Weigand KL, Totten DC, Marshall S, Brewington AK; Hendrix College</i>	Effect of multi-course prenatal corticosteroids on breathing muscle fiber-type profiles and myosin heavy chain expression
8:45 am	111-4	<i>Ramenofsky M, Priester C, Koopman H, Gay DM, Dillaman R; University of California, Davis, University of North Carolina, Wilmington</i>	Biochemical and ultrastructural adaptations of avian flight muscle for long distance migration and arrival on the breeding grounds
9:00 am	111-5	<i>Pradhan DS, Ma C, Schlinger BA, Soma KK, Ramenofsky M; University of California, Los Angeles, University of British Columbia, University of California, Davis</i>	Androgen signaling in muscle of a migratory songbird
9:15 am	111-6	<i>Jimenez AG, Dias J, Nguyen T, Reilly B, Anthony N; Colgate University, University of Arkansas</i>	Effects of thermal hormetic priming on muscle oxidative stress and muscle structure in slow-growing and fast-growing <i>Coturnix</i> quail lines
9:30 am		Coffee Break	200 Rooms Foyer
8:00 AM – 9:45 AM		Session 112	Room 211-213
Sexual Selection II			
<i>Chair: Robert Cox</i>			
8:00 am	112-1	<i>Cox RM, Costello RA, Camber BE, McGlothlin JW; University of Virginia, Virginia Tech</i>	Genetic architecture of the <i>Anolis</i> dewlap reveals both shared and sex-specific features of a sexually dimorphic ornament
8:15 am	112-2	<i>Henschen AE, Whittingham LA, Dunn PO; University of Wisconsin, Milwaukee</i>	Do plumage ornaments signal how individuals respond to stress?
8:30 am	112-3	<i>Roberts NS, Mendelson TC; University of Maryland, Baltimore County</i>	Male mate choice contributes to behavioral isolation in sexually dimorphic fish with traditional sex roles
8:45 am	112-4	<i>Enbody ED, Lantz SM, Karubian J; Tulane University</i>	Males and females differ in the production of plumage ornaments in two tropical passerine birds
9:00 am	112-5	<i>Reedy AM, Seears HA, Kahrl AF, Giordano C, Warner DA, Cox RM; University of Virginia, Auburn University</i>	Sexually antagonistic selection emerges in the adult life stage in a sexually dimorphic lizard
9:15 am	112-6	<i>Barnard AA, Fincke OM, Masly JP; University of Oklahoma</i>	How do females evaluate male tactile signals? Quantitative variation in female sensory structures and implications for species recognition, sexual selection, and speciation
9:30 am	112-7	<i>Morris JS, Ruff JS, Potts WK, Carrier DR; University of Utah</i>	Grappling with inefficiency: Socially dominant male house mice have reduced locomotor economy
9:45 am		Coffee Break	200 Rooms Foyer
8:00 AM – 9:45 AM		Session 113	Room 214
Evolutionary Physiology I			
<i>Chair: Charles Watson</i>			
8:00 am	113-1	<i>Ihle KE; Smithsonian Tropical Research Institute</i>	Links between ovary status, sensory perceptions and foraging in a socially plastic bee

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8:15 am	113-2	<i>Watson CM; Midwestern State University</i>	Optimal foraging frequency and its physiological “brackets” in ectotherms
8:30 am	113-3	<i>Levin E, McCue M, Davidowitz G*; University of Arizona, St. Mary's University</i>	Beyond sugar: Allocation and metabolism of nectar amino acids and fatty acids in a lepidopteran
8:45 am	113-4	<i>Matoo OB, Julick CR, Montooth KL; University of Nebraska, Lincoln</i>	Role of genetic variation on the ontogeny of metabolism during development
9:00 am	113-5	<i>Arnold PA, Cassey P, White CR; The University of Queensland, The University of Adelaide, Monash University</i>	Experimental evolution of dispersal-related traits in a model insect: Morphological, physiological, and behavioural responses to spatial selection
9:15 am	113-6	<i>Owerkowicz T, Ivy CM, Scott GR; CSUSB, McMaster</i>	Respiratory turbinate surface area is not affected by adaptation to high-altitude hypoxia in deer mice
9:30 am	113-7	<i>Neel LK, McBrayer LD; Georgia Southern University</i>	Thermal dependence of sprint performance and critical thermal limits in ecologically distinct populations of a small ectotherm

9:45 am **Coffee Break** **200 Rooms Foyer**

8:00 AM – 9:30 AM **Session 114** **Room 215-216**

Evolutionary Morphology III

Chair: Stephanie Crofts

8:00 am	114-1	<i>Zhuang MV, Russell AP, Jamniczky HA, Higham TE; University of California, Riverside, University of Calgary</i>	Evolution of the gecko ankle in relation to the acquisition of frictional adhesion: A geometric morphometric analysis of the mesotarsal joint
8:15 am	114-2	<i>Hagey TJ; Michigan State University</i>	Convergence in gecko toe pad shape
8:30 am	114-3	<i>Bressman NB, Buser T, Summers D, Gibb AC, Summers A; Wake Forest University, Oregon State University, University of Washington, Northern Arizona University</i>	Intertidal sculpins aren't fat, they're big boned! Influence of habitat on pectoral ossification in cottoid fishes
8:45 am	114-4	<i>Pfeiffenberger JA, Hsieh ST, Cziko PA, Cheng CHC; Temple University, University of Oregon, University of Illinois</i>	The pelvic morphology of a bottom-walking Antarctic barbeled plunderfish, <i>Histiodraco velifer</i> , and how it compares to other Antarctic notothenioid fishes
9:00 am	114-5	<i>Crawford CH, Flammang BE; New Jersey Institute of Technology</i>	Skeletal morphology of a walking cavefish
9:15 am	114-6	<i>Soda KJ, Slice DE; Florida State University, University of Vienna</i>	Vector autoregressive-moving average models as tools to visualize differences in shape trajectories

9:30 am **Coffee Break** **200 Rooms Foyer**

8:00 AM – 9:45 AM **Session 115** **Room 217**

Stress III

Chairs: Michelle Rensel, Christine Lattin

8:00 am	115-1	<i>Rensel MA, Ding J, Schlinger BA; University of California, Los Angeles</i>	The (non) stressed brain: Local metabolism regulates corticosterone action in the songbird CNS
8:15 am	115-2	<i>Chouinard-Thuly L, Reddon AR, Leris I, Earley RL, Reader SM; McGill University, Utrecht University, University of Alabama</i>	Developmental experience affects habituation to a mild stressor in female but not male guppies
8:30 am	115-3	<i>Newman AEM; University of Guelph</i>	The influence of the early-life environment on stress physiology and fitness in the wild
8:45 am	115-4	<i>Ernst DK, Wilsterman K, Kumaravel J, Bentley GE; University of San Francisco, University of California, Berkeley</i>	Ovarian GnIH expression and steroidogenesis in response to acute stress in an opportunistically-breeding songbird
9:00 am	115-5	<i>Pritchard CE, Clinchy M, Zanette LY, Sheriff MJ; Penn State University, University of Victoria, University of Western Ontario</i>	Direct and indirect predation cues affect prey foraging behavior and physiology

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9:15 am	115-6	<i>Zimmer C, Taff CC, Scheck D, Vitousek MN; Cornell University</i>	Effects of predator type and proximity on glucocorticoid level
9:30 am	115-7	<i>Graham MA, Cooney B, Earley RL, Baker J, Foster SA; Clark University, University of Alabama</i>	Evolutionary history matters: Maternal hormonal response to a natural stressor and effects on offspring growth and behavior

9:45 am **Coffee Break** **200 Rooms Foyer**

8:00 AM – 9:45 AM **Session 116** **Room 218**

Adaptation

Chair: Ryan Martin

8:00 am	116-1	<i>Gamboa MP, Sillett TS, Funk WC, Ghalambor CK; Colorado State University, Smithsonian Institution</i>	The role of selection and gene flow in shaping thermal tolerance of song sparrow populations exposed to a climatic gradient
8:15 am	116-2	<i>Emberts Z, Miller CW, Kiehl D, St. Mary CM; University of Florida</i>	Beyond escaping predation: Autotomy can reduce the survival cost of injury
8:30 am	116-3	<i>Kobiela ME, Snell-Rood EC; University of Minnesota</i>	Effects of road salt on butterfly life history and potential for adaptation to high sodium levels
8:45 am	116-4	<i>Tobler M, Barts N, Passow CN, Greenway R, Kelley JL; Kansas State University, Washington State University</i>	Evolution and expression of oxygen transport genes in replicated lineages of sulfide spring fishes
9:00 am	116-5	<i>Orton RO, McBrayer LD; Georgia Southern University</i>	Predation and color polymorphism in a fragmented landscape
9:15 am	116-6	<i>Diamond SE, Chick L, Perez A, Strickler SA, Martin RA*; Case Western Reserve University</i>	Rapid evolution of ant thermal tolerance within an urban heat island
9:30 am	116-7	<i>Hall JM, Warner DA; Auburn University</i>	Thermal spikes caused by the urban heat island effect result in differential egg survival of a non-native lizard (<i>Anolis cristatellus</i>)

9:45 am **Coffee Break** **200 Rooms Foyer**

8:00 AM – 9:45 AM **Session 117** **Room 220**

Feeding: Kinematics

Chairs: Patricia Hernandez, Aaron Olsen

8:00 am	117-1	<i>McGee MD, Borstein SR, Seehausen O, Wainwright PC; EAWAG, UT Knoxville, UC Davis</i>	Machine learning predicts cichlid feeding kinematics from craniofacial morphology
8:15 am	117-2	<i>Olson RA, Montuelle SJ, Williams SH; Ohio University</i>	Stereotypy and flexibility of jaw movements during feeding in pigs
8:30 am	117-3	<i>Scott B, Wilga C, Brainerd E; University of Rhode Island, University of Alaska, Brown University</i>	Three-dimensional motion of the hyoid arch of white-spotted bamboo sharks, <i>Chiloscyllium plagiosum</i> , using XROMM
8:45 am	117-4	<i>Hernandez LP, Brainerd EL; George Washington University, Brown University</i>	Flexibility in cranial kinematics facilitates surface feeding in a bottom-feeding cypriniform fish, <i>Carassius auratus</i>
9:00 am	117-5	<i>Mangalam M, Pacheco MM, Frigaszy DM; University of Georgia</i>	How wild bearded capuchin monkeys crack nuts
9:15 am	117-6	<i>Lemberg JB, Westneat MW, Shubin NH; University of Chicago</i>	Feeding mechanics of <i>Atractosteus spatula</i> : Assessing the advantages of a mobile palate in a lateral-snapper
9:30 am	117-7	<i>Olsen AM, Camp AL, Brainerd EL; Brown University</i>	Balancing complexity and error in kinematic models: Fitting 2D and 3D four-bar linkage models to the opercular mechanism of largemouth bass (<i>Micropterus salmoides</i>)

9:45 am **Coffee Break** **200 Rooms Foyer**

8:00 AM – 9:30 AM Session 118 Room 219

Swimming I

Chair: Sarah Hoffmann

8:00 am	118-1	<i>Hernandez AV, Gervais CR, Rummer JL, Porter MP; Florida Atlantic University, Macquarie University, James Cook University</i>	Life history matters: Swimming and aquatic walking kinematics of epaulette sharks
8:15 am	118-2	<i>Mayerl CJ, Youngblood JP, Rivera G, Vance JT, Blob RW; Clemson University, Arizona State University, Creighton University, College of Charleston</i>	Stability vs maneuverability in freshwater turtles
8:30 am	118-3	<i>Feilich KL; Harvard University</i>	Rethinking gait: A new approach to defining and comparing gaits in fishes
8:45 am	118-4	<i>Hoffmann SL, Leigh SC, Donatelli CM, Brainerd EL, Porter ME; Florida Atlantic University, University of California, Irvine, Tufts University, Brown University</i>	Three-dimensional movements of the pectoral fin during routine turns in the Pacific spiny dogfish, <i>Squalus suckleyi</i>
9:00 am	118-5	<i>Whitlow KR, Oufiero CE; Towson University</i>	A comparative study of locomotor performance in gymnotiform and body-caudal fin swimmers
9:15 am	118-6	<i>Moran CJ, Rzucidlo CL, Gerry SP; Fairfield University</i>	Locomotor physiology of a hibernating fish in the family labridae

9:30 am Coffee Break 200 Rooms Foyer

8:15 AM – 9:30 AM Session 119 Room 221

Chemical Ecology

Chairs: Winnie Ho, Lee Smee

8:15 am	119-1	<i>Ho WW, Riffell JA; University of Washington, Seattle</i>	Scent divergence in floral and vegetative tissues of carnivorous pitcher plants (Sarraceniaceae)
8:30 am	119-2	<i>Kaliszewska ZA, Santana SE, Riffell JA; University of Washington</i>	Plants talking to bats: Chemical diversity of piper scents
8:45 am	119-3	<i>Santana SE, Kaliszewska ZA, Miller LB, Riffell JA; University of Washington</i>	Bats' response to the plant bouquet: Linking bat diet to fruit scent diversity
9:00 am	119-4	<i>Smee DL, Scherer AE; Texas A&M - Corpus Christi</i>	Phenotypic plasticity in oysters mediated by chemical cues from predators and injured prey
9:15 am	119-5	<i>Van Alstyne KL, Padilla DK, Chan M, Yee AK; Western Washington University, Stony Brook University, Emory University</i>	Do dietary chemical signals cue an inducible offense?

9:30 am Coffee Break 200 Rooms Foyer

8:00 AM – 9:45 AM Session 120 Room 222

Behavioral Ecology of Predator-Prey Interactions

Chair: Matt Steffenson

8:00 am	120-1	<i>Steffenson MM, Brown CA; Adams State University, Tennessee Technological University</i>	Leg autotomy and its effects on predator-prey interactions in the wolf spider <i>Pardosa valens</i>
8:15 am	120-2	<i>Wheatley R, Levy O, Pavlic TP, Wilson RS; University of Queensland, Arizona State University</i>	What Factors determine predation success? Considering speed, agility, and strategy for predators and prey
8:30 am	120-3	<i>Jurcak AM, Moore ME, Moore PA; Bowling Green State University, Baldwin Wallace University</i>	Understanding the sensitivity of native and invasive prey to the impact space of a predator.
8:45 am	120-4	<i>Venable CP, Langkilde TL; The Pennsylvania State University, The Pennsylvania State University</i>	Choosing a meal: Lizards differentially kill and consume native versus invasive ants
9:00 am	120-5	<i>Perron J, Verde EA*, Onthank KL; St. George's University, Maine Maritime Academy, Walla Walla University</i>	<i>Octopus rubescens</i> ' prey handling procedures are influenced by bivalve shell thickness and adductor muscle strength

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9:15 am	120-6	<i>Lascala-Gruenewald DE, Mehta R, Liu Y, Denny MW; Stanford University, Uppsala University</i>	Fat-tailed foraging strategies require energetic trade-offs in patchy environments
9:30 am	120-7	<i>Van Breugel F, Dickinson MH; Caltech</i>	Optimal search with unreliable and dangerous cues
9:45 am	Coffee Break		200 Rooms Foyer

8:15 AM – 9:45 AM **Session 121** **Room 223**

Host Immunity and Immune Responses

Chairs: Brian Dolan, Carla Madelaire

8:15 am	121-1	<i>Dolan BD, Dugovich BS, Crane LL, Alcantar BE, Jolles AE; Oregon State University</i>	Multiple innate antibacterial immune response elements are correlated in diverse ungulate species
8:30 am	121-2	<i>Tylan C, Langkilde T; Pennsylvania State University</i>	Local and systemic immune response to phytohemagglutinin: Validation of the PHA skin test in the green anole, <i>Anolis carolinensis</i>
8:45 am	121-3	<i>Madelaire CB, Cassettari BO, Gomes FR; University of São Paulo</i>	Effects of testosterone and corticosterone treatment on immunocompetence of anurans from the Brazilian semi-arid area
9:00 am	121-4	<i>Bruschg GA, Denardo DF; Arizona State University</i>	Hydration immunology: The relationship between hydric state and immune performance
9:15 am	121-5	<i>Haskins DL, Hamilton MT, Stacy NI, Tuberville TD; University of Georgia, University of Florida</i>	Effects of selenium on the hematology, innate immunity, and metabolic rate of yellow-bellied sliders (<i>Trachemys scripta scripta</i>)
9:30 am	121-6	<i>Mydlarz LD, Fuess LE, Pinzon JC, Weil E; University of Texas, University of Puerto Rico</i>	Disease resistant corals activate autophagy over apoptosis after an immune challenge
9:45 am	Coffee Break		200 Rooms Foyer

8:00 AM – 9:45 AM **Session 122** **Room 224**

Reproduction and Metabolism I

Chairs: Ned Place, Melanie Richter

8:00 am	122-1	<i>Metzger DCH, Schulte PM; University of British Columbia</i>	Maternal stress has divergent effects on gene expression patterns in the brains of male and female threespine stickleback
8:15 am	122-2	<i>Place NJ, Albertini DF, Laird DJ, Holmes MM; Cornell University, University of California, University of Toronto</i>	How female naked mole-rats remain fertile for decades: Insights from ovarian histology
8:30 am	122-3	<i>Irvine SQ, Lopez C; University of Rhode Island</i>	Proteomic changes due to elevated temperature in ascidian ovaries
8:45 am	122-4	<i>Hurley LL, McDiarmid CS, Rowe M, Griffith SC; Macquarie University, University of Sydney, University of Oslo</i>	The heat is on: Decrease in avian sperm functionality at high ambient temperatures
9:00 am	122-5	<i>Tezak BM, Sifuentes I, Wyneken J; Florida Atlantic University</i>	Can the sex of sea turtle hatchlings be identified via blood samples?
9:15 am	122-6	<i>Richter MM, Barnes BM, O'Reilly KM, Fenn AM, Buck CL; Western Kentucky University, University of Alaska, University of Portland, Harvard Medical School, Northern Arizona University</i>	The influence of androgens on hibernation phenology of free-living arctic ground squirrels
9:30 am	122-7	<i>Skrip M, Seeram N, Yuan T, Ma H, McWilliams S*; University of Rhode Island</i>	Dietary antioxidants and flight exercise affect how female birds allocate nutrients to eggs: How carry-over effects work
9:45 am	Coffee Break		200 Rooms Foyer

Locomotion: At the Water's Edge

Chairs: Rita Mehta, Yasemin Ozkan Aydin

10:00 am	123-1	<i>Pruett JE, Mayerl CJ, Rivera ARV, Blob RW; Clemson University, Creighton University</i>	Hind limb muscle function in turtles: Is novel skeletal design correlated with novel muscle function?
10:15 am	123-2	<i>Mehta RS, Morgia JM, Salladay K, Jacquemetton CP, Busby WP, Ward AB, Mehta R; University of California, Santa Cruz, Adelphi University</i>	The effects of substrate on terrestrial locomotion in the snowflake moray, <i>Echidna nebulosa</i>
10:30 am	123-3	<i>Tennett KA, Costa DP, Fish FE; West Chester University, University of California, Santa Cruz</i>	Terrestrial locomotion of a massive amphibious mammal: Constraints of northern elephant seals on land
10:45 am	123-4	<i>Choitz C, Minicozzi M, Gibb A; Northern Arizona University</i>	Do amphibious fishes jump farther than fully aquatic fishes?
11:00 am	123-5	<i>Weiss TM, Sane S, Graham M, Jung S, Hedrick TL, Socha JJ; Virginia Tech, National Centre for Biological Sciences, University of North Carolina at Chapel Hill</i>	Jumping on water: Field recordings of the skittering frog <i>Euphlyctis cyanophlyctis</i>
11:15 am	123-6	<i>Ortega-Jimenez VM, Arriaga-Ramirez S*, Dudley R; University of California, Berkeley, University of California, Davis</i>	Meniscus-climbing by thrips in varied viscous solutions
11:30 am	123-7	<i>Jung S, Chang B, Croson M, Straker L, Gart S, Dove C, Gerwin J; Virginia Tech, Smithsonian Institution, North Carolina Museum of Natural Sciences</i>	How seabirds (<i>Morus bassanus</i> and <i>Sula leucogaster</i>) plunge-dive without injuries
11:45 am	123-8	<i>Ozkan Aydin Y, Rieser JM, Gong C, Michel K, Rankin J, Nicieza AG, Hutchinson JR, Choset H, Goldman DI; Georgia Tech, Carnegie Mellon, The Royal Veterinary College, Universidad de Oviedo</i>	Coordinated body bending improves performance of a salamander-like robot

12:00 pm **Lunch Break**

Neuromechanics I

Chair: Brett Aiello

10:15 am	124-1	<i>Hardy AR, Hale ME; University of Chicago</i>	Touch sensation by fins of bottom dwelling fish and the encoding of substrate surface features
10:30 am	124-2	<i>Aiello BR, Bensmaia SJ, Hale ME; University of Chicago</i>	Encoding properties of pectoral fin mechanosensors in response to fin deformation
10:45 am	124-3	<i>Arend LA, Biswas D, Stamper SA, Vagvolgyi BP, Fortune ES, Cowan NJ; Bethel University, Johns Hopkins University, New Jersey Institute of Technology</i>	Active sensing movements are modulated by the strength of sensory feedback in electric fish
11:00 am	124-4	<i>Schwalbe MAB, Coughlin LL, Mukherjee R, Tytell ED; Tufts University</i>	Bluegill sunfish (<i>Lepomis macrochirus</i>) are stable to horizontal vortices with and without their lateral line and visual systems
11:15 am	124-5	<i>Ackerly KL, Chapman LJ, Krahe R; McGill University</i>	The effects of hypoxia on fast-starts and electric signal production in the African mormyrid, <i>Gnathonemus victoriae</i>
11:30 am	124-6	<i>Simard CS, Palmer AR; University of Alberta, Bamfield Marine Sciences Centre</i>	Too many podia, too little coordination? Sea stars on surface tension

11:45 am **Lunch Break**

Evolutionary Physiology II

Chair: Art Woods

10:15 am	125-1	<i>Lane SJ, Shishido CM, Moran AM, Tobalske BW, Woods HA; University of Montana, University of Hawai'i, Manoa</i>	Scaling of respiratory variables in cutaneous gas exchange by sea spiders
10:30 am	125-2	<i>Shah AA, Ghalambor CK, Shah A; Colorado State University</i>	Does climate variability predict thermal tolerance? A comparison of thermal breadths in aquatic insects across elevation & latitude
10:45 am	125-3	<i>Tift MS, Lueker TJ, St. Leger JA, Cabrales P, Jordan PA, Ponganis PJ; UCSD, SeaWorld</i>	Blowing smoke? Elevated carbon monoxide (CO) in marine mammals
11:00 am	125-4	<i>Harada AE, Burton RS; University of California, San Diego</i>	The mitochondrial basis of thermal tolerance in the intertidal copepod <i>Tigriopus californicus</i>
11:15 am	125-5	<i>Woods HA, Lane SJ, Tobalske BW, Shishido CM, Moran AL, Woods A; University of Montana, University of Hawai'i at Mānoa</i>	Oxygen-dependent limits to body size in giant sea spiders
11:30 am	125-6	<i>Greenway R, Kelley JL, Tobler T; Kansas State University, Washington State University</i>	OXPHOS adaptation and ecological speciation in toxic sulfide springs
11:45 am	125-7	<i>Nguyen AD, Brown M, Zhitnay J, Helms Cahan S, Gotelli NJ, Arnett A, Ellison AM, Nguyen A; University of Vermont, Unity College, Harvard Forest</i>	Constraints on cold tolerance and hardening ability limit the distribution of forest ants at its northern range boundary

12:00 pm Lunch Break

Evolutionary Morphology IV

Chair: Brandon Moore

10:30 am	126-1	<i>Luger AM, Schotte M, Baum D, Huber D, Dean MN; Max Planck Institute, Ghent University, Zuse Institute Berlin, Tampa University</i>	On the jaws of lamniform sharks: Explaining function through morphology
10:45 am	126-2	<i>Crofts SB, Flammang BE; NJIT</i>	Functional morphology of marine reptile caudal fins
11:00 am	126-3	<i>Martinez CM, Rohlf FJ, Frisk MG; University of California, Davis, Stony Brook University</i>	Extent and prevalence of sexual dimorphism in skates (Batoidea: Rajoidei)
11:15 am	126-4	<i>Burruss ED, Tan M, Armbruster JW; Auburn University, Emory University</i>	The evolution of pharyngeal jaw shape, size, and associated musculature across the neotropical cichlid phylogeny
11:30 am	126-5	<i>Longo SJ, Wainwright PC; University of California, Davis</i>	A combination of biomechanical factors constrains craniofacial diversity in seahorses and pipefishes
11:45 am	126-6	<i>Stinson CM, Deban SM; University of South Florida</i>	Functional trade-offs in salamander feeding performance due to morphological divergence

12:00 pm Lunch Break

Stress IV

Chairs: Maren Vitousek, Adam Lendvai

10:15 am	127-1	<i>Vitousek MN, Taff CC, Zimmer CG, Ardia DR, Salzman TC, Winkler DW; Cornell University, Franklin and Marshall College</i>	Do brief, acute stressors have lasting effects on phenotype?
10:30 am	127-2	<i>Robart AR, Watts HE; Loyola Marymount University</i>	Food reduction increases daytime activity and corticosterone in a facultative migrant
10:45 am	127-3	<i>Jones BC, Schoech SJ; University of Memphis</i>	High stress-response Florida scrub-jays (<i>Aphelocoma coerulescens</i>) are more sensitive to human gaze.

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11:00 am	127-4	<i>Navis CJ, Cornelius JM, Bednekoff PA; Eastern Michigan University</i>	Winter corticosterone responses in American Goldfinches (<i>Spinus tristis</i>) in urban and rural environments
11:15 am	127-5	<i>Polich RL, Bodensteiner BL, Adams CI, Janzen FJ; Iowa State University</i>	Transgenerational effects of elevated corticosterone on offspring phenotype and fitness in the painted turtle (<i>Chrysemys picta</i>)
11:30 am	127-6	<i>Senner NR, Velotta JP, Wolf CJ, Cheviron ZA; University of Montana</i>	The stress response of peromyscus mice to experimental high elevation conditions
11:45 am	127-7	<i>Lendvai AZ, Toth Z, Vincze O, Vagasi CI, Pap PL, Ouyang JQ; University of Debrecen, University Babes-Bolyai, University of Nevada</i>	Insulin-like growth factor-1 decreases in response to stress in a free-living bird

12:00 pm Lunch Break

10:15 AM – 12:00 PM Session 128

Room 218

Muscle Function: Locomotion

Chairs: Craig McGowan, Christopher Richards

10:15 am	128-1	<i>McGowan CP, Schwaner MJ, Lin DL; University of Idaho, Washington State University</i>	Is there a division of labor between proximal and distal muscles of kangaroo rats hopping on an incline?
10:30 am	128-2	<i>Schwaner MJ, Lin DC, McGowan CP; University of Idaho, Washington State University</i>	Muscle dynamics during vertical jumping by kangaroo rats (<i>D. deserti</i>)
10:45 am	128-3	<i>Balaban JP, Azizi E; University of California, Irvine</i>	Elastic energy storage and thermal performance in fence lizards
11:00 am	128-4	<i>Richards CT, Porro LB, Collings AJ; Royal Veterinary College</i>	The dynamics of trajectory control in jumping frogs
11:15 am	128-5	<i>Foster KL, Higham TE; University of Ottawa, University of California, Riverside</i>	Comparative neuromuscular function during arboreal locomotion in <i>Anolis</i> lizards
11:30 am	128-6	<i>Theriault JS, Bahlman JW, Altshuler DL; University of British Columbia, Vancouver</i>	The functional role of the intrinsic wing muscles of the pigeon (<i>Columba livia</i>) during dynamic wing morphing
11:45 am	128-7	<i>Bahlman J, Altshuler D; University Bristish Columbia</i>	How to overcome your physiology: Decoupling wing and muscle motion in zebra finches

12:00 pm Lunch Break

10:00 AM – 12:00 PM Session 129

Room 219

Feeding: Bites and Strikes

Chair: Greg Erickson

10:00 am	129-1	<i>Fabre A-C, Dumont M, Wall CE, Brewer D, Ehmke E, Welser K, Dumont E, Godfrey L, Herrel A; UMR7179 CNRS/MNHN, psala Universitet, Duke University, Duke Lemur Center, UMass Amherst</i>	Geometric morphometric approaches to inferring bite force and diet in extinct strepsirrhines
10:15 am	129-2	<i>Erickson GM, Kuhn-Hendricks SM, Sidebottom MA, Curry JF, Zeng G, Norell MA, Krick BA; Florida State University, Tallahassee, Lehigh University, American Museum of Natural History</i>	Wavy enamel in hadrosaurid dinosaurs with grinding dentitions functioned to limit fracture damage through energy-robbing crack deflection and channeling
10:30 am	129-3	<i>Gignac PM, Erickson GM; Oklahoma State University, Florida State University</i>	The biomechanics behind extreme osteophagy in <i>Tyrannosaurus rex</i>
10:45 am	129-4	<i>Whitford MD, Freymiller GA, Clark RW, Higham TE; San Diego State University, University of California, Davis, University of California, Riverside</i>	Three-dimensional kinematics of rattlesnake strikes in nature
11:00 am	129-5	<i>Law CJ, Young C, Mehta RS; University of California, Santa Cruz, California Department of Fish and Wildlife</i>	Ontogenetic scaling of theoretical bite force in southern sea otters (<i>Enhydra lutris nereis</i>)
11:15 am	129-6	<i>Bloom SV, Deban SM; University of South Florida, Tampa</i>	Projecting tiny tongues: Performance consequences of miniaturization in salamanders

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11:30 am	129-7	<i>Gibson JC, Ye D, Suarez AV; University of Illinois at Urbana-Champaign</i>	Kinematics, scaling and fatigue of mandible strike performance in a polymorphic trap-jaw ant <i>Daceton armigerum</i>
11:45 am	129-8	<i>Harrison JS, Higgins BA, Mehta RS; Duke University, University of California, Santa Cruz</i>	Scaling of dentition and prey size in the California moray (<i>Gymnothorax mordax</i>)

12:00 pm Lunch Break

10:30 AM – 12:00 PM Session 130 Room 220

Swimming II

Chair: Jen Carr

10:30 am	130-1	<i>Shuman JL, Coughlin DJ; Widener University</i>	Thermal acclimation and red muscle function in rainbow smelt, <i>Osmerus mordax</i> , and rainbow trout, <i>Oncorhynchus mykiss</i>
10:45 am	130-2	<i>Donatelli CM, Summers AP, Tytell ED; Tufts University, University of Washington</i>	Characterizing body twisting in elongate fishes: Kinematics, mechanics, and control
11:00 am	130-3	<i>Carr JA, Ankarali MM, Danos N, Cowan NJ, Tytell ED; Tufts University, Middle East Technical University, University of San Diego, Johns Hopkins University</i>	Noisy work loops: A new technique for understanding how muscle intrinsic properties contribute to the non-steady dynamics of rhythmic movements
11:15 am	130-4	<i>Lewis GT, Zhu R, Zhu JZ, Bart-Smith H; University of Virginia</i>	The influence of the peduncle on swimming performance in thunniform swimmers
11:30 am	130-5	<i>Zhu R, Lewis GT, Bart-Smith H; University of Virginia</i>	Effects of peduncle flexibility on thunniform swimming performance
11:45 am	130-6	<i>Akanyeti O, Yanagitsuru YR, Stewart WJ, Lauder GV, Liao JC; University of Florida, Eastern Florida State College, Harvard University</i>	Undulatory fishes increase tail beat amplitude during acceleration for high propulsive efficiency

12:00 pm Lunch Break

10:00 AM – 12:00 PM Session 131 Room 221

Population Biology

Chair: Michael Sheriff

10:00 am	131-1	<i>Dormio SM, McCoy MW; East Carolina University</i>	Staying active for life: Investigating the covariance between behavioral and physiological trade-offs in treefrogs
10:15 am	131-2	<i>Bevan EM, Coleman A, Wibbels T, Selangi M; University of Alabama, Institute for Marine Mammal Studies, Birmingham Audubon Society</i>	Female-biased sex ratio of immature Kemp's ridley sea turtles in the northern Gulf of Mexico
10:30 am	131-3	<i>Rael RC, Taylor C; Tulane University</i>	A flow network model of rat dynamics in New Orleans
10:45 am	131-4	<i>Olmi HD, Darnell MZ; University of Southern Mississippi</i>	Migratory movements and fishing mortality of the Louisiana blue crab spawning stock
11:00 am	131-5	<i>Morishige K, Moran AL; University of Hawai'i at Mānoa</i>	Environmental drivers of variation in maternal investment of <i>Colobocentrotus atratus</i> across the Hawaiian Archipelago
11:15 am	131-6	<i>Ghanizadeh Kazerouni EN, E. Franklin CR, Seebacher FR; University of Sydney, University of Queensland, Brisbane</i>	Parental exposure to UV-B affects offspring responses
11:30 am	131-7	<i>McCoy MW; East Carolina University</i>	Resource availability and prey growth dynamics determines the outcome of size-structured predator-prey interactions
11:45 am	131-8	<i>Sheriff MJ, MacLeod K, Krebs CJ, Boonstra R; Penn State University, University of British Columbia, University of Toronto</i>	The lethality of non-consumptive predation risk

12:00 pm Lunch Break

Behavioral and Ecological Toxicology

Chair: Jacob Johansen

10:15 am	132-1	<i>Johansen JL, Esbaugh AJ; University of Texas Marine Science Institute</i>	Chronic impairment of cardiorespiratory function and swim performance of red drum (<i>Sciaenops ocellatus</i>) following acute exposure to naturally weathered crude oil
10:30 am	132-2	<i>Khursigara AJ, Johansen JL, Esbaugh AJ; University of Texas at Austin, University of Texas at Austin</i>	The influence of oil exposure on social interactions and competition in a marine teleost
10:45 am	132-3	<i>Neal AE, Moore PA; Bowling Green State University</i>	Altering duration of exposure to atrazine impacts aggressive behavior in crayfish
11:00 am	132-4	<i>Mackay SB, Brereton C, Bergman DA; Grand Valley State University</i>	Chronic effects of nonylphenol on reproductive behavior and development of crayfish
11:15 am	132-5	<i>Harrigan KM, Moore PA; Bowling Green State University</i>	Scaling to the organism: An innovative model of dynamic toxic hotspots in a stream system
11:30 am	132-6	<i>Switzer CM, Combes SA; Harvard University, University of California, Davis</i>	The neonicotinoid pesticide, imidacloprid, affects <i>Bombus impatiens</i> (bumblebee) sonication behavior when consumed at doses below the LD50
11:45 am	132-7	<i>Crall JD, Switzer CM, Oppenheimer RO, Combes SA; Harvard University, University of New Hampshire, University of California, Davis</i>	A neonicotinoid pesticide disrupts nest behavior and social interactions in bumblebee colonies

12:00 pm **Lunch Break**

Morphogenesis and Differentiation

Chairs: Karen Crawford, Shai Abehsera

10:45 am	133-1	<i>Hertzler PL; Central Michigan University</i>	Development of muscle and germ line in penaeid shrimp
11:00 am	133-2	<i>Dreier M, Cota C, Davidson B; Swarthmore College</i>	Mitotic coordination of membrane trafficking in <i>Ciona intestinalis</i> heart development
11:15 am	133-3	<i>Mire P, Cavanaugh M; University of Louisiana, Lafayette</i>	Dynamics of cnidocyte types in development of <i>Nematostella vectensis</i>
11:30 am	133-4	<i>Crawford K, Karimi KR; St. Mary's College of Maryland</i>	GFP Illuminates the role of retinoic acid in regenerating axolotl limbs
11:45 am	133-5	<i>Abehsera S, Peles S, Aflalo ED, Sagi A; Ben-Gurion University of the Negev</i>	A novel protein family involved in mandible formation in the decapod crustacean <i>Cherax quadricarinatus</i>

12:00 pm **Lunch Break**

Metabolism

Chairs: Anusha Shankar, Marshall McCue

10:15 am	134-1	<i>Shankar A, Canepa JR, Graham CH, Wethington SM, Powers DR; Stony Brook University, George Fox University, Hummingbird Monitoring Network, WSL Zurich</i>	Energy budgeting in a temperate hummingbird
10:30 am	134-2	<i>Townsend JP, Sweeney AM; University of Pennsylvania</i>	From blushing beroids to tenacious tentaculata: New evidence of tyrosine metabolites in ctenophores and their functional implications
10:45 am	134-3	<i>McCue MD, Salazar G, Albach A; St. Mary's Univ</i>	Repeated exposure to food limitation earlier in life enables rats to spare lipid stores during prolonged starvation
11:00 am	134-4	<i>McTernan MR, Anderson RA, Powers SD; Western Washington University, George Fox University</i>	Resting metabolism comparisons among populations of a subspecies of lizard differing in climate and vegetation types

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11:15 am	134-5	<i>Norin T, Gamperl AK; University of Glasgow, Memorial University of Newfoundland</i>	Metabolic scaling of individuals vs. populations: Experimental evidence for variation in scaling exponents at different community levels
11:30 am	134-6	<i>Elder LE, Seibel BA; Yale University, University of South Florida</i>	Transparency and depth effects on metabolic rates in hyperiid amphipods
11:45 am	134-7	<i>Goessling JM, Mendonca MT*, Appel AG; Auburn University</i>	Effects of dormancy and temperature on metabolic parameters in gopher tortoises, <i>Gopherus polyphemus</i> : Does immune state match metabolic rate?
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12:00 pm	Lunch Break		

Sunday Program Afternoon Sessions

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

1:30 PM – 3:15 PM	Session 135	Room 210
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Energetics II

Chairs: Jon Harrison, Karine Saline

1:30 pm	135-1	<i>Harrison JF; Arizona State University</i>	Hypometric scaling of metabolic rate arises from size-dependent natural selection on ATP demand
1:45 pm	135-2	<i>Salin K, Auer SK, Anderson G, Villasevil EM, Selman C, Metcalfe NB, Salin K; University of Glasgow</i>	How does mitochondrial functioning constrain energy efficiency?
2:00 pm	135-3	<i>Hood WR, Zhang Y; Auburn University</i>	Understanding the bioenergetic mechanisms that underlie the interactions among life history traits
2:15 pm	135-4	<i>Frieder CA, Applebaum SL, Pan T-CF, Hedgecock D, Manahan DT; University of Southern California</i>	Energy metabolism and shell formation in bivalve larvae under different environmental conditions
2:30 pm	135-5	<i>Rendleman AJ, Rodriguez JA, Ohanian A, Chang B, Pace DA; California State University, Long Beach</i>	Comparing the developmental physiology of two morphologically distinct sea urchin larvae: <i>Strongylocentrotus purpuratus</i> and <i>Centrostephanus coronatus</i>
2:45 pm	135-6	<i>Pan T-CF, Applebaum SL, Manahan DT; University of Southern California, Los Angeles</i>	Biochemical bases for growth phenotype variation in marine larvae of different genotypes
3:00 pm	135-7	<i>Old JM; Western Sydney University</i>	Immune system development in marsupials

3:15 pm	Coffee Break	Exhibit Hall
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1:30 PM – 3:30 PM	Session 136	Room 211-213
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Neuromechanics II

Chairs: Bradley Dickerson, Orit Peleg

1:30 pm	136-1	<i>Holmes PD, Shia V, Moore TY, Vasudevan R; University of Michigan, University of California, Berkeley</i>	Direct perturbation on humans performing sit-to-stand motion reveals corrective feedback control strategy
1:45 pm	136-2	<i>Hunter AH, Angilletta MJ, Pavlic T, Wilson RS; The University of Queensland, Arizona State University</i>	Applying optimal performance theory to the soccer penalty: Identifying the best strategies for success
2:00 pm	136-3	<i>Dickerson BH, Dickinson MH; California Institute of Technology</i>	<i>Drosophila</i> haltere steering muscles are active during voluntary maneuvers and are directionally tuned
2:15 pm	136-4	<i>Roth E, Sponberg S, Daniel T; University of Washington, Georgia Tech</i>	Robustness via redundancy: Multisensory control of flight in hawkmoths
2:30 pm	136-5	<i>Chandler S, Sponberg S; Georgia Institute of Technology</i>	Flight control compensation to changing body mass in feeding hawkmoths
2:45 pm	136-6	<i>Peleg O, Peters J, Salcedo MK, Mahadevan L; Harvard University</i>	Dynamic morphology in honeybee swarms

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3:00 pm	136-7	<i>Mohren TL, Callaham J, Pratt BD, Brunton BW, Daniel TL; University of Washington, University of Massachusetts</i>	Sparse sensing by arrays of wing mechanosensors for insect flight control
3:15 pm	136-8	<i>Bustamante J, Jankauski M, Daniel TL; University of Washington</i>	Wasp waist: A tail of abdominal flexion, sensing, actuation, and flight control
3:30 pm	Coffee Break		Exhibit Hall

1:45 PM – 3:15 PM	Session 137	Room 214
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Evolutionary Physiology III

Chair: Rebecca Clark

1:45 pm	137-2	<i>Clark RM, Adam K, Darrigade L, McCue M, Zera AJ, Williams CM; University of California-Berkeley, AgroParis Tech, St. Mary's University, University of Nebraska-Lincoln</i>	A genetic polymorphism for a hormonal circadian rhythm is associated with a shift in metabolic fuel use in flight-capable but not flightless crickets
2:00 pm	137-3	<i>Ambardar M, Grindstaff JL, Medhavi A; Oklahoma State University</i>	Do gonadotropin-releasing hormone-induced testosterone levels predict reproductive success in eastern bluebirds (<i>Sialia sialis</i>)?
2:15 pm	137-4	<i>Braciszewski AR, German DP; University of California, Irvine</i>	Relatedness and differential disease resistance in eastern Pacific halibutids
2:30 pm	137-5	<i>Helm RR, Martín Díaz ML, Thabet AA, Tarrant AM; Woods Hole Oceanographic Institution, Universidad de Cádiz, Al-Azhar University in Assiut</i>	Characterization of peroxiredoxins in the sea anemone <i>Nematostella vectensis</i>
2:45 pm	137-6	<i>Gibbons TC, Rudman SM, Schulte PM; University of British Columbia</i>	Cold and diluted: Evidence for evolution in response to the interactive effects of temperature and salinity in threespine stickleback
3:00 pm	137-7	<i>Asamoah A; Kwame Nkrumah University of Science and Technology</i>	What strategies do plants use in stress environments?
3:15 pm	Coffee Break		Exhibit Hall

1:30 PM – 3:15 PM	Session 138	Room 215-216
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Evolutionary Morphology V

Chairs: Brandon Moore, Julian Smith III

1:30 pm	138-1	<i>Dumont ER, Hedrick B, Dávalos LM, Rossiter S, Sears KE, Dumont E; UMass Amherst, Stony Brook University, Queen Mary University of London, University of Illinois, Urbana</i>	The morphology of the bat sensory system: Correlates of sight, chemosensation, and hearing in noctilionoid bats
1:45 pm	138-2	<i>Thomas KN, Vecchione M, Johnsen S; Duke University, NOAA Systematics Lab, Duke University</i>	What big eyes you have: Eye allometry and visual range in deep-sea cephalopods
2:00 pm	138-3	<i>Boyle KS, Couillaud P, Herrel A; University of West Florida, MNHN, Paris, MNHN/CNRS, Paris</i>	Shape variation of the neurocranium and anterior vertebrae related to the auditory system in piranhas and pacus (Otophysi: Serrasalminidae)
2:15 pm	138-4	<i>Moore BC, Does MD, Kelly DA; Sewanee: The University of the South, Vanderbilt University, UMass Amherst</i>	3D magnetic resonance imaging (MRI) to investigate crocodylian phallic functional morphology
2:30 pm	138-5	<i>Smith III JPS, Gobert S, Artois T, Brand J, Schärer L; Winthrop University, Hasselt University, University Of Basel</i>	Evolution of the proboscis-armature in schizorhynchia (Platyhelminthes; Kalyptorhynchia): Multiple origins and losses?
2:45 pm	138-6	<i>Clark EG; Yale University</i>	3D imaging reveals the functional history of the ophiuroid arm
3:00 pm	138-7	<i>Rupp AR, Sever DM; University of Louisiana, Lafayette, Southeastern Louisiana University</i>	Histology and ultrastructure of mental glands and caudal courtship glands in three genera of plethodontid salamanders
3:15 pm	Coffee Break		Exhibit Hall

1:30 PM – 2:45 PM **Session 139** **Room 217**

Developmental Endocrinology

Chairs: *Suvi Ruuskanen, Mikus Abolins-Abols*

1:30 pm	139-1	<i>Ruuskanen S, Groothuis TGG, Darras VM, Gienapp P, Schaper SV, Visser ME; University of Turku, Netherlands Institute of Ecology (NIOO-KNAW), University of Groningen</i>	Egg thyroid hormones: An unexplored mechanism for maternal effects in birds
1:45 pm	139-2	<i>Breves JP, Duffy TA, Einarsdottir IE, Björnsson BT, McCormick SD; Skidmore College, Northeastern University, University of Gothenburg, USGS, Conte Anadromous Fish Res. Cen.</i>	<i>In vivo</i> effects of α -ethinylestradiol, 17 β -estradiol and 4-nonylphenol on hepatic insulin-like growth-factor binding protein (igfbp) mRNA levels in Atlantic salmon
2:00 pm	139-3	<i>Abolins-Abols M, Kassab HD, Ketterson ED, Abolins-Abols M; Indiana University</i>	Hormone and melanocyte signaling in a social feather ornament
2:15 pm	139-4	<i>McCoy KA, Blake BE, Tran T; East Carolina University, University of North Carolina at Chapel Hill</i>	Fetal sex hormone exposure programs autism-like behavior in the rat model
2:30 pm	139-5	<i>Slater G, Helm B, Yocum G, Bowsher J, Slater G; North Dakota State University, USDA-ARS</i>	The fallacy of honeybee caste determination: How quantity, not quality, may determine caste

2:45 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 3:00 PM **Session 140** **Room 218**

Muscle Function: Feeding

Chair: *Ariel Camp*

1:30 pm	140-1	<i>Wu J, Ha S, Kim G, Dhanusha S, Braccini S, Hu D; Georgia Tech, Zoo Atlanta</i>	Elephant trunk forms joints to better grip objects
1:45 pm	140-2	<i>Camp AL, Roberts TJ, Brainerd EL; Brown University</i>	A little mouth with a lot of power: How cranial and axial muscles generate suction expansion in bluegill sunfish
2:00 pm	140-3	<i>Gidmark NJ, Orsbon CP, Ross CF; Knox College, University of Chicago</i>	High bite forces maintained across gapes may circumvent length-tension constraints via dynamic architecture in Macaque monkey jaws
2:15 pm	140-4	<i>Burnette MF, Ashley-Ross MA; Wake Forest University</i>	Motor patterns of cranial muscles during spitting in the archer fish (<i>Toxotes chatareus</i>): The role of target distance
2:30 pm	140-5	<i>De Meyer J, Goethals T, Augustijns T, Habraken J, Hellemans J, Vandewiele V, Dhaene J, Bouillart M, Adriaens D*; UGent</i>	Dimorphism throughout the European eels' life cycle: Head shape related to dietary differences?
2:45 pm	140-6	<i>Krentzel D, Angielczyk K; University of Chicago, Field Museum</i>	The evolution of novel jaw adductor muscle configurations in rodents: New insights from kangaroo rats and jerboas using DICE CT

3:00 pm **Coffee Break** **Exhibit Hall**

1:30 PM – 2:45 PM **Session 141** **Room 219**

Gutting it out

Chair: *Samantha Leigh*

1:30 pm	141-1	<i>Riddle MR, Tabin CJ; Harvard Medical School</i>	The eyeless Mexican cavefish <i>Astyanax mexicanus</i> as a model to investigate development and evolution of the gastrointestinal (GI) tract
1:45 pm	141-2	<i>Koch L, Shainer I, Gurevich T, Gothlif Y, Holzman R; Tel Aviv University, Inter-University institute</i>	Hunger games: The expression of hypothalamic appetite-stimulating neuropeptides, reveals hydrodynamic-induced starvation in a larval fish
2:00 pm	141-3	<i>Leigh SC, Hoffmann SL, Summers AP, German DP; University of California, Irvine, Florida Atlantic University, University of Washington</i>	Spiraling into control: Investigating the function of the spiral intestine in elasmobranchs

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2:15 pm	141-4	Wiggins WD, Wilder SM; Oklahoma State University	Macronutrient effects on juvenile jumping spider growth
2:30 pm	141-5	Curtis MD, Turner RL; Florida Institute of Technology	Ciliary urns: Development and morphology in <i>Synaptula hydriformis</i>

2:45 pm**Coffee Break****Exhibit Hall**

1:30 PM – 3:00 PM**Session 142****Room 220**

Infection and Immunity Come at a Cost

Chairs: Elizabeth Schultz, Laura Schoenle

1:30 pm	142-1	Schultz EM, Klasing KC, Hahn TP; Kenyon College, University of California, Davis	Modulation of reproductive physiology and cytokine expression by changes in photoperiod and immune challenge in red crossbills
1:45 pm	142-2	Fuess LE, Mann WT, Brinkhuis V, Stacy C, Mydlarz LD; University of Texas Arlington, University of Texas Arlington, Florida Fish and Wildlife Conservation Commission	Octocorals demonstrate fitness tradeoffs associated with response to a disease outbreak
2:00 pm	142-3	Eddy D, Stager M, Cheviron ZA, Carling MD; University of Wyoming, University of Montana	Assessing the metabolic costs of avian malaria in a temperate songbird (<i>Junco hyemalis</i>)
2:15 pm	142-4	Buchanan JL, Montooth KL; University of Nebraska, Lincoln	Sex-specific effects of compromised energy metabolism on immunity and life-history
2:30 pm	142-5	Kirschman LJ, Quade AH, Zera AJ, Warne RW, Kirschman L; Southern Illinois University, University of Nebraska	Immune factor trade-offs in response to parasite threats
2:45 pm	142-6	Schoenle LA, Kernbach ME, Moore IT, Bonier F; Virginia Tech, University of South Florida, Queen's University	Why does malaria infection reduce fitness in wild birds?: A test of physiological mechanisms

3:00 pm**Coffee Break****Exhibit Hall**

1:30 PM – 3:15 PM**Session 143****Room 221**

Biodiversity

Chairs: Zach Stahlschmidt, Donald Miles

1:30 pm	143-1	Grimes CJ; Texas A&M at Galveston	Ecological baseline of macroinfaunal assemblages in nearshore sediments of Southeast Florida
1:45 pm	143-2	Holmes IA, Rabosky DL, Davis Rabosky AR; University of Michigan, Ann Arbor	Microbial lineages in a squamate host community
2:00 pm	143-3	Lashley MA, Barton BT, Jordan HR, Tomberlin JK; Mississippi State University, Texas A&M University	Community responses to an experimental mass mortality event and the role of vertebrate scavengers
2:15 pm	143-4	Stahlschmidt ZR, Mills AM, Walman RM; University of the Pacific, Low Country Institute	Dynamics influencing refuge use by vertebrate communities on the coastal plain—from seasonality to fire ants
2:30 pm	143-5	Miles DB, Sinervo B, Huey RB, Müller J, Lovich J, Mendez De La Cruz F, Resendiz R, Rosen P; Ohio University, University California, Santa Cruz, University Washington, Museum für Naturkunde, USGS, Conte Anadromous Fish Res. Cen., Universidad Nacional Autonoma de Mexico, University of Arizona	Desert tortoises race against climate change: Past, present and future
2:45 pm	143-6	Bergstrom CA; University of Alaska Southeast	Effects of melting glaciers on estuarine fish communities
3:00 pm	143-7	Patel KV, Bohonak AJ, Simovich M, Goddard N, Black C, Graige N; San Diego State University	Genetic admixture in the San Diego fairy shrimp (<i>Branchinecta sandiegonensis</i>)

3:15 pm**Coffee Break****Exhibit Hall**

1:45 PM – 3:15 PM Session 144 Room 222

Mate Choice and Sexual Selection

Chair: Erica Westerman

1:45 pm	144-1	Westerman EL, Letchinger R, Tenger-Trolander A, Massardo D, Kronforst M; University of Arkansas, University of Chicago	Presentation or pattern? The role of movement in butterfly attraction
2:00 pm	144-2	Cirino LA, Miller CW; University of Florida	Effects of male quality and territory quality on female preference of varying condition
2:15 pm	144-3	Murphy MA, Schul J; Salisbury University, University of Missouri	Why mate with leaders? Direct benefits associated with leader preference in the katydid <i>Neoconocephalus ensiger</i>
2:30 pm	144-4	Medina-García A, Wright TF; New Mexico State University	Exploring female mate choice for cognitive abilities in budgerigars
2:45 pm	144-5	Rice MA, Sanin G, Ophir AG; Cornell University, Georgia State University	Effects of operational sex ratio on spatial memory, reproductive success, and neural phenotype in prairie voles (<i>Microtus ochrogaster</i>)
3:00 pm	144-6	Leary CJ, Crocker-Buta SP; University of Mississippi	Acute stress is a target of intra- and intersexual selection in the green treefrog, <i>Hyla cinerea</i> : Implications for fitness, honest signals, and the evolution of endocrine-based acoustic armaments

3:15 pm Coffee Break Exhibit Hall

1:30 PM – 3:00 PM Session 145 Room 223

Education

Chairs: Sarah Woodley, Janice Voltzow

1:30 pm	145-1	Woodley SK, Freeman PE, Ricketts TD; Duquesne University, Carnegie Mellon University	Innovations in a physiology laboratory course: Combining novel research and service-learning to address a community-based problem
1:45 pm	145-2	Killpack TL, Melon LC; Wellesley College	Faculty professional development for inclusive STEM classrooms
2:00 pm	145-3	MacPhee LR; Northern Arizona University	Low budget, hands-on labs and activities your students can do offline as part of an online course
2:15 pm	145-4	Spain D, Sullivan L, Young A, Spain D; Dominican University of California	Developing relevant science classes for non-science majors
2:30 pm	145-5	Taft NK; University of Wisconsin-Parkside	Combating stereotype threat in introduction to organismal biology
2:45 pm	145-6	Voltzow J, Cronin C, Smieja J; University of Scranton, Gonzaga University	Trends in institutional policies for work/life balance at undergraduate institutions

3:00 pm Coffee Break Exhibit Hall

1:30 PM – 3:00 PM Session 146 Room 224

Stress Physiology II

Chairs: Leigh Boardman, Shelcie Menard

1:30 pm	146-1	Menard SS, Watson GM; University of Louisiana at Lafayette	Sea anemone hair bundles are resilient to multiple types of trauma.
1:45 pm	146-2	Nilsson B, Bucklin A, Jepsen PM, Hansen BW; Roskilde University, University of Connecticut	Do copepods experience stress caused by experimental handling?
2:00 pm	146-3	Boardman L, Oztekin EK, Hahn DW, Hahn DA; University of Florida	Spot the difference: Finding a biomarker for irradiated insects
2:15 pm	146-4	Boothby TC, Tapia H, Brozena AH, Piszkiwicz S, Smith AE, Mehta A, Koshland D, Goldstein B, Pielak G; UNC, UC Berkeley, NCSU	How do tardigrades survive extremes? Disordered proteins as mediators of tardigrade stress tolerance

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2:30 pm	146-5	<i>Zhang Y, Humes F, Brasher A, Kallenberg C, Kavazis A, Hood W, Zhang Y; Auburn University</i>	The mitohormetic response and an evaluation of a method for inducing oxidative damage
2:45 pm	146-6	<i>Butler MW, Baylor J; Lafayette College</i>	Immune challenges result in oxidative damage, which may be mitigated via antioxidant activities of biliverdin

3:00 pm	Coffee Break	Exhibit Hall
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3:45 PM – 4:45 PM	MOORE LECTURE	Room 208/209/210
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Moore Lecture	<i>Reid R; Council for the Advancement of Science Writing</i>	Only converse? A journalist sizes up the problem of science communication
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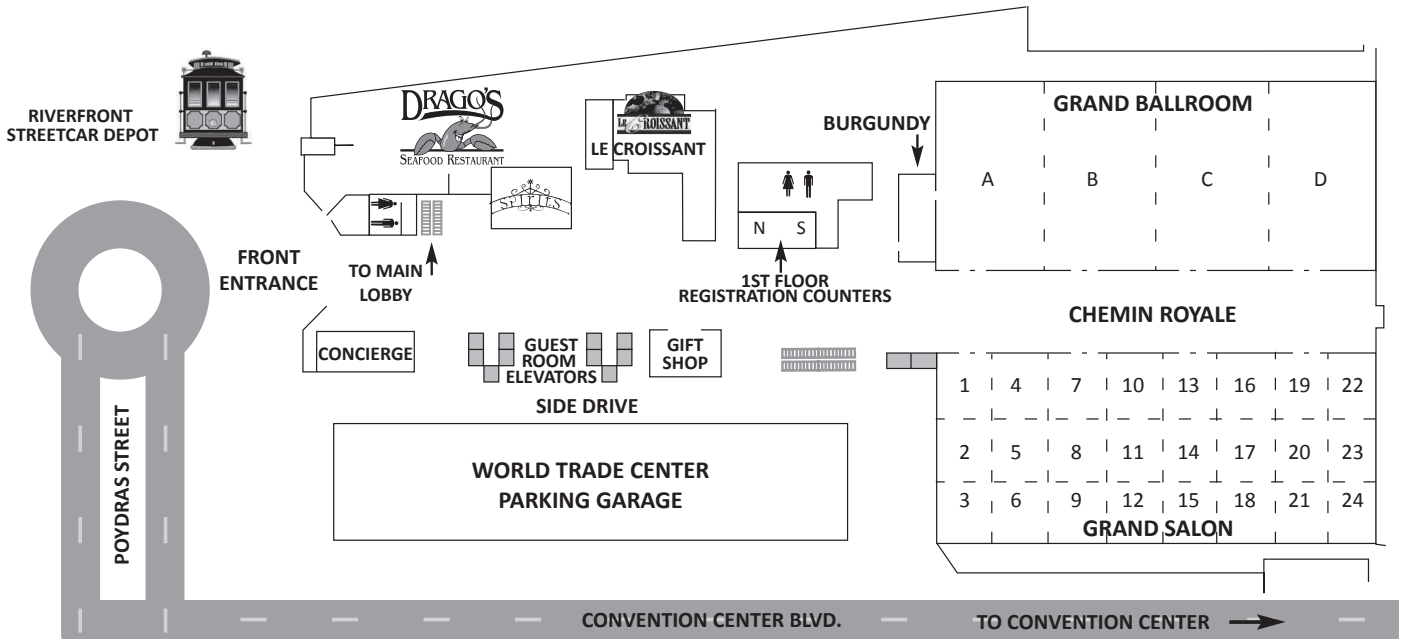
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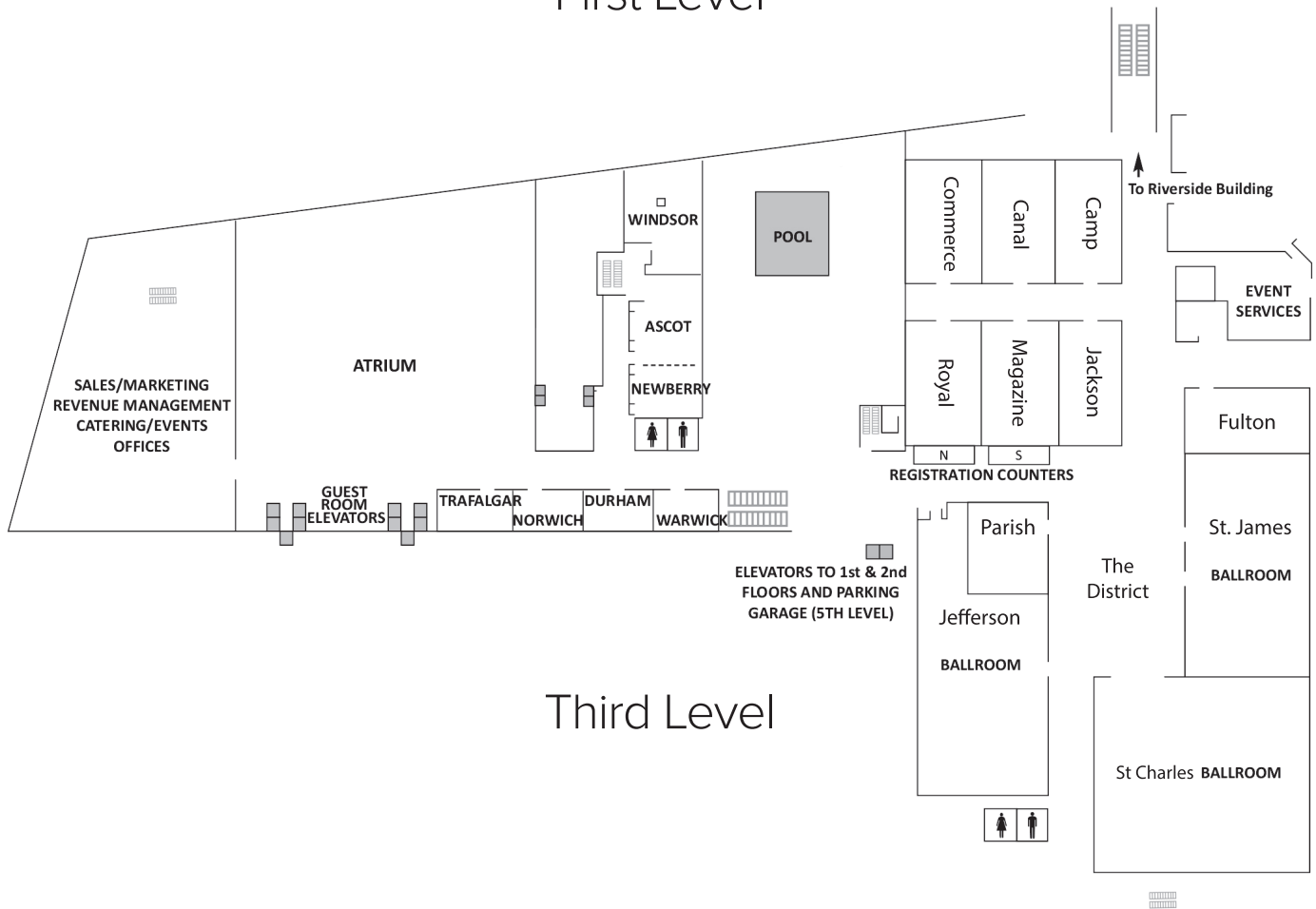
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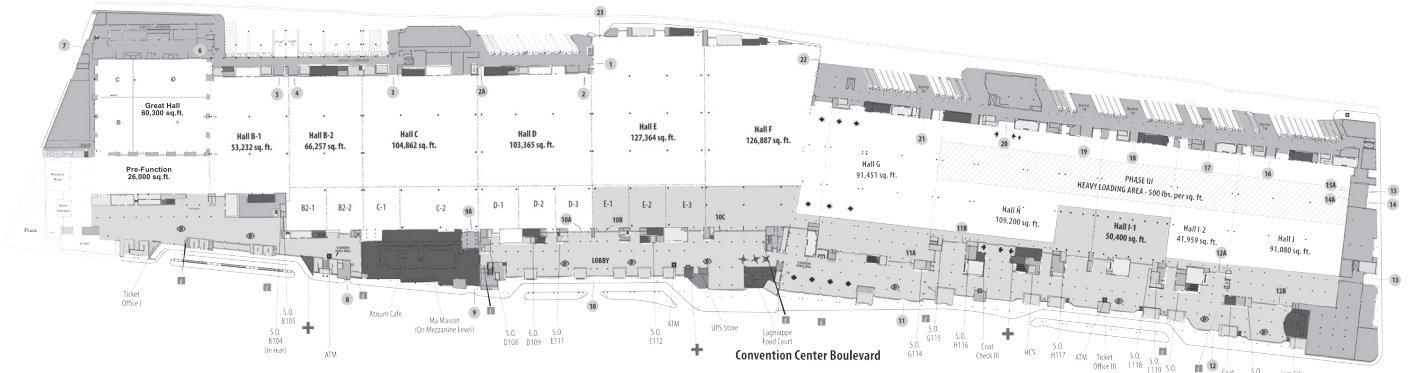


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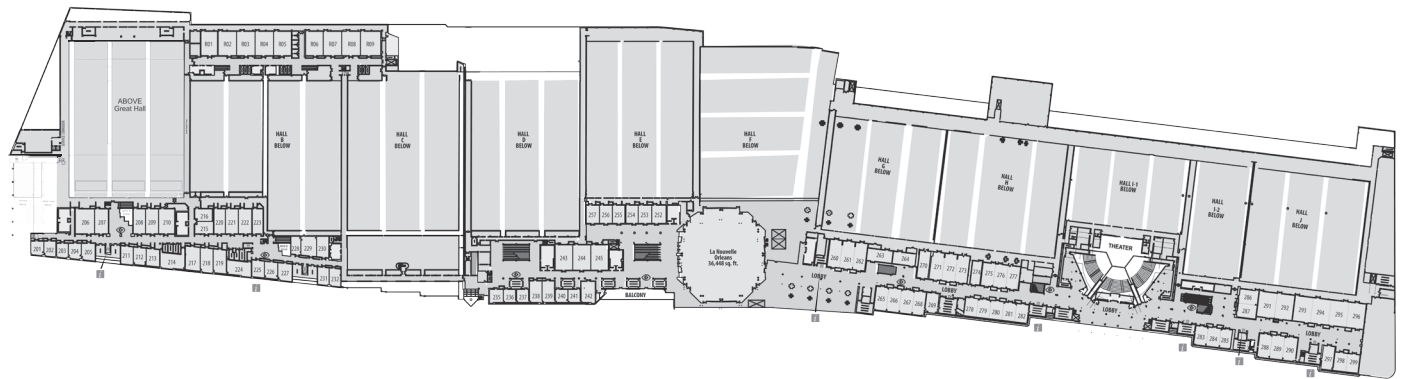


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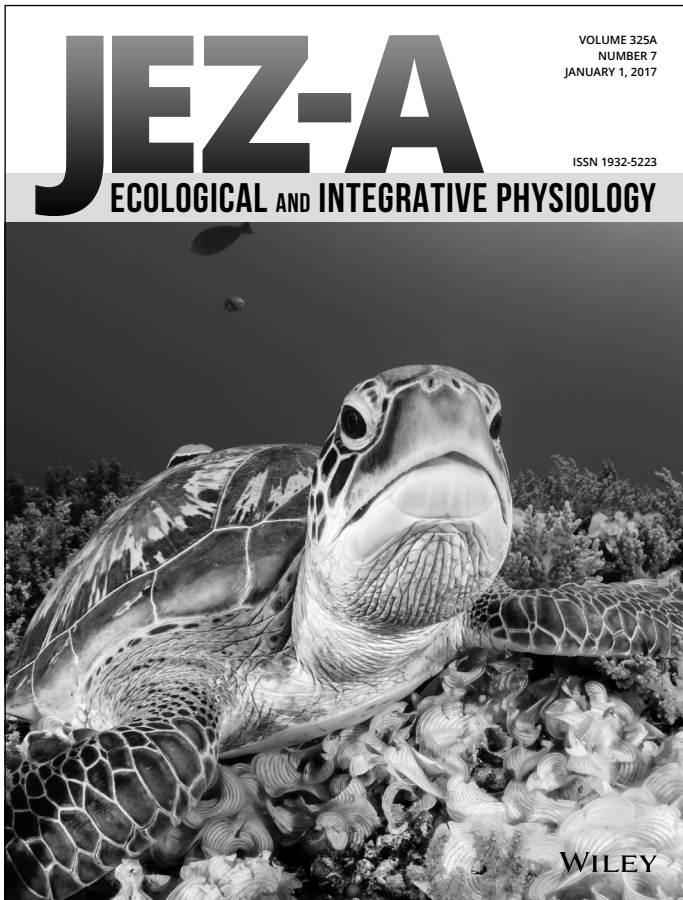


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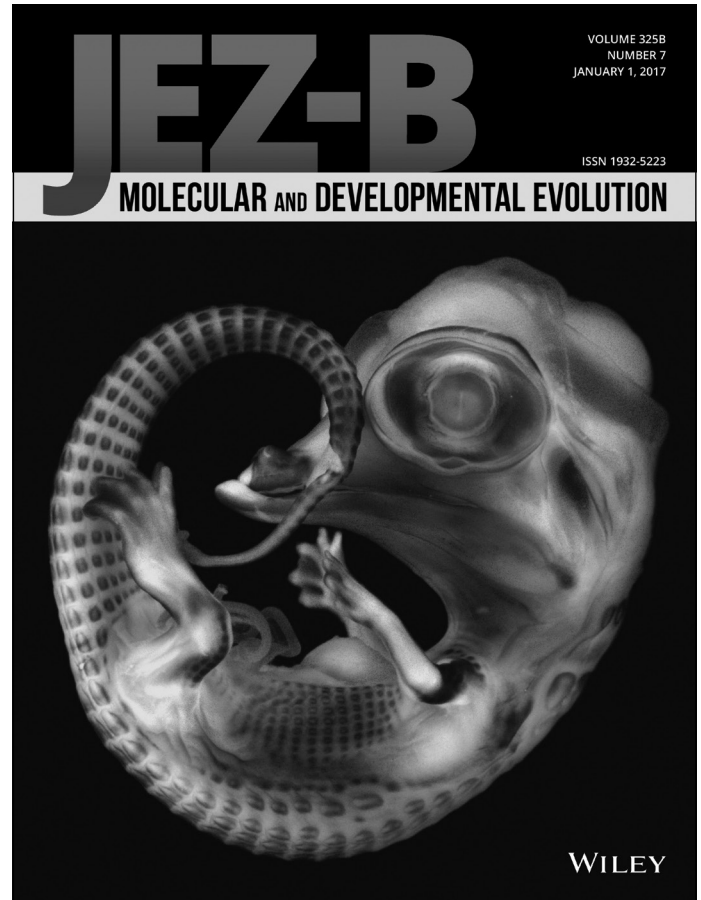


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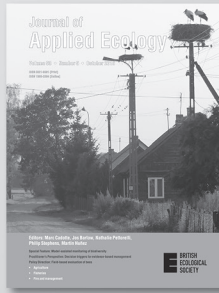
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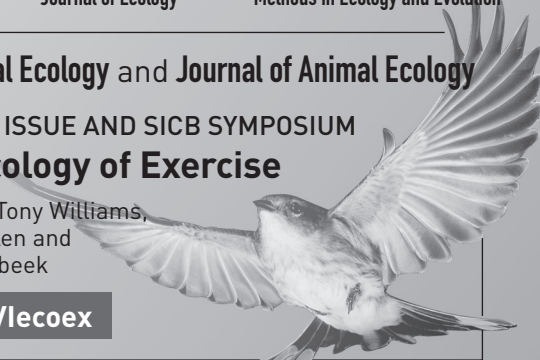
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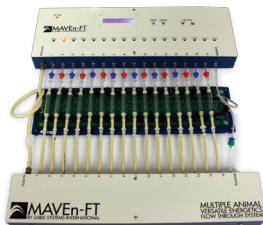
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