Society for Integrative and Comparative Biology

with the

Animal Behavior Society

American Microscopical Society

The Crustacean Society

2013 SICB Annual Meeting

3-7 January 2013
Hilton San Francisco Union Square
San Francisco, CA

Final Program

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Future Meeting Dates

Austin, Texas, 3-7 January 2014

Palm Beach, Florida, 3-7 January 2015

The Society for Integrative & Comparative Biology
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Suite 402
McLean, VA 22101
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FAX: 703-790-2672
Email: SICB@BurkInc.com
Web: www.SICB.org

Welcome to San Francisco
Message from the Program Officer

Welcome to the largest SICB meeting on record! With 1658 presentations over four full days, you are sure to find more fascinating research than you will have time to see. These presentations are organized into 11 symposia with their complementary poster and oral sessions, plus 148 contributed oral sessions and 672 poster presentations. Check out the schedule grid on the website at **http://www.sicb.org/meetings/2013/SICB2013grid.pdf** for a quick guide to where and when everything occurs.

Major lectures: We will start the SICB Conference with our Past-President's Plenary Lecture by Richard Satterlie. Successive evenings will hold the Bartholomew Lecture (Friday, Jan 4), by Alison Sweeney; the Bern Lecture (Saturday, Jan 5) by Ellen Ketterson; and we will conclude the meeting with the Moore Lecture (Monday, Jan 7 @ 3 PM) by Susan Singer.

Symposia: The eleven symposia are truly outstanding this year; good luck picking amongst them! They are listed on **page 9** of this book, and are described in detail on the website at: **http://www.sicb.org/meetings/2013/symposia/index.php**

We also have special contributed paper sessions honoring Howard Bern, Bruce Sidell, and Ken Nagy, as well as a special contributed session on Crayfish Biology.

Workshops: Eight workshops designed to help you develop new professional skills are described on **page 10** of this book, and are described in more detail at **http://www.sicb.org/meetings/2013/workshops.php**

Socials:

There's a party every night, as described on **page 5**. Don't miss the society-wide welcome reception on Thursday from 8:30-10 PM, and the end-of-meeting party in honor of students and postdocs from 4- 6 PM on Monday. The Broadening Participation committee organizes a special welcome reception, Mentor/Mentee Meeting/Reception from 6:30-7:30 PM on Thursday, and a social on Sunday from 8-10 PM. There are also socials every night for the various divisions.

Business meetings: I strongly urge you to attend the divisional and society business meetings, especially if you are a student or postdoc. They are short and informative. It's a great way to make connections, learn how things operate, improve the meeting, become actively involved, and develop your professional skills.

Don't forget to upload your talk at the Ready Room (California Room) at least half a day before your presentation. If you are going to use your own computer, check the connections out in the room before talks start.

Finally, please remember to thank the many people who worked hard to put this meeting together, including the division program officers, the TCS and AMS program reps, the symposium organizers, the SICB Officers, and our great team from Burk & Associates: Lori Strong, Brett Burk, Jill Drupa and Ruedi Birenheide.

Let the integrating begin!

Jon Harrison
SICB Program Officer

Society for Integrative and Comparative Biology

2013 Officers

Kenneth P. Sebens, President
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Brett J. Burk, Executive Director

Co-Sponsoring Societies

Animal Behavior Society (ABS)
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.

Hilton San Francisco Union Square

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UC PRESS BIOLOGY

Edward C. Beedy, Edward R. Pandolfino, and Keith Hansen
Birds of the Sierra Nevada
Their Natural History, Status, and Distribution
$75.00 cloth, $39.95 paper

Annalisa Berta
Return to the Sea
The Life and Evolutionary Times of Marine Mammals
$44.95 cloth

Richard A. Bradley
Common Spiders of North America
$60.00 cloth

Richard Despard Estes
The Behavior Guide to African Mammals
Including Hoofed Mammals, Carnivores, Primates
Drawings by Daniel Otte. Foreword by E.O. Wilson.
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Benedikt Hallgrímsson and Brian K. Hall, Editors
Epigenetics
Linking Genotype and Phenotype in Development and Evolution
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Alexander Harcourt
Human Biogeography
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Susan P. Harrison
Plant and Animal Endemism in California
JUNE 2013
$49.95 cloth

Michel Laurin
How Vertebrates Left the Water
$40.00 cloth

Jonathan B. Losos
Lizards in an Evolutionary Tree
Ecology and Adaptive Radiation of Anoles
Organisms and Environments, 10
$95.00 cloth, $49.95 paper

Roy W. McDiarmid, Mercedes S. Foster, Craig Guyer, J. Whitfield Gibbons, and Neil Chernoff, Editors
Reptile Biodiversity
Standard Methods for Inventory and Monitoring
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Kevin Padian and Ellen-Thérèse Lamm, Editors
Bone Histology of Fossil Tetrapods
Advancing Methods, Analysis, and Interpretation
MARCH 2013
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David W. Pfennig and Karin S. Pfennig
Evolution's Wedge
Competition and the Origins of Diversity
Organisms and Environments, 12
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Stephen T. Ross
Ecology of North American Freshwater Fishes
A Stephen Bechtel Fund Book in Ecology and the Environment
JUNE 2013
$75.00 cloth

Marcelo Sánchez
Embryos in Deep Time
The Rock Record of Biological Development
$39.95 cloth

George R. Zug
Reptiles and Amphibians of the Pacific Islands
A Comprehensive Guide
JUNE 2013
$70.00 cloth, $34.95 paper

ENCYCLOPEDIAS OF THE NATURAL WORLD

Mark W. Denny and Steven D. Gaines, Editors
Encyclopedia of Tidepools and Rocky Shores
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Rosemary G. Gillespie and David A. Clague, Editors
Encyclopedia of Islands
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Daniel Simberloff and Marcel Rejmánek, Editors
Encyclopedia of Biological Invasions
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Alan Hastings and Louis Gross, Editors
Encyclopedia of Theoretical Ecology
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SPECIES AND SYSTEMATICS

Michael Heads
Molecular Panbiogeography of the Tropics
$75.00 cloth

Lynne R. Parenti and Malte C. Ebach
Comparative Biogeography
Discovering and Classifying Biogeographical Patterns of a Dynamic Earth
$50.00 cloth

John S. Wilkins
Species
A History of the Idea
$50.00 cloth, $29.95 paper

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MEETING HIGHLIGHTS/SOCIAL EVENTS

Thursday 3 January

Student Orientation Welcome and Meeting Orientation - *Imperial A, 5:30-6:30 pm*
"How to get the most out of your SICB Meeting"

Broadening Participation Mentor–Mentee Meeting/Reception - *Union Square 2, 6:30-7:30pm*

Plenary Session - *Continental Ballroom 1-9, 7:30-8:30 pm*
The Plenary Address, "Altering Rhythmicity: Slow Dance, Fast Dance, Hither and Yon," will be given by Richard Satterlie, SICB Past President and the Frank Hawkins Kenan Distinguished Professor of Marine Biology at the University of North Carolina at Wilmington.

Welcome to San Francisco Reception - *Golden Gate Ballroom, 8:30-10:00 pm*
The Society for Integrative and Comparative Biology welcomes you to San Francisco with a reception. The Welcome Reception will follow the Plenary lecture. Light snacks will be provided.

Friday 4 January

Companion Orientation Program/Continental Breakfast - *Cityscape, 9:00-10:00 am*

Poster Session 1 - *Grand Ballroom, 3:00-5:00 pm*
Even # poster authors present from 3:00-4:00 pm, Odd # poster authors present from 4:00-5:00 pm.

DAB/DNB Social - *Cityscape, 6:00-7:30 pm*

DCPB Social - *Golden Gate Ballroom, 7:30-8:30 pm*

Saturday 5 January

SRC Breakfast - *Lori's Diner, 6:30-8:30 am, Pay on your own at the restaurant*

Poster Session 2 - *Grand Ballroom, 3:00-5:00 pm*
Even # poster authors present from 3:00-4:00 pm, Odd # poster authors present from 4:00-5:00 pm.

DCE Social - *Cityscape, 7:30-10:00 pm*

DCB/DVM/DEDB/DPCB Dessert Social - *Golden Gate Ballroom, 7:30-10:00 pm*

Sunday 6 January

AMS Business Meeting/Lunch - *Taylor, Noon-1:00 pm*
"Bring your own lunch" - no prepaid tickets are required.

Poster Session 3 - *Grand Ballroom, 3:00-5:00 pm*
Even # poster authors present from 3:00-4:00 pm, Odd # poster authors present from 4:00-5:00 pm.

SICB Business Meeting - *Continental 5, 5:15-6:15 pm*
SICB Society Meeting & Awards Presentation (and NSF report from Bill Zamer)

DIZ/DEE/AMS/TCS Social - *Golden Gate Ballroom, 6:30-8:30 pm*

DIZ Libby Hyman Auction - *Golden Gate Ballroom, 7:00-8:00 pm*

Broadening Participation Social - *Cityscape, 8:00-10:00 pm*

Monday 7 January

Society-Wide Social in Honor of Students and Postdocs - *Grand Ballroom, 4:00-6:00pm*
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

Friday 4 January

DAB Meeting - *Continental 1, 5:15-6:00pm*
DCPB Meeting - *Continental 2/3, 5:15-6:15pm*
DCB Meeting - *Continental 7, 5:15-6:15 pm*
DEDB Meeting - *Continental 8, 5:15-6:15pm*
DEE Meeting - *Continental 9, 5:15-6:15pm*

Saturday 5 January

DCE Meeting - *Continental 1, 5:15-6:15pm*
DVM Meeting - *Continental 2/3*, *5:15-6:15pm*
DIZ Meeting - *Continental 7, 5:15-6:15pm*
DNB Meeting - *Continental 8, 5:15-6:15pm*
DPCB Meeting - *Continental 9, 5:15-6:15pm*

Sunday 6 January

AMS Business Meeting - *Taylor, Noon-1:00pm*
TCS Business Meeting - *Continental 1, 6:15-7:15pm*

SICB Society Business Meeting &
Awards Presentation
Sunday 6 January
5:15-6:15pm, Continental 5

SPECIAL LECTURES

George A. Bartholomew Award/Lecture - Friday 4 January, *Continental 4-6 - 6:30-7:30 pm*
This year's George A. Bartholomew Lecture, "Animal photonics: an integrated, comparative view," will be presented by Alison Sweeney, from the University of Pennsylvania.

Howard Bern Lecture - Saturday 5 January, *Continental 4-6 - 6:30-7:30 pm*
The title of this year's Howard Bern presentation is, "Synthesizing research on the adaptable snowbird: geographic variation, seasonality, and evolutionary endocrinology," presented by Ellen D Ketterson from Indiana University.

John A. Moore Lecture - Monday 7 January, *Continental 4-6 - 3:00-4:00 pm*
This year's John A. Moore lecture is given by Susan Rundell Singer, from Carleton College, "Promising practices in undergraduate science and engineering education: why don't we implement them?"

SPECIAL SESSIONS

Session 1: Special Session Honoring Ken Nagy - Friday 4 January, *Continental 6 - 7:50 am-Noon*
There will be a special session of contributed papers (Session 1) honoring the contributions of Ken Nagy to the field. Presentations by: Ken Nagy, Dan Costa, Bill Karasov, Stephen Secor, John Speakman, Karen Martin, Ray Huey, Lisa Hazard, R.A. Anderson, John Lighton, and Joe Williams. Related posters will also be presented.

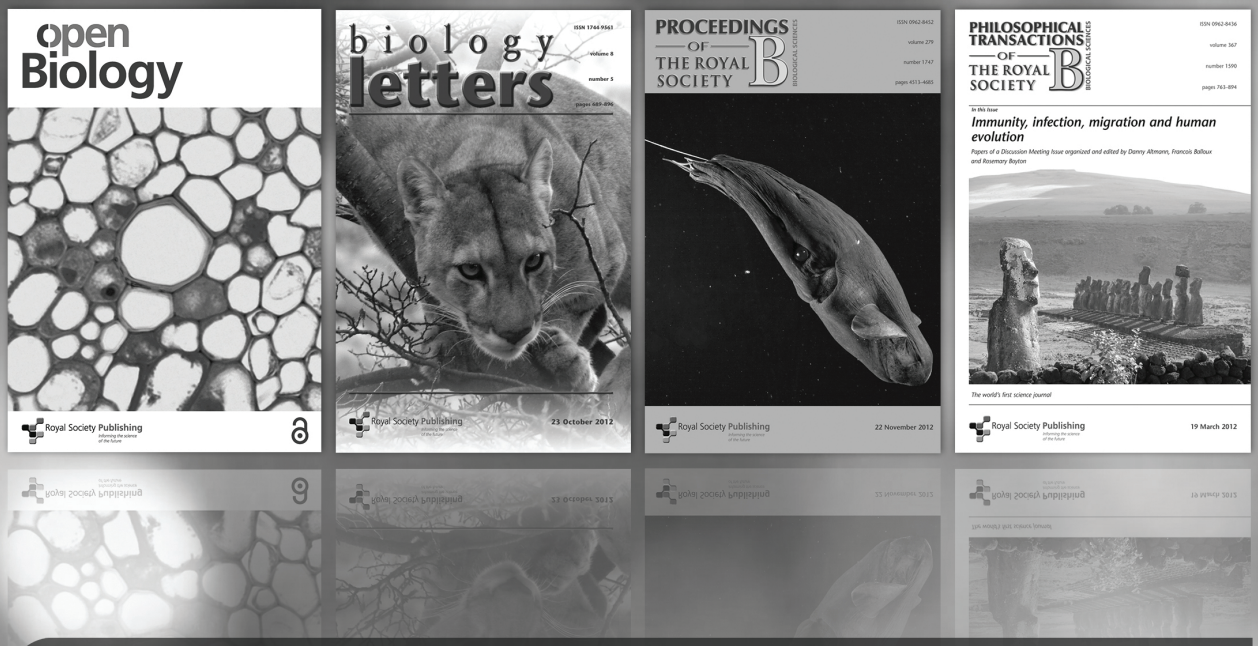
Session 55 and Session 69: Bruce Sidell's Most Excellent Career: Adventures in Thermal Biology and Cold-Bodied Fishes - Saturday 5 January, *Session 55 - Plaza A - 10:00 am-Noon; Session 69, same room, 1:00-3:00 pm*
Comparative Physiology and Biochemistry lost a giant with the passing of Bruce Sidell in February 2011. Sponsored by The Company of Biologists, *The Journal of Experimental Biology* and the Division of Comparative Physiology and Biochemistry.

Session 63: Special Session Honoring Howard Bern - Saturday 5 January, *Imperial A - 1:00-3:00 pm*
Howard A. Bern, Professor (Emeritus) of Integrative Biology and Research Endocrinologist, Cancer Research Laboratory, University of California, Berkeley, died January 3, 2012, at the age of 91. Dr. Bern was a prolific conceptual leader in the field of Comparative Endocrinology, and a founder of the field of endocrine disruptors. He was a Member of the National Academy of Sciences, a Fellow of the California Academy of Sciences, and a Member of the American Academy of Arts and Sciences. He was an author of approximately 600 scientific papers and co-editor of seven books. He mentored over 70 Ph.D. and Master's students and over 90 postdocs. In addition he was an enthusiastic teacher of thousands of undergraduates, and he was the winner of a major teaching award at U.C. Berkeley.

The Howard Bern Special Session is sponsored by DCE, with presentations by: Stephen McCormick, Mark Sheridan, Dwight Causey, Henry John-Alder, Masaru Nakamura and Kevin Kelley.

Session 127: Special Session: Crayfish Biology; a new model organism for the field of biology - Monday 7 January, *Golden Gate 6/7 - 8:00 am-Noon*
There will be a special session organized by Tadashi Kawai, Zen Faulkes, and Gerhard Scholtz, and sponsored by Pacific Consultants Co., LTD, Japan, The Crustacean Society, and Japan Crayfish Club. Speakers are to include: Peer Martin, Christoph Chucholl, Antonio Garza de Yta, Francesca Gherardi, Teresa Feria, Zen Faulkes, Keith Crandall.

The Royal Society publishes a range of biological journals that are relevant to the fields of integrative and comparative biology.



For more information and to pick up free issues of the journals please visit booth number 105 to speak to Royal Society Publishing representative Charlotte Wray.

Read more about our journals at **royalsocietypublishing.org**

SYMPOSIA

- S1: When Predators Attack: Sensing and Motion in Predator-Prey Interactions (Friday 4 January)
- S2: Ecological Epigenetics (Friday 4 January)
- S3: Vertebrate Land Invasions - Past, Present and Future (Saturday 5 January)
- S4: Understanding First Order Phenotypes: Transcriptomics for Emerging Models (Saturday 5 January)
- S5: Hormone-mediated Sex Ratio Adjustment in Vertebrates (Saturday 5 January)
- S6: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World (Sunday 6 January)
- S7: Keeping Time during Animal Evolution: Conservation and Innovation of the Circadian Clock (Sunday 6 January)
- S8: Assembling the Poriferan Tree of Life (Sunday 6 January)
- S9: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World (Monday 7 January)
- S10: Integrating Genomics with Comparative Vision Research of the Invertebrates (Monday 7 January)
- S11: Phenotypic Plasticity and the Evolution of Gender (Monday 7 January)

The **Exhibits** will open on
Friday 4 January, at 9:30 am

Grand Ballroom in the Hilton San Francisco Union Square
will be the location for coffee breaks on
Friday, Saturday, and Sunday mornings from 9:30-10:30 am, and 3:00-5:00 pm
during the poster sessions

WORKSHOPS AND PROGRAMS

Thursday 3 January

Student Orientation Welcome and Meeting Orientation, "How to get the most out of your SICB meeting" *Imperial A - 5:30-6:30 pm*

The Student/Postdoctoral Affairs Committee will be hosting the student orientation meeting where we will have 'tips' sheets available for all students! These 'tips' sheets are for students attending their first meeting (or any student for that matter) and will contain information about how to get the best out of the meeting. We will be calling this sheet the Notes from the A6bove Ground to correspond with the Notes from the Underground (tips about local flare).

Friday 4 January

Broadening Participation Workshop, "Effective presentations skills" *Continental 2/3 - Noon-1:00 pm*

The purpose of this workshop is to present students/postdocs/faculty with various strategies for effectively preparing and delivering scientific presentations. The workshop will consist of two parts. During the first half of the workshop, there will be a demonstration of software. Then for the remaining time, professional speakers will talk about tips for healthy preparation habits and handling Q&A. Professional speakers include Manny Azzizi, Patricia Hernandez, and Andrew Clark.

Saturday 5 January

NSF Workshop: "Developing proposals and the new review process" *Continental 1, Noon-1:00 pm*

Presented by William Zamer, NSF Program Directors will present an overview of the new review process that involves submission of pre-proposals, and will provide some tips about proposal writing aimed at beginning grant writers. A significant amount of time will be set aside for Q & A.

Public Affairs Workshop: "Beyond public outreach: citizen science" *Continental 5, Noon-1:00 pm*

Interested in involving the public while doing serious science? Worldwide, scientists are increasingly teaming up with volunteers to tackle tough and complicated questions. These collaborations provide scientists with access to larger datasets and different types of data compared to traditional research methods, while at the same time providing a valuable educational experience to participants. Citizen scientists monitor bird migrations, test for contaminants in watersheds, or even play online games that predict how proteins fold! At the 2013 annual meeting in San Francisco, SICB's public affairs committee will bring together a panel of experts to describe their work with citizen scientists and answer your questions about the design and funding of effective, meaningful, and rigorous citizen science projects. Participants include: Dr. Rick Bonney, Cornell Laboratory of Ornithology; Dr. Firas Khatib, Foldit; Dr. Christy Semmens, Reef Environmental Education Foundation (REEF); and Dr. Ellen McCallie, National Science Foundation

Sunday 6 January

Broadening Participation Workshop, "How to negotiate your first job" *Continental 1 - Noon-1:00 pm*

Finding your first faculty position can be difficult, particularly in this economic climate. But once you have applied and received an interview, you can be assured that you are doing very well. If you are offered a faculty position you need to negotiate the best possible deal that will help you achieve success. It is at this point in time that YOU are in a position of strength—they have decided that they want YOU in their department. And they are now willing to make a tremendous investment in your career. In this workshop we will discuss several topics including: salary range, lab space, start-up funds, office space, leave time, teaching requirements, and service assignments. Having done your "homework" about the position ahead of time can help you to negotiate an agreeable contract with the department chair. Your goal is make sure you give yourself all of the resources you need to be successful. Hosted by Gregory Florant and Billie Swalla.

Genomics for non-model organisms: custom microarray development and analysis, *Continental 9 - 7:00-10:00 pm*

Genomic-level analyses were once limited to only model-organisms, but due to advances in DNA sequencing technology the number and kinds of molecular analyses that can be applied to non-model organisms has greatly expanded to address questions in evolutionary and ecological genetics, comparative physiology, and developmental biology. This workshop will provide a primer of the technology and analytical methods currently available for scientists working on non-model organisms, and will provide hands-on experience working through microarray analysis using free software, which can now be done on almost any species given the increasing ease in ability of sequencing entire transcriptomes. A practice dataset will be provided.

Workshop Leader: Dr. Matthew Settles, Director and Bioinformatician, Institute for Bioinformatics and Evolutionary Studies (IBEST) Genomics Resources Core, University of Idaho. IBEST has collaborated with biologists, biochemists, ecologists, evolutionary biologists, mathematicians, statisticians, and computer scientists to address a broad array of questions spanning evolutionary biology, genetics, and physiology. Matt specializes on genomic-level techniques for non-model organisms.

WORKSHOPS AND PROGRAMS

Student/Postdoctoral Affairs Workshop on Elevator Talks, *Continental 2/3 - 6:30-8:00 pm*

This year the Student/Postdoc Affairs Committee will host a workshop that aims to teach our young scientists how to effectively communicate their science in the time it takes to ride in an elevator! We all know and appreciate how scientists can be long-winded in their detailed descriptions of their research. We also know how important it is for the public to appreciate what it is that we do as scientists. This workshop will highlight not only the importance of layperson communication of science, but give pointers on how to accomplish it.

DPCB Workshop: "Comparative methods in R clinic," *Powell - 7:00-10:00 pm*

The clinic will provide consultations with a comparative methods doctor to resolve questions or confusions about implementing comparative methods in R. We welcome questions of all levels, from "How do I read my tree into R?" to "How can I write a custom function to fit a specific model of trait evolution?" Patients will be seen on a first-come, first-served basis.

Monday 7 January

Grand challenges in organismal biology update *Continental 1, Noon-1:00 pm*

Educational Council First Annual Workshop: "Teaching and learning roundtable: vision and change in introductory biology," *Golden Gate 4/5 - Noon-1:30 pm*

The Educational Council will host its first annual "Teaching and Learning X" (TAL-X) roundtable discussion in San Francisco. The goal of these roundtables will be to take advantage of the broad teaching expertise within SICB by giving instructors a forum to share their most innovative ideas for teaching in their disciplines. Each year's topic will be chosen from competing proposals and the roundtable will be facilitated by the Educational Council. Our topic for 2013, "Teaching and Learning: Vision and Change in Introductory Biology," will involve luminaries from the field, including Susan Singer of Carleton College, our 2013 Moore Lecturer. This workshop is being organized by Dr. Bram Lutton of Endicott College based on his participation in the Vision and Change conference on introductory biology in summer 2012. More information about that conference is at http://ibp.ou.edu/; stay tuned for more information about the roundtable. We look forward to having you participate in TAL-IB!

Tuesday 8 January

Macrophysiology Workshop, *Plaza A - 8:00 am-5:00 pm*

Jonathon Stillman and Piero Calosi are organizing a one-day workshop on Macrophysiology in San Francisco during the day following the SICB meeting on Tuesday 8 January 2013. In brief, macrophysiology is the study of physiological rules that shape phenotypic diversity over large temporal or spatial scales. At the workshop we intend to address one of the core challenges identified in the Gaston et al 2009 Am. Nat. paper [174(5):595-612;http://www.jstor.org/stable/10.1086/605982], and develop a framework by which we could move forward to develop the community resources and tools required to solve outstanding macrophysiological problems. In particular, we intend to use this day discussion to improve our understanding of the relationship between physiological mechanisms and demographic parameters, whilst also discussing: i) understanding responses to simultaneously variation in multiple environmental factors (both biotic and abiotic), ii) integrating laboratory and field experiments. This workshop will not be an official SICB symposium, but since many of us will already be in SF, and since we can leverage SICB's existing space reservation at the hotel/conference center for our workshop, it makes sense to hold the Macrophysiology workshop as associated with the SICB meeting. We hope that the result of the day will be a directed and coordinated cooperative effort to address macrophysiological challenges that could lead to, among other things, a research coordination network, a white paper, collaborative proposals, or other community efforts.

A tentative structure of the workshop is to have two or three short and stimulating talks where specific questions for discussion and discussion objectives will be clearly articulated. Each talk will be followed by a breakout discussion group and then larger group discussion. Additional contributed papers on macrophysiology related topics can be presented at the SICB meeting, and we have included "Macrophysiology" as a topic on the abstract submission form. If you are interested in participating in the workshop, please contact Jonathon Stillman at stillmaj@sfsu.edu.

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

We strongly encourage each presenter to visit the Ready Room, **California Room**, in the Hilton San Francisco, Union Square, 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 twenty 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:

Day	Date	Time
Thursday	3 January	Noon-7 pm
Friday-Sunday	4-6 January	7 am-5 pm
Monday	7 January	7-10 am

Business Centers

If you need to use a fax, use a computer, make basic photocopies, there is a small Business Center located in the on the lobby level of the San Francisco Hilton. The use of the business center is at your own expense.

Coffee Breaks

Coffee break service is available each day of the Meeting. There will be a morning service from 9:30-10:30 am and an afternoon service from 3:00-5:00. The coffee breaks will be located in Grand Ballroom, Friday-Sunday, and near the Meeting Rooms on Monday.

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 Board is located in the SICB Registration area. The Employment Board provides a place for attendees to post "Positions Wanted" and learn about "Positions Available" and to schedule possible interviews. If you would like to schedule an interview in a private room, please ask SICB Registration Desk personnel for a room assignment.

Keyword Index

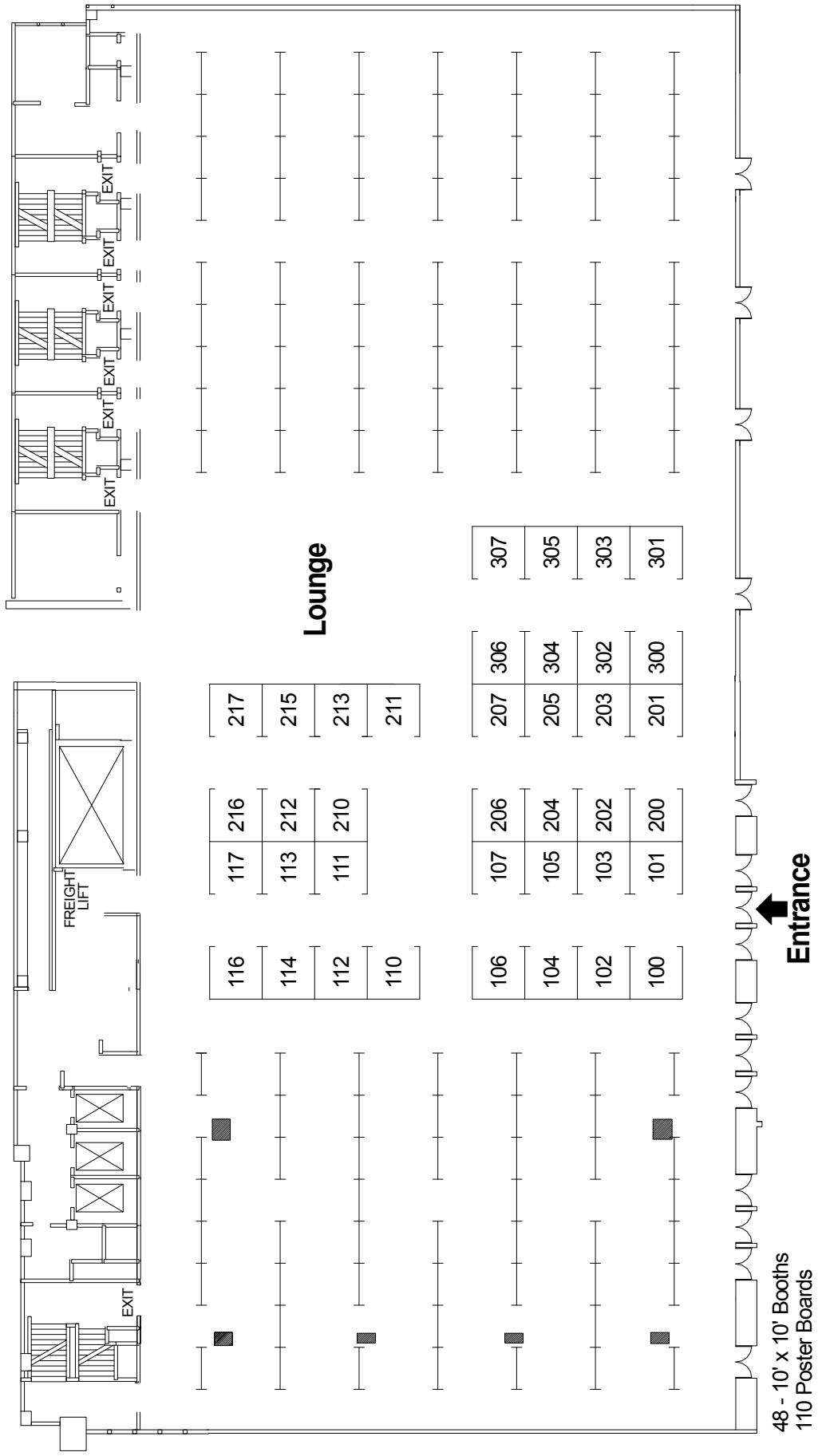
Refer to the keyword index located at the end of this program for easy access when looking up a specific subject matter. Each author who is presenting an abstract has supplied up to three keywords for your reference.

Registration

The SICB Registration area is located in the Yosemite Foyer. The Registration Desk will be open during the following hours:

Thursday 3 January	3:00-8:00 pm
Friday 4 January	7:00 am-5:00 pm
Saturday 5 January	7:30 am-4:00 pm
Sunday 6 January	7:30 am-3:00 pm
Monday 7 January	7:30 am-1:00 pm

SICB 2013 EXHIBITOR FLOORPLAN



Exhibits Floorplan, Grand Ballroom

2013 SICB EXHIBITORS

Exhibit Hours

Hilton Union Square, Grand Ballroom

Friday 4 January	9:30 AM-1:00 PM 2:00-5:00 PM
Saturday 5 January	9:30 AM-1:00 PM 2:00-5:00 PM
Sunday 6 January	9:30 AM-1:00 PM 2:00-5:30 PM

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Student Postdoctural Affairs **Booth: 113**
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This year the Student/Postdoc Affairs Committee will host a booth in the Exhibition Hall that is aimed at increasing interactions between students, postdocs, and researchers in a relaxed environment. Each day, scientists of all levels will be 'manning' the booth. And each day there will be themed questions that will serve as ice-breaking topics to get conversations going, as well as answer questions that students or postdocs might have. If you run your own lab, make sure to sign up for a slot so that you can meet the fantastic students and postdocs that attend SICB each year and help them out. And, if you are a student or postdoc…stop by anytime the Exhibition Hall is open for a break from the meeting and a chance to meet new folks! You never know, you might get something out of it, like your CV edited by a faculty member!

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Thursday Schedule of Events

All events take place in the Hilton San Francisco Union Square

EVENT	TIME	LOCATION
Registration	3:00-8:00 PM	Yosemite Foyer
Exhibitor Setup	Noon-8:00 PM	Grand Ballroom
SPECIAL LECTURE		
SICB Opening Plenary Session	7:30-8:30 PM	Continental 1-9
COMMITTEE & BOARD MEETINGS		
SICB Executive Committee	2:30-5:30 PM	Yosemite B
Broadening Participation: Mentor/Mentee Meeting/Reception	6:30-7:30 PM	Union Square 2
WORKSHOPS AND PROGRAMS		
Student Orientation Welcome and Meeting Orientation, "How to get the most out of your SICB meeting"	5:30-6:30 PM	Imperial A
SOCIAL EVENTS		
SICB Welcome Reception	8:30-10:00 PM	Golden Gate

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 Yosemite Foyer area near the plenary session on the day of arrival, Thursday 3 January. Please stop by for a "preview" of the posters that these students will later present in their scheduled poster sessions.

Friday Schedule of Events

All events take place in the Hilton San Francisco Union Square

EVENT	TIME	LOCATION
Poster Session 1 Set Up	7:00-8:00 AM	Grand Ballroom
Registration	7:00 AM-5 PM	Yosemite Foyer
Exhibit Hall	9:30 AM-5:00 PM	Grand Ballroom
Poster Session 1 Even Numbers Viewing	3:00-4:00 PM	Grand Ballroom
Poster Session 1 Odd Numbers Viewing	4:00-5:00 PM	Grand Ballroom
Poster Session 1 Teardown	5:00-5:30 PM	Grand Ballroom
Coffee Break/PM Poster Session Cash Bar	9:30-10:30 AM/3-5 PM	Grand Ballroom
SPECIAL LECTURE		
George A. Bartholomew Award Lecture	6:30-7:30 PM	Continental 4-6
SYMPOSIA ORAL PRESENTATIONS		
S1: When Predators Attack: Sensing Motion in Predator-Prey Interactions	8:10 AM-3:00 PM	Continental 4
S2: Ecological Epigenetics	8:00 AM-2:30 PM	Continental 5
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 1: Special Session in Honor of Ken Nagy	7:50 AM-Noon	Continental Ballroom 6
Session 2: Fish Swimming I	8:00-9:40 AM	Plaza A
Session 3: Fish Swimming II	10:00 AM-Noon	Plaza A
Session 4: Form & Function, Part I	8:00-9:40 AM	Imperial Room A
Session 5: Human Impacts	8:20-9:40 AM	Imperial Room B
Session 6: Locomotion: Hopping & Jumping	7:40-9:40 AM	Plaza B
Session 7: Coral Reefs	8:00-9:40 AM	Yosemite B
Session 8: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part I	8:00-10:00 AM	Yosemite A
Session 9: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part II	10:20 AM-Noon	Yosemite A
Session 10: Comp to Symp: Understanding First Order Phenotypes...Part I	8:00-9:40 AM	Yosemite C
Session 11: Comp to Symp: Understanding First Order Phenotypes...Part II	10:00-11:50 AM	Yosemite C
Session 12: Skulls & Teeth I	8:00-10:00 AM	Continental 2/3
Session 13: Metabolism & Energetics	8:00 AM-Noon	Continental 8
Session 14: Sexual Selection I	8:00-9:40 AM	Continental 1
Session 15: Sexual Selection II	10:00-11:40 AM	Continental 1
Session 16: Invertebrate Endocrinology	8:20-9:40 AM	Continental 7
Session 17: Neurobiology: Neuroethology	8:00-Noon	Continental 9
Session 18: Evolution & Morphology I	10:00-11:40 AM	Imperial A
Session 19: Macrophysiology	10:00 AM-Noon	Imperial B
Session 20: Avian Flight	10:00 AM-Noon	Plaza B
Session 21: Coral Symbiosis	10:00-11:20 AM	Yosemite B
Session 22: Parental Behavior	10:20-11:40 AM	Continental 2/3
Session 23: Comparative Endocrinology	10:00 AM-Noon	Continental 7
Session 24: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part III	1:00-3:00 PM	Yosemite A
Session 25: “Ray Huey Award” DEE Best Student Paper	1:00-3:00 PM	Continental 6
Session 26: Comp to Symp: Coping with Uncertainty: Integrating Physiology,...Part I	1:00-3:00 PM	Plaza A
Session 27: Adhesion	1:00-3:00 PM	Imperial B
Session 28: Bat Flight	1:00-3:00 PM	Plaza B
Session 29: Symbiosis	1:00-2:40 PM	Yosemite B
Session 30: Reproductive Behavior	1:00-3:00 PM	Continental 2/3
Session 31: Stress, Immunity and Parasites	1:00-3:00 PM	Continental 1
Session 32: Evolution & Morphology II	1:00-3:00 PM	Imperial A
Session 33: Comp to Symp: Understanding First Order Phenotypes...Part III	1:00-2:30 PM	Yosemite C
Session 34: Population Genetics	1:00-3:00 PM	Continental 7
Session 35: Ecomorphology	1:00-3:00 PM	Continental 9
Session 36: Energetics	1:00-3:00 PM	Continental 8
COMMITTEE & BOARD MEETINGS		
Broadening Participation Committee Meeting	7:00-8:00 AM	Mason
DPOs and Symposium Organizers for Austin	Noon-1:00 PM	Cityscape
Division Chairs President/President-Elect	Noon-1:00 PM	Powell
TCS Board Meeting	5:15-10 PM	Mason
SICB Nominating Committee	8:00-9:00 PM	Sutter
AMS Executive Committee	8:00-11:00 PM	Powell
BUSINESS MEETINGS		
DAB Meeting	5:15-6:00 PM	Continental 1
DCPB Meeting	5:15-6:15 PM	Continental 2/3
DCB Meeting	5:15-6:15 PM	Continental 7
DEDB Meeting	5:15-6:15 PM	Continental 8
DEE Meeting	5:15-6:15 PM	Continental 9
WORKSHOPS AND PROGRAMS		
Broadening Participation Workshop: “Effective presentations: performance and visual aids”	Noon-1:00 PM	Continental 2/3
SOCIAL EVENTS		
Companion Orientation Program	9:00-10:00 AM	Cityscape
DAB/DNB Social	6:00-7:30 PM	Cityscape
DCPB Social	7:30-8:30 PM	Golden Gate

FRIDAY PROGRAM
SYMPOSIA

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

8:10 am - 3:00 pm
Continental Ballroom 4

Symposium S1: When Predators Attack: Sensing Motion in Predator-Prey Interactions
Part I - Sensory Systems

Sponsored by: NSF, The Company of Biologists, Biological Bulletin, and SICB Divisions: DAB, DCB, DVM, DNB, DEE
Organized by: Matthew McHenry, Stacey Combes

8:10 AM				Introduction
8:20 AM	S1-1.1		*Casas J; University of Tours (France)*	Search games in realistic predator-prey interactions
9:00 AM	S1-1.2	DAB	*Barber JR, Kawahara AY; Boise State University, University of Florida*	Anti-bat behavioral strategies and evolutionary routes in the escalation of the bat-moth arms race
9:20 AM	S1-1.3	DNB	*Derby C; Georgia State University*	The role of chemicals in interactions between inking molluscs and their predators
9:40 AM	S1-1.4		*Leonardo A; Janelia Farm, HHMI*	Guidance laws underlying prey capture in the dragonfly

10:00 AM BREAK IN EXHIBIT HALL

Part II - Motor Systems

10:20 AM	S1-2.1		*Domenici P; CNR- National Research Council, Oristano, Italy*	Escape responses in fishes
11:00 AM	S1-2.2	DCB	*Combes SA, Iwasaki JM, Pandit MM, Switzer CM, Weiland TJ; Harvard University, University Otago, NZ, Indiana University, Middlebury College*	The role of identity in predator-prey interactions: are mechanics and strategy one-size-fits-all or tailored to each adversary?
11:20 AM	S1-2.3	DVM	*Holzman R; Tel Aviv University*	Suction feeding mechanics and hydrodynamics in fishes
11:40 AM	S1-2.4	DCB	*Patek SN, Devries MS, Murphy EAK; University of Massachusetts Amherst, University of California Berkeley, University of Virginia*	What is fast?

NOON LUNCH BREAK

Part III - Motor Integration

1:20 PM	S1-3.1		*Patterson BW, Abraham A, McLean D, Patankar NA, Maciver MA*; Northwestern University*	Vision versus electrosense: mechanics and sensing in prey capture behavior in larval zebrafish compared to electric knifefish
2:00 PM	S1-3.2	DCB	*Stewart WJ, Nair AM, McHenry MJ; University of California, Irvine*	The sensory cues for predator evasion in fish
2:20 PM	S1-3.3	DCB	*Robinson HE, Koehl MAR; University of California, Berkeley*	Sessile predators and motile prey: the effects of turbulence and wavy flow on benthic predator-prey interactions
2:40 PM	S1-3.4		*Kiørboe T; Technical University of Denmark*	Attack or attacked: the sensory and fluid mechanical constraints of copepod predator-prey interactions

8:00 am - 2:30 pm
Continental Ballroom 5

Symposium S2: Ecological Epigenetics

Sponsored by: DEDB, DEE, DCE
Organized by: Cristina Ledon-Rettig

8:00 AM	S2-1.1	DEDB	*Ledon-Rettig CC; North Caorlina State University*	Ecological epigenetics: an introduction to the symposium

8:30 AM	S2-1.2	DEE	*Schrey A, Alvarez M, Foust C, Kilvitis H, Liebl A, Martin LB, Richards C, Robertson M; Armstrong Atlantic State University, University S. Florida*	Ecological Epigenetics: beyond MS-AFLP
9:00 AM	S2-1.3		*Day T; Queen's University*	Evolutionary consequences of nongenetic inheritance
9:30 AM	S2-1.4		*Richards EJ, Henkhaus N, Anand IS; Boyce Thompson Institute for Plant Research, Cornell University*	Natural epigenetic variation in arabidopsis
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S2-1.5		*Herb BR, Wolschin F, Hansen KD, Aryee MJ, Langmead B, Irizarry R, Amdam GV*, Feinberg AP; Johns Hopkins University, Norwegian University of Life Sciences, Arizona State University*	Reversible switching between epigenetic states in honeybee behavioral subcastes
10:30 AM	S2-1.6		*Glastad KM, Hunt BG, Yi SV, Goodisman MAD*; Georgia Tech*	The function of DNA methylation in insects
11:00 AM	S2-1.7	DEDB	*Snell-Rood EC; University of Minnesota*	The role of learning in mediating transgenerational responses to nutrition
11:30 AM LUNCH BREAK				
1:00 PM	S2-2.1		*Richards CL, Boruta M, Bossdorf O, Coon CAC, Foust CM, Hughes AR, Kilvitis HJ, Liebl AL, Nicotra AB, Pigliucci M, Robertson MH, Schrey AW; University of South Florida, University of Bern, Florida State University, Australian National University, City University of New York, Armstrong Atlantic State University*	Epigenetic mechanisms of phenotypic plasticity
1:30 PM	S2-2.2		*Ecker J; The Salk Institute for Biological Studies*	Personal and population level epigenome dynamics
2:00 PM	S2-2.3	DEE	*Liebl AL, Schrey AW, Richards CR, Martin LB; University S. Florida, Armstrong Atlantic State University*	Epigenetic variation: a mechanism to overcome reduced diversity in novel environments?

FRIDAY PROGRAM
MORNING SESSIONS

7:50 am - Noon
Continental Ballroom 6

Session 1: Special Session in Honor of Ken Nagy

Chair: Stephen Secor

7:50 AM				Introduction
8:00 AM	1.1		*Nagy KA; University of California, Los Angeles*	Reflections and Projections on Becoming a Physiological Ecologist
8:20 AM	1.2	DCPB	*Costa DP, Schwarz LK, Maresh J, Robinson PW, Crocker DE; University of California, Santa Cruz, Sonoma State University*	A bioenergetics approach to understanding the population consequences of natural and anthropogenic disturbance
8:40 AM	1.3	DCPB	*Karasov WH; University of Wisconsin, Madison*	Research paradigms in nutritional ecology inspired by Ken Nagy
9:00 AM	1.4	DCPB	*Secor SM; University of Alabama, Tuscaloosa*	From field metabolic rates to genomics, the integrative digestive physiology of snakes
9:20 AM	1.5		*Speakman JR; Rowett Research Institute*	The contribution of DLW to understanding problems in human nutrition: a comparative perspective
9:40 AM BREAK IN EXHIBIT HALL				

10:00 AM	1.6	DCPB	*Martin KL; Pepperdine University*	Seas of sand, from desert to beach: sand as a nesting habitat for fish, turtles, and tortoises
10:20 AM	1.7	DAB	*Anderson RA; Western Washington University*	Proximal causes of diet of in the lizard *Phrynosoma platyrhinos* in a northern desert scrub
10:40 AM	1.8	DEE	*Huey RB, Kingsolver JG; University of Washington, Seattle, University of North Carolina*	Thermal sensitivity of ectotherm growth: interactions of food quantity and food quality with climate change
11:00 AM	1.9	DCPB	*Hazard LC; Montclair State University*	Integrating physiology and conservation: lessons from the Nagy lab
11:20 AM	1.10		*Lighton J, Brownell P; Sable Systems International, Oregon State University*	Extrasomatic energy storage in scorpions
11:40 AM	1.11	DCPB	*Williams JB, Ostrowski S; Ohio State University, National Wildlife Research Station*	Energy expenditure and water flux of free-living sand gazelles in Saudi Arabia

NOON LUNCH BREAK

8:00 - 9:40 am
Plaza A

Session 2: Fish Swimming I

Chair: Brooke Flammang

8:00 AM	2.1	DVM	*Blevins EL; Harvard University*	Structure-function relationships in the pectoral fin of freshwater stingray *Potamotrygon orbignyi*
8:20 AM	2.2	DCB	*Lauder GV, Xiong G; Harvard University*	Quantifying center of mass motion in swimming fishes
8:40 AM	2.3	DCB	*Burton LJ, Guasto JS, Stocker R, Hosoi AE; Massachusetts Institute of Technology*	Different strokes for different folks: comparing motion across and within swimming species
9:00 AM	2.4	DEE	*Bergstrom CA, Pacheco J, Fritz T; University of Alaska Southeast*	Functional morphology and swimming performance in flounder: are left-sided fish faster?
9:20 AM	2.5		*George AB, De Buron I, McElroy E; College of Charleston*	The effects of the parasites, *Cardicola laruei* and *Henneguya cynoscioni*, on the swimming performance of spotted seatrout, *Cynoscion nebulosus*

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Plaza A

Session 3: Fish Swimming II

Chair: Marianne E. Porter

10:00 AM	3.1	DVM	*Flammang BE, Lauder GV; Harvard University*	Backwards swimming by bluegill sunfish requires multifin coordination
10:20 AM	3.2	DVM	*Feilich KL, Lauder GV; Harvard University, Cambridge, MA*	Why do fish have different shapes? A test using simple physical models
10:40 AM	3.3		*Jacobs HO; Imperial College London*	On the interpretation of swimming as a limit cycle
11:00 AM	3.4	DCB	*Van Leeuwen JL, Muller UK*; Wageningen University, California State University Fresno*	Body dynamics of larval fish – implications for the mechanics of large-amplitude swimming
11:20 AM	3.5	DCB	*Akanyeti O, Liao JC; The Whitney Lab for Marine Bioscience, University of Florida Gainesville*	Modeling midline kinematics of fish swimming in a vortex street
11:40 AM	3.6	DCB	*Fish FE, Neal D, Fontanella JE, Dinenno N, Gabler MK; West Chester University, Pennsylvania, LaVision, Michigan*	Flow patterns associated with swimming motions of benthic and pelagic batoids as visualized with DPIV

NOON LUNCH BREAK

8:00 - 9:40 am
Imperial Room A

Session 4: Form & Function, Part I

Chair: Brent A. Craven

8:00 AM	4.1	DCB	*Balaban JB, Summers AP, Wilga CAD; University of Rhode Island, University of Washington*	Mechanical properties of a shark jaw support structure
8:20 AM	4.2		*Lillie MA, Piscitelli MA, Gosline JM, Shadwick RE; University of British Columbia*	Structure and mechanics of fin whale arteries
8:40 AM	4.3	DCB	*Dudek DM, Gao L, Lu H, Mueller R; Virginia Tech, Shandong University*	Mechanics of bat vocal folds
9:00 AM	4.4	DVM	*Craven BA, Richter JP, Rumple CR, Quigley AP, Ranslow AN, Neuberger T, Krane MH, Yee KK, Wysocki CJ, Van Valkenburgh B; Penn State University, Monell Chemical Senses Center, University of California, Los Angeles*	Reconstructing respiration and olfaction in the mammalian nasal cavity
9:20 AM	4.5		*Ary WJ, Cranford T, Berta A, Krysl P; San Diego State University, University of California, San Diego*	Form and function of the odontocete ear

9:40 AM BREAK IN EXHIBIT HALL

8:20 - 9:40 am
Imperial Room B

Session 5: Human Impacts

Chair: Brittan Wilson

8:20 AM	5.1	DEE	*Wilson BA; University of Baltimore*	Utilizing algal communities as bioindicators for PPCP contamination
8:40 AM	5.2	DEE	*Hanlon SM, Parris MJ; University of Memphis*	Taking the good with the bad: varying effects Roundup® on amphibian health
9:00 AM	5.3	DEE	*Peterson S, Hassrick J, Debier C, Crocker D, Costa D; University of California, Santa Cruz, Universite Catholique de Louvain, Belgium, Sonoma State University*	Polychlorinated biphenyl (PCB) bulk concentrations and congener profiles in a highly migratory marine mammal
9:20 AM	5.5	DEE	*Wagner DN, Green DJ, Cooper JM, Love OP, Williams TD; University of Miami - RSMAS, Simon Fraser University, Cooper, Beauchesne, & Associates, Ltd., University of Windsor*	Impact of hydroelectric operations on the physiology of songbirds during fall migration

7:40 - 9:40 am
Plaza B

Session 6: Locomotion: Hopping & Jumping

Chair: Craig P. McGowan

7:40 AM	6.1	DCB	*Usherwood JR; The Royal Veterinary College*	The basic mechanics of pronking, bounding or frog-hopping – the costs of pitching accounts for much of the diversity of fast quadrupedal gaits
8:00 AM	6.2	DCB	*Astley HC, Roberts TJ; Brown University*	Where's the catch? Examining the catch mechanism in anuran jumping using inverse dynamics
8:20 AM	6.3	DCB	*Gutmann AK, Lee DV, McGowan CP; University of Idaho, University of Nevada, Las Vegas*	Collision dynamics of bipedal hopping
8:40 AM	6.4	DCB	*McGowan CP, Shine C; University of Idaho*	Incline hopping by kangaroo rats: is there a division of labor?

9:00 AM	6.5	DVM	*Landberg T, Warkentin K, Wilink B, Mount K, Clouse E, Whiteman H; Murray State University, Boston University, University of Costa Rica*	Larval density affects jumping performance development during metamorphosis in two arboreal frogs
9:20 AM	6.6	DCB	*Olberding JP, Higham TE; University of California, Riverside*	Three-dimensional joint mechanics and kinematics of jumping lizards

10:00 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Yosemite B

Session 7: Coral Reefs

Chair: Howard R. Lasker

8:00 AM	7.1	DEE	*Doo SS, Fan TY, Fujita K, Mayfield AB, Chen HK, Nguyen HD, Byrne M; National Museum of Marine Biology and Aquarium, University of the Ryukyus, University of Sydney*	Developing molecular techniques to assess resilience in large benthic foraminiferan communities
8:20 AM	7.2	DEE	*Mouchka ME, Lehnert EM, Burriesci MS, Schwarz J, Pringle JR; Cornell University, Stanford University, Vassar College*	Identification of symbiotic-specific genes reveals a role for host immunity in a cnidarian-dinoflagellate mutualism
8:40 AM	7.3	DIZ	*Lasker HR, Paris CB, Kough A, Cherubin LM; University at Buffalo, University of Miami*	Reproductive timing and connectivity in the octocoral *Pseudopterogorgia elisabethae*
9:00 AM	7.4		*Stocking JB, Rippe JP, Reidenbach MA; University of Virginia*	Boundary layer flow effects on dissolved oxygen exchange and photosynthesis in scleractinic corals
9:20 AM	7.5	DIZ	*Tarrant AM, McCorkle DC, Deputron SJ, Church C, Henry J, Cohen AL; Woods Hole Oceanographic Institution, Bermuda Institute of Ocean Sciences*	Variation in size of juvenile corals and sensitivity to ocean acidification

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 10:00 am
Yosemite A

Session 8: Complementary to to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part I

Chair: Erin Lehmer

8:00 AM	8.1		*Cheng B, Bible J, Todgham A, Miller N, Chang A, Ferner M, Wasson K, Deck A, Zabin C, Latta M, Grosholz E; University of California, Davis, San Francisco State University, Smithsonian Environmental Research Center, San Francisco Bay National Estuarine Research Reserve, Elkhorn Slough National Estuarine Research Reserve, State Coastal Conservancy*	A test of multiple stressors and latent effects on a foundational estuarine species, the Olympia oyster (*Ostrea lurida*)
8:20 AM	8.2	DCPB	*Elder L, Seibel B; University of Rhode Island*	The effect of thermal stress and hypoxia on the hyperiid amphipod *Phronima*
8:40 AM	8.3	DEE	*Komoroske LM, Hasenbein M, Lindberg J, Connon RE, Fangue NA; University of California, Davis*	Understanding climate change impacts on Delta Smelt
9:00 AM	8.4	DIZ	*Castro DA, Podolsky RD; College of Charleston*	Effects of elevated oceanic CO_2 and Temperature on Sperm Motility and Swimming Speed in Northern and Southern Populations of the Sea Urchin *Arbacia punctulata*
9:20 AM	8.5	DEE	*Kenkel CD, Almanza AT, Matz MV; University of Texas at Austin*	Physiological and genetic underpinnings of local coral adaptation in the Florida Keys

9:40 AM	8.6	DCPB	*Lockwood BL, Byrd N, Montooth KL; Indiana University*	Coping with stress: the cellular maintenance of embryonic development

10:00 AM BREAK IN EXHIBIT HALL

10:20 am - Noon
Yosemite A

Session 9: Complementary to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part II

Chair: Brad Seibel

10:20 AM	9.1	DIZ	*Allen JD, Armstrong AF; College of William and Mary, University of California, Davis*	Developmental flexibility in a variable environment: lessons from sand dollars and sea urchins
10:40 AM	9.2		*Foo SA, Byrne M; University of Sydney, Australia*	Effects of ocean warming and ocean acidification on the sea urchin *Heliocidaris tuberculata*
11:00 AM	9.3	DEE	*Armstrong AF, Blackburn HN, Allen JD; University of California, Davis, College of William and Mary*	Delay of hatching in the sand dollar *Echinarachnius parma* in response to reduced salinity
11:20 AM	9.4		*Nguyen HD, Doo SS, Soars NA, Thomson M, Byrne M; University of Sydney*	Tolerance of early life history stages of Australian intertidal sea stars to ocean warming and ocean acidification: sensitivity of lecithotrophic developers
11:40 AM	9.5	DIZ	*Vasquez MC, Murillo A, Brockmann HJ, Julian D; University of Florida, Gainesville, FL*	Multiple stressor interactions delay horseshoe crab embryo development

NOON LUNCH BREAK

8:00 - 9:40 am
Yosemite C

Session 10: Complementary to Symposium: Understanding First Order Phenotypes: Transcriptomics for Emerging Model Systems - Part I

Chair: Mikhail Matz

8:00 AM	10.1	DIZ	*Pankey MS, Oakley TH; University of California, Santa Barbara*	Parallel molecular signatures underlie convergent evolution in two bioluminescent squid
8:20 AM	10.2	DEE	*Matz MV, Kenkel CD, Bay LK; University of Texas at Austin, Australian Institute of Marine Science*	Gene expression signatures of local adaptation in reef-building corals
8:40 AM	10.3		*Lehnert EM, Mouchka ME, Burriesci MS, Schwarz J, Pringle JR; Stanford University School of Medicine, Cornell University, Vassar College*	RNA-Seq uncovers extensive differential expression of metabolic genes in symbiotic versus aposymbiotic cnidarians
9:00 AM	10.4		*Konczal M, Koteja P, Radwan J, Stuglik M, Babik W; Jagiellonian University in Krakow*	Accuracy of pooled RNA-seq
9:20 AM	10.5	DEDB	*Moroz LL; University of Florida*	Genomic bases for independent origins of neurons and complex brains: new insights from RNA-seq and genomic sequencing of basal metazoans, basal deuterostomes and molluscs

9:40 AM BREAK IN EXHIBIT HALL

10:00 - 11:50 am
Yosemite C

Session 11: Complementary to Symposium: Understanding First Order Phenotypes: Transcriptomics for Emerging Model Systems - Part II

Chair: Susy Renn

10:00 AM	11.1	DAB	*Renn SCP; Reed College, Portland*	Genetic accommodation and behavioral evolution: insights from genomic studies
10:20 AM	11.2		*Chang ES, Shcheglovitova M, Cartwright P; University of Kansas*	Comparative transcriptomics of cnidarian freshwater parasites

10:40 AM	11.3	DEDB	*Koenig KM, Meyer E, Gross JM; University of Texas, Austin, Oregon State University*	RNA-seq as a tool to understand the evolution and development of the single-chambered eye: transcriptomics of the long-finned squid, *Doryteuthis (Loligo) pealeii*
11:00 AM	11.4	DEE	*Cortes PA, Bacigalupe L, Contreras CI, Varas V, Blier PU, Opazo JC; Universidad Austral de Chile, Université du Québec à Rimouski*	Discovering the genetic basis of torpor in a Chilean marsupial
11:20 AM	11.5		*Hanna BSK, Chang PK, Medina MM; University of California, Merced*	Tissue specific gene expression in the fresh water snail *Biomphalaria glabrata*: implications for biominerlization and shell formation
11:40 AM	11.6	DPCB	*Girardo DO, Citarella M, Kohn AB, Moroz LL; University of Florida*	Zero-click, automatic assembly, annotation and visualization workflow for comparative analysis of transcriptomes: the quest for novel signaling pathways
11:45 AM	11.7	DPCB	*Fodor A, Kohn AB, Swalla BJ, Moroz LL; University of Florida, University of Washington*	Quest for muscle specific genes in *Pleurobrachia bachei*: had mesoderm independently evolved in Ctenophores?

11:50 AM LUNCH BREAK

8:00 - 10:00 am
Continental Ballroom 2/3

Session 12: Skulls & Teeth I

Chair: Laura Porro

8:00 AM	12.1	DVM	*McGee MD, Borstein SR, Wainwright PC; University of California Davis, California State University Sacramento*	Origin and loss of cichlid craniofacial diversity
8:20 AM	12.2	DCB	*Olsen AM, Westneat MW; University of Chicago, Field Museum of Natural History*	Dabbling, grazing and diving: skull shape is related to beak foraging behaviors in the avian order Anseriformes
8:40 AM	12.3	DVM	*Jaszlics A, Pardo JD; University of Texas at Arlington, University of Nebraska at Lincoln, University of Calgary*	Patterns of development and diversity in the crocodilian skull
9:00 AM	12.4		*Cuff AR, Rayfield E; University of Bristol, UK*	Finite element validation of an avian skull using *ex vivo* measurements
9:20 AM	12.5	DVM	*Self CJ, Herring SW; University of Washington, Seattle*	Morphology of the rabbit periodontal ligament and the effect of reduced bite force
9:40 AM	12.6	DEE	*Kraatz BP, Bumacod N, Wedel M, Azevedo B; Western University of Health Sciences*	Evolution, ecology, and modularity of the lagomorph skull

10:00 AM BREAK IN EXHIBIT HALL

8:00 am - Noon
Continental Ballroom 8

Session 13: Metabolism & Energetics

Co-Chairs: Scott L. Applebaum, Shawn Noreen Kramer

8:00 AM	13.1	DCPB	*Lee JW, Applebaum SL, Manahan DT; University Southern California, Los Angeles*	Differential energy allocation for protein synthesis is genetically determined during marine larval development
8:20 AM	13.2	DCPB	*Pan F, Applebaum SL, Manahan DT; University Southern California, Los Angeles*	Amino acid transport as an index of growth potential in larvae of the Pacific oyster, *Crassostrea gigas*
8:40 AM	13.3	DCPB	*Applebaum SL, Lee JW, Manahan DT; University Southern California, Los Angeles*	Global metabolite profiles as predictors of physiological traits in bivalve larvae with genetically-determined differential growth rates

9:00 AM	13.4		*Edmunds PJ, Fan TY; California State University, Northridge, National Museum of Marine Biology and Aquarium, Taiwan, Republic of China*	Evidence that high pCO2 affects coral recruits through perturbed protein metabolism
9:20 AM	13.5		*Yuge S, Honeyfield DC, Saloka SK, Li W; Michigan State University, East Lansing, USGS-NARL, Wellsboro*	Characterization and functional analyses of three *thiamin related transporters* and a *thiamin pyrophosphokinase* in rainbow trout, and examination of their expression alteration in thiamin deficiency
9:40 AM	13.6	DCPB	*Powell ML, D'Abramo LR, Watts SA; The University of Alabama at Birmingham, Mississippi State University*	Effects of dietary n6 and n3 fatty acids on zebrafish total body composition
10:00 AM BREAK IN EXHIBIT HALL				
10:20 AM	13.7	DCPB	*Levesque DL, Lovegrove BG; University of KwaZulu-Natal*	Reproduction and the evolution of endothermy-Increased homeothermy in reproductively active female Greater hedgehog tenrecs (*Setifer setosus*)
10:40 AM	13.8	DCPB	*Thometz NM, Williams TM; University of California, Santa Cruz*	Ontogeny of oxygen storage capacity and diving ability in southern sea otters (*Enhydra lutris nereis*)
11:00 AM	13.9	DCPB	*Noren SR, Triggs L, Oland L, Paschke J, Kramer AW, Udevitz MS, Jay CV; University of California, Santa Cruz, Point Defiance Zoo and Aquarium, Indianapolis Zoo, Six Flags Discovery Kingdom, US Geological Survey*	Body condition and caloric demand of female Pacific walruses (*Odobenus rosmarus divergens*)
11:20 AM	13.10	DEE	*Woods HA, Wilson JK; University of Montana*	Information theory illuminates the evolution of homeostasis
11:40 AM	13.11	DCPB	*Marshall HM, Brill R, Bushnell P, Skomal G, Bernal D; University of Massachusetts Dartmouth, Virginia Institute of Marine Science/NOAA, Indiana University South Bend, Massachusetts Division of Marine Fisheries*	Comparison of fishing-induced stress response and post-release mortality between sandbar (*Carcharhinus plumbeus*) and dusky (*Carcharhinus obscurus*) sharks
NOON LUNCH BREAK				

8:00 - 9:40 am
Continental Ballroom 1

Session 14: Sexual Selection I

Chair: Nathan I Morehouse

8:00 AM	14.1	DEE	*Friesen CR, Mason RT, Uhrig EJ, Brennan PL; Oregon State Univeristy, University of Massachusetts at Amherst*	Sexual conflict during mating in red-sided garter snakes as evidenced by genital manipulation
8:20 AM	14.2		*Cui R, Schumer M, Kruesi K, Andolfatto P, Rosenthal G; Texas A&M University, Princeton University, Universidad Nacional Autónoma de México*	Revealing extensive reticulate evolution in Xiphophorus fishes using high-throughput phylogenomics
8:40 AM	14.3		*Morehouse NI, Bartoch CM, Luna EN, Roberts NS, Saleh NW; University of Pittsburgh*	Food, nuptial gifts and vaginae dentatae: phenotypic plasticity and sexual conflict in a gift-giving butterfly
9:00 AM	14.4	DAB	*McCullough EL, Tobalske BW, Emlen DJ; University of Montana*	Long and strong? Mechanical limits to maximum weapon size in a giant rhinoceros beetle
9:20 AM	14.5	DVM	*Martin CH, Wainwright PC; University of California, Davis*	Multiple fitness peaks on the adaptive landscape drive the evolution of novel ecological niches within a recent sympatric adaptive radiation of *Cyprinodon* pupfishes
9:40 AM BREAK IN EXHIBIT HALL				

10:00 - 11:40 am
Continental Ballroom 1

Session 15: Sexual Selection II

Chair: Patrick Krug

10:00 AM	15.1	DPCB	*McEntee JP, Penalba J, Bowie RCK; University of California, Berkeley*	Singing out from sky islands: sunbird song evolution across the Eastern Afromontane
10:20 AM	15.2	DPCB	*Krug PJ, Vendetti JE, Trowbridge CD; California State University, Los Angeles, Oregon Institute of Marine Biology*	Do shifts in host use or larval development drive speciation in the sea? A comparative study of herbivorous sea slugs
10:40 AM	15.3	DEE	*Phuong MA, Lim M, Wait DR, Rowe KC, Moritz C; University of California, Berkeley, Museum Victoria, Melbourne, Australian National University*	Understanding discordance among diverse datasets in an integrative taxonomy: a case study in ground squirrels
11:00 AM	15.4		*Steffen MA, Bonett RM; University of Tulsa*	Pheromone evolution and reproductive isolation in dusky salamanders
11:20 AM	15.5	DPCB	*Bastiaans E, Marshall J, Sites J, Morinaga G, Sinervo B; University of California, Santa Cruz, Weber State University, Brigham Young University, Clark University*	Interpopulation variation in throat color morphs in an incipiently speciating lizard: from blue to white and back again?

11:40 AM LUNCH BREAK

8:20 - 9:40 am
Continental Ballroom 7

Session 16: Invertebrate Endocrinology

Chair: Megumi Fuse

8:20 AM	16.1	DCE	*Silva N, Miry S, Omondi C, Abdon B, Njie C, Ramos L, Moffatt C, Fuse M*; SFSU*	Systemic responses to ionizing irradiation-induced imaginal discs in the larval hornworm, *Manduca sexta*
8:40 AM	16.2	DCE	*Reynolds LA, Gibbs AG; University of Nevada, Las Vegas*	20-hydroxyecdysone (20E) signaling delay in starvation resistant *Drosophila*
9:00 AM	16.3	DCE	*Nimitkul S, Mykles DL, Chang ES; Bodega Marine Laboratory, University of California, Davis, Colorado State University*	Role of cyclic nucleotides, intracellular calcium and nitric oxide in the molt-inhibiting hormone (MIH) signaling pathway in Y-organs of the green shore crab (*Carcinus maenas*)
9:20 AM	16.4	DCE	*Sharabi O, Ventura T, Manor R, Aflalo ED, Sagi A; Ben Gurion University of the Negev, University of the Sunshine Coast, Queensland, Australia*	Dual function of a putative epidermal growth factor receptor in the decapod crustacean *Macrobrachium rosenbergii*

9:40 AM BREAK IN EXHIBIT HALL

8:00 am - Noon
Continental Ballroom 9

Session 17: Neurobiology: Neuroethology

Co-Chairs: Mark A. Willis, Duane McPherson

8:00 AM	17.1	DCB	*Munk Y, Wilkinson S, Daniel TL; University of Washington, Morehouse College*	Hawkmoths of Endor: navigational decision policies for obstacle navigation in *Manduca sexta*
8:20 AM	17.2	DCB	*Ros IG, Biewener AA; Harvard University*	Potential control inputs for aerial turning in the pigeon
8:40 AM	17.3	DNB	*Theobald JC, Cabrera S; Florida International University*	Flying fruit flies correct for visual sideslip using motion parallax cues
9:00 AM	17.4	DAB	*Van Breugel F, Dickinson M; Caltech, University of Washington*	Foraging for food: multimodel sensory fusion in freely flying fruit flies
9:20 AM	17.5	DNB	*Zamore S, Lamarca E, Daniel TL; University of Washington, Roosevelt High School*	Mosquitoes do not track warm plumes in the absence of CO2

9:40 AM	17.6	DNB	*Mongeau J-M, Sponberg SN, Full RJ; University of California, Berkeley*	Unit responses from antenna in cockroaches generate control input predicted from control-theoretic model of wall following

10:00 AM BREAK IN EXHIBIT HALL

10:20 AM	17.7		*Deora T, Singh AK, Sane SP; National Centre for Biological Sciences, TIFR, Bangalore*	A general mechanical model of the Dipteran thorax
10:40 AM	17.8	DAB	*Elzinga MJ, Dickinson MH; California Institute of Technology, University of Washington*	Stroke features involved in the stabilization of longitudinal forward flight in flies
11:00 AM	17.9		*Krishnan A, Sane SP; National Centre for Biological Sciences, TIFR, Bangalore*	Antennal positioning in flying hawk moths
11:20 AM	17.10		*Simpson GM, Willis MA; Case Western Reserve University*	The effect of loss of sensory input from the tegula on the flight behavior and muscle activation patterns of the moth *Manduca sexta*
11:40 AM	17.11	DNB	*Malec AM, Willis MA*; Case Western Reserve University*	Overlap between the fore and hind wings in the moth *Manduca sexta* is different associated with sex and weight in free flight

NOON LUNCH BREAK

10:00 - 11:40 am
Imperial A

Session 18: Evolution & Morphology I

Chair: David Collar

10:00 AM	18.1	DVM	*Collar DC, Mehta RS, Holzman R, Wainwright PC; University of California, Santa Cruz, Tel Aviv University, University of California, Davis*	The morphological and kinematic basis of suction feeding performance evolution
10:20 AM	18.2	DVM	*Claverie T, Wainwright PC; University of California, Davis*	Fractal radiation: repeated patterns of diversification along an axis of body elongation in fishes
10:40 AM	18.3		*Neutens C, Adriaens D, Christiaens J, Van Loo D, De Kegel B, Boistel R, Van Hoorebeke L; Ghent University, Belgium, Université de Poitiers, France*	Evolutionary morphology of the prehensile tail in syngnathid fishes: from pipefish to seahorse
11:00 AM	18.4	DEE	*Des Roches S, Torresdal J, Morgan T, Brinkmeyer M, Harmon LJ, Rosenblum EB; University of Idaho, University of California, Berkeley*	Beyond black and white: comparative ecomorphology in three rapidly evolving lizard species at white sands
11:20 AM	18.5	DVM	*Angielczyk KD, Schmitz L; Field Museum of Natural History, Claremont McKenna, Pitzer, Scripps Colleges*	Reconstructing the diel activity patterns of fossil nonmammalian synapsids

NOON LUNCH BREAK

10:00 am - Noon
Imperial B

Session 19: Macrophysiology

Chair: Mark A. Chappell

10:00 AM	19.1	DEE	*Gibbs AG, Rajpurohit S, Peterson LM, Orr A; University of Nevada, University of Pennsylvania*	Testing the melanism-desiccation hypothesis using experimental evolution
10:20 AM	19.2	DEE	*Thompson AB, Boyles JG*, McKechnie AE, Malan E, Humphries MM, Careau V; McGill University, Southern Illinois University, University of Pretoria, University of California, Riverside*	Resource needs and climate means contributing to a global heterothermic continuum in mammals

10:40 AM	19.3	DCPB	*Waters JS, Harrison JF; Princeton University, Arizona State University*	Metabolic and behavioral variation with colony size and age: a manipulative test of the size-dependence theory of metabolic allometry
11:00 AM	19.4	DCPB	*Hedrick MS, Hillman SS, Drewes RC, Hancock TV; University of North Texas, Portland State University, California Academy of Sciences, Eastern Washington University*	Physiological vagility, vertebrate dispersal and population genetic structure of amphibians
11:20 AM	19.5	DCPB	*Chappell MA, Londono G, Jankowski J, Robinson S, Rincon D, Chinome A, Rivera S, Rinconguarin D, Florez C; University of California, Riverside, University of Florida, Gainesville, University of British Columbia, Vancouver, University de Antioquia, Columbia, University Tecnologia y Pedagogica de Tunja, Columbia, University Industrial d Santander, Columbia*	Do tropical birds from Andean forests have low basal metabolism?
11:40 AM	19.6		*Tepolt CK, Somero GN; Stanford University*	Cardiac thermal tolerance and acclimatory plasticity in diverse populations of the invasive green crab, *Carcinus maenas*

NOON LUNCH BREAK

10:00 am - Noon
Plaza B

Session 20: Avian Flight

Chair: Donald R. Powers

10:00 AM	20.1	DCPB	*Powers DR, Tobalske BW; George Fox University, University of Montana*	Metabolic power, mechanical efficiency, and heat production during hovering and forward flight in calliope hummingbirds (*Selasphorus calliope*)
10:20 AM	20.2		*Portugal S, Hubel T, Fritz J, Wilson A, Usherwood J; Royal Veterinary College, Uk, Royal Veterinary College, Austria*	The aerodynamics of flapping V formation flight
10:40 AM	20.3	DCB	*Williams CD, Biewener AA; Harvard University, Boston*	Squeezing through: strategies for navigating tight spaces in flight
11:00 AM	20.4	DCB	*Shelton RM, Jackson BE, Hedrick TL; University of North Carolina, Chapel Hill*	High speed pursuit in barn and cliff swallows
11:20 AM	20.5	DCB	*Lentink D; Stanford University, Wageningen University, Harvard University*	Direct aerodynamic force measurements in avian flight support active upstroke hypothesis
11:40 AM	20.6	DVM	*Bright JA, Cobb SN, Marugan-Lobon J, Rayfield EJ; University of Bristol, Hull York Medical School, Universidad Autonoma de Madrid*	Morphological, dietary and phylogenetic convergence in the diurnal birds of prey

NOON LUNCH BREAK

10:00 - 11:20 am
Yosemite B

Session 21: Coral Symbiosis

Co-Chairs: Amanda Holt, Malcolm S. Hill

10:00 AM	21.1	DIZ	*Hanes SD, Kempf SC, Meyer E; Auburn University, Oregon State University*	Profiling gene expression responses of the symbiotic anemone, *Aiptasia pallida*, to elevated temperature and light conditions using RNA Seq
10:20 AM	21.2	DEE	*Hill M, Hill A, Cotman C, Friday S, Heist T, McCauley M, Peterson K, Richardson C, Riesgo A, Strehlow B; University of Richmond, University of Mississippi, University of Virginia, CEAB, Spain*	Evolutionary and ecological significance of sponge-*Symbiodinium* symbioses: genetic regulation of uptake and maintenance in sponges

10:40 AM	21.3		*McGinty ES, McMahon RF, Mydlarz LD; University of Texas at Arlington*	The effect of temperature on the growth rates and oxygen consumption of 6 cnidarian algal symbionts
11:00 AM	21.4	DIZ	*Holt AL, Gagnon Y, Vahidinia S, Morse DE, Sweeney AM; UCSB, Duke University, NASA-Ames, University of Pennsylvania*	Photonic enhancement of symbiotic photosynthesis in giant clams

11:20 AM LUNCH BREAK

10:20 - 11:40 am
Continental Ballroom 2/3

Session 22: Parental Behavior

Chair: Alice Boyle

10:20 AM	22.1	DAB	*Boyle WA, Winkler DW, Guglielmo CG; Kansas State University, Cornell University, Western Ontario*	When and how do tree swallow chicks die during cold weather?
10:40 AM	22.2		*D'Alba L, Jones D, Badawy H, Shawkey MD; University of Akron, Griffith University*	Mechanisms of egg defense in Megapodes: avoiding infection in a compost heap
11:00 AM	22.3	DAB	*Bowers EK, Sakaluk SK, Thompson CF; Illinois State University*	Immune challenge and terminal investment in female house wrens (*Troglodytes aedon*)
11:20 AM	22.4	DAB	*Wright ML, Caldwell RL; University of California, Berkeley*	Are two parents better than one? Examining the effects of biparental care in a stomatopod crustacean

11:40 AM LUNCH BREAK

10:00 am - Noon
Continental Ballroom 7

Session 23: Comparative Endocrinology

Co-Chairs: Kathleen Hunt, Elizabeth Addis

10:00 AM	23.1	DCE	*Addis EA, Reding DM, Schwartz TS, Palacios MG, Bronikowski AS; Gonzaga University, Iowa State University, CENPAT-CONICAT*	Insulin-like signaling and life history trade-offs in garter snakes with divergent life histories
10:20 AM	23.2		*Ryan CP, Dawson AS, Sharp PJ, Williams TD; Simon Fraser University, Canada, Centre for Ecology and Hydrology, UK, The Roslin Institute, University of Edinburgh, UK*	Hormone-trait relationships for experimentally enlarged clutches continue to challenge the prolactin-based model for clutch-size determination
10:40 AM	23.3		*Dores RM, Liang L; University of Denver*	Humans are also mammals; using the human melanocortin-2 receptor as a model for analyzing the evolution of MC2Rs
11:00 AM	23.4	DCE	*Hunt KE, Rolland R, Kraus S; New England Aquarium*	Respiratory vapor sampling for endocrine studies of free-swimming baleen whales
11:20 AM	23.5	DCE	*Thompson JA, Valverde RA; University of Georgia, Southeastern Louisiana University*	2,4,6-Trichlorobiphenyl disrupts the hypothalamic-pituitary-adrenal axis in red-eared slider turtles (*Trachemys scripta elegans*)
11:40 AM	23.6		*Mark MM, Rubenstein DR; Columbia University*	Interspecific brood parasitism prolongs parental care and increases the stress response in a tropical songbird

NOON LUNCH BREAK

FRIDAY PROGRAM
AFTERNOON SESSIONS

1:00 - 3:00 pm
Yosemite A

Session 24: Complementary to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part III

Chair: Michael W. Sears

1:00 PM	24.1	DEE	*Sears MW; Clemson*	Toward a spatially-explicit thermal ecology: predicting activity from the dispersal of individuals through thermally-structured landscapes
1:20 PM	24.2	DAB	*Clissold FJ, Simpson SJ; The University of Sydney, Australia*	Plant quality is more than just nutrients: host plant choice is determined by temperature and nutrients
1:40 PM	24.3	DEE	*Kingsolver JG, Diamond SE; University of North Carolina, Chapel Hill, North Carolina State University*	Thermal stress and the fitness consequences of climate change for ectotherms
2:00 PM	24.4	DCPB	*Andrew NR, Hart RA, Jung M-P, Terblanche JS; University of New England, Australia, National Academy of Agricultural Science, South Korea, Stellenbosch University, South Africa*	Can temperate insects take the heat? Physiological and behavioural responses suggest high extinction risk with climate change
2:20 PM	24.5	DEE	*Bernardo J, Spotila JR, Agosta S; Texas A&M University, Drexel University, Virginia Commonwealth University*	Thermal sensitivity of metabolic rates explains range properties: towards a cause-and-effect understanding of climate change vulnerability
2:40 PM	24.6		*Lighton JRB, Foerster TD, Kaiyala KJ, Wisse B; Sable Systems International, University of Washington*	Problem and solution: multiplexing distorts metabolic data

1:00 - 3:00 pm
Continental Ballroom 6

Session 25: "Ray Huey Award" DEE Best Student Paper

Co-Chairs: Elizabeth Dahlhoff, Mike Angiletta

1:00 PM	25.1	DEE	*Carney RM, Ahearn SC, McConchie A, Glaser C, Jean C, Barker C, Park B, Padgett K, Parker E, Aquino E, Kramer V; Brown University, City University of New York, University of British Columbia, California Dept of Public Health, University of California, Davis*	A biologically-based GIS model for predicting outbreaks of mosquito-borne viral diseases
1:20 PM	25.2	DEE	*Munoz MM, Stimola MA, Landestoy MA, Conover A, Rodriguez A, Algar AC, Losos JB; Harvard University, Columbia University, Sociedad Ornitologica de la Hispaniola, Stuyvesant High School, University of California, Davis, University of Nottingham*	Does thermal specialization accompany environmental differentiation in a diverse clade of Caribbean *Anolis* lizards?
1:40 PM	25.3	DEE	*Logan ML; Dartmouth College*	Fine-scale variation in thermal ecology suggests resilience to climate change among tropical lizards
2:00 PM	25.4	DEE	*Sunday JM, Bates AE, Dulvy NK; Simon Fraser University, Institute for Marine and Antarctic Studies, University of Tasmania*	Global patterns of thermal tolerance and range limits predict climate change responses in ectotherms
2:20 PM	25.5	DEE	*Koch RE, Hill GE; Auburn University*	Searching for evidence of a runaway process in art and literature
2:40 PM	25.6	DEE	*Mitchell TS, Maciel J, Janzen FJ; Iowa State University*	Sex-ratio selection influences nesting behavior in a reptile with environmental sex determination

1:00 - 3:00 pm
Plaza A

Session 26: Complementary to Symposium: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World - Part I

Chair: Kristjan Niitepold

1:00 PM	26.1		*Niitepold K, Perez A, Boggs CL; Stanford University*	Food limited butterflies – resting and flight metabolic rate, fecundity and longevity
1:20 PM	26.2		*Boggs CL, Niitepold K, Perez A; Stanford University*	Comparative effects of adult food limitation on butterfly life histories
1:40 PM	26.3	DEE	*Kim TW, Taylor J, Lovera C, Barry JP; Monterey Bay Aquarium Research Institue*	Ocean acidification impairs olfaction and elevates respiration in deep sea hermit crabs, with high variation between individuals
2:00 PM	26.4	DCPB	*Gunderson AR; Duke University*	Testing common models of temperature-dependent activity: implications for predicting responses to climate change
2:20 PM	26.5		*Sapir N, Rotics S, Kaatz M, Davidson S, Zurell D, Eggers U, Jeltsch F, Nathan R, Wikelski M; Max Planck Institute for Ornithology, Germany, The Hebrew University of Jerusalem, Israel, University of Potsdam, Germany*	Multi-year tracking of White storks (*Ciconia ciconia*): how the environment shapes the movement and behavior of a soaring-gliding inter-continental migrant
2:40 PM	26.6	DCPB	*Shero MR, Pearson LE, Goetz KT, Robinson PW, Hückstädt LA, Costa DP, Burns JM; University of Alaska Anchorage, University of California Santa Cruz*	How Weddell seals stay in shape: using morphometric and isotopic dilution techniques to assess seasonal changes in body condition

1:00 - 3:00 pm
Imperial B

Session 27: Adhesion

Chair: Tonia Hseih

1:00 PM	27.1	DVM	*Stark AY, Niewiarowski PH, Dhinojwala A, Badge I; The University of Akron*	The effect of water on the gecko adhesive system
1:20 PM	27.2	DVM	*Irschick DJ, Crosby AJ, Federle W; University Massachusetts Amherst, Cambridge University, UK*	The evolution of gecko adhesion: an integrative perspective
1:40 PM	27.3	DCB	*Gillies AG, Lin H, Henry A, Ren A, Shiuan K, Fearing RS, Full RJ; University of California, Berkeley*	Gecko toe and lamella adhesion on macroscopically rough surfaces
2:00 PM	27.4	DCB	*Labonte D, Federle W; University of Cambridge*	Division of labour between adhesion and friction pads in stick insects (*Carausius morosus*)
2:20 PM	27.5	DCB	*Smith AM; Ithaca College*	Double network gels and biological glues: a powerful new toughening mechanism
2:40 PM	27.6	DCB	*Clifton GT, Hedrick TL, Biewener AA; Concord Field Station, Harvard University, University of North Carolina, Chapel Hill, CFS*	Running on water: the impressive rushing behaviour of Western and Clark's grebes

1:00 - 3:00 pm
Plaza B

Session 28: Bat Flight

Chair: Nicolai Konow

1:00 PM	28.1	DCB	*Padian K, Dial KP; University of California, Berkeley, University of Montana, Missoula*	Did bat ancestors glide? A phylogenetic approach

1:20 PM	28.2	DEDB	*Cooper L, Sears K, Simmons N; NEOMED, University of Illinois, Urbana-Champaign, American Museum of Natural History*	Regional alterations in bone thickness and density helped bats acquire active flight
1:40 PM	28.3	DCB	*Bergou A, Franck J, Taubin G, Swartz S, Breuer K*; Brown University*	How do bats turn?
2:00 PM	28.4	DCB	*Cheney JA, Middleton KM, Konow N, Giblin EL, Breuer KS, Swartz SM; Brown University, University of Missouri, Columbia*	Electromyography of bat wing membrane muscles
2:20 PM	28.5	DCB	*Konow N, Von Busse R, Cheney JA, Breuer KS, Swartz SM; Brown University*	What is the relationship between pectoralis muscle recruitment intensity and air speed velocity in an un-laden bat?
2:40 PM	28.6	DCB	*Bahlman JW, Swartz SM, Breuer KS; Brown University*	The cost of performance: power cost and aerodynamic force generated by varying wingbeat kinematics

1:00 - 2:40 pm
Yosemite B

Session 29: Symbiosis

Chair: Michele K. Nishiguchi

1:00 PM	29.1	DCPB	*Allam B, Carden W, Ward JE, Ralph GM, Winnicki S, Parvez N, Pales Espinosa E; Stony Brook University, Stony Brook, University of Connecticut, University of Connecticut, Groton*	Evidence that Perkinsus marinus is acquired by oysters during rejection of waterborne particles as pseudofeces
1:20 PM	29.2	DEE	*Fitzpatrick BM; University of Tennessee*	Symbiont transmission and maintenance of interspecific disequilibrium in structured populations
1:40 PM	29.3	DEE	*Essock-Burns T, Tarrell A, Mathai P, Gohad NV, Mount AS, Maki JS, Rittschof D; Duke University, Marquette University, Clemson University*	Interactions between biofilm bacteria and barnacles *Balanus amphitrite*
2:00 PM	29.4	DEE	*Pakes MJ, Mejía-Ortiz LM, Weiss A, Caldwell RL; University of California, Berkeley, University of Quintana Roo, Cozumel*	Endosymbiosis in an Anchialine crustacean
2:20 PM	29.6		*Katz S, Tresguerres M, Rouse GW; Scripps Institution of Oceanography, UCSD, San Diego*	Drilling for nutrition: the physiological mechanism of bone penetration by *Osedax*

1:00 - 3:00 pm
Continental Ballroom 2/3

Session 30: Reproductive Behavior

Chair: John Christy

1:00 PM	30.1	DAB	*Christy JH; Smithsonian Tropical Research Institute*	Extreme synchrony, amplitude modulation and phase reversals in the semilunar reproductive cycle of the intertidal false limpet *Siphonaria gigas* on a rocky shore in Panama
1:20 PM	30.2	DEE	*Heiniger J, Dickman C, Wilson RS; The University of Queensland, University of Sydney*	The frenetic sex life of male northern quolls: does performance degrade when the sex becomes too demanding?
1:40 PM	30.3	DAB	*Huffard CL, Caldwell RL; California Academy of Sciences, University of California, Berkeley*	Female proceptive behavior in octopus (*Abdopus aculeatus* d'Orbigny 1834)

2:00 PM	30.4		*Gibson Q, Howells E, Lambert J, Mazzoil M, O'Cory-Crowe G, Richmond J; University of North Florida, Harbor Branch Oceanographic Institute*	Reproductive state influence on female bottlenose dolphin ranging patterns
2:20 PM	30.5		*Murphy KK, Walker SE; California State University, Fullerton*	The impact of age and mate quality on resource allocation in the house cricket, *Acheta domesticus*
2:40 PM	30.6	DEE	*Drury JP, Anderson CN, Grether GF; University of California, Los Angeles, Oberlin College*	Reproductive interference and interspecific territoriality in rubyspot damselflies (*Hetaerina* spp.)

1:00 - 3:00 pm
Continental Ballroom 1

Session 31: Stress, Immunity and Parasites

Chair: Zach Stahlschmidt

1:00 PM	31.1	DEE	*Uhrig EJ, Friesen CR, Mason RT; Oregon State University*	Endoparasitic infections in the red-sided garter snake, *Thamnophis sirtalis parietalis*
1:20 PM	31.2	DEE	*Pinzon JH, Beach-Letendre JM, Cawthorne A, Weil E, Mydlarz LD; University of Texas, Arlington, University of Puerto Rico - Mayaguez*	Why does immunity vary? Linking phylogenetics and life history traits to immunity in reef-building corals
1:40 PM	31.3	DEE	*Stahlschmidt ZR, Rollinson N, Acker M, Adamo SA; Dalhousie University*	Are all eggs created equal? Food availability and the fitness tradeoff between reproduction and immunity
2:00 PM	31.4		*Krasnov BR, Khokhlova IS; Ben-Gurion University of the Negev*	Patterns, mechanisms, consequences of gender-biased parasitism in small mammals
2:20 PM	31.5	DEE	*Palacios MG, Cunnick J, Bronikowski AM*; Iowa State University*	Complex interplay of body condition, life-history, and prevailing environment shape immune defenses of garter snakes in the wild
2:40 PM	31.6	DCPB	*Ragland GJ; University of Notre Dame*	Relaxed, but ready: dormancy responses are the opposite of stress responses at the transcriptional level

1:00 - 3:00 pm
Imperial A

Session 32: Evolution & Morphology II

Chair: Campbell Rolian

1:00 PM	32.1		*Stewart TA; University of Chicago*	Multiple origins of the adipose fin and the morphological diversification of novel vertebrate appendages
1:20 PM	32.2	DCB	*Provini P, Biewener AA, Abourachid A; Muséum National d'Histoire Naturelle, Paris, Department of Organismic and Evolutionary Biology, Concord Field Station, Harvard University, Cambridge*	The 3D kinematics of the trunk and hindlimbs during take-off and landing in zebra finch (*Taeniopygia guttata*)
1:40 PM	32.3	DVM	*Rolian C, Dowhanik A, Krueger C, Hallgrimsson B; University of Calgary*	Observing skeletal evolution in real time: preliminary results from an artificial selection experiment in laboratory mice
2:00 PM	32.4	DCB	*Ryerson WG, Schwenk K; University of Connecticut*	The medium matters: tongue-flicking mechanics in air and water in the water snake (*Nerodia sipedon*)
2:20 PM	32.5	DVM	*Fabre A-C, Slater G, Cornette R, Peigné S, Goswami A, Pouydebat E; CNRS and MNHN, France, University College London, UK, Smithonian Institution, Washington, DC*	Getting a grip on grasping in carnivorans: a three-dimensional analysis of forelimb shape

2:40 PM	32.6	DEE	*Rupp MF, Hulsey CD; University of Tennessee Knoxville*	Evolution and kinematics of pectoral fins in malawi cichlids

1:00 - 2:30 pm
Yosemite C

Session 33: Complementary to Symposium: Understanding First Order Phenotypes: Transcriptomics for Emerging Model Systems - Part III

Chair: Prashant Sharma

1:00 PM	33.1	DEDB	*Sharma PP, Schwager EE, Giribet G, Jockusch EL, Extavour CG; Harvard University, University of Connecticut*	*Distal-less* and *dachshund* pattern both plesiomorphic and apomorphic structures in chelicerates: RNAinterference in the harvestman *Phalangium opilio* (Opiliones)
1:20 PM	33.2	DEDB	*Clemmensen SF, Hulsey CD; University of Tennessee*	Effects of morphological phenotypic plasticity on cichlid transcriptome expression
1:40 PM	33.3	DPCB	*Garb JE, Hayashi CY, Lancaster AK, Corbett S, Ayoub NA; University of Massachusetts Lowell, University of California, Riverside, Whitehead Institute for Biomedical Research, Washington and Lee University*	Fresh insights from RNA-Seq analysis into black widow spider venom composition and evolution
2:00 PM	33.4	DEDB	*Sanders SM, Shcheglovitova M, Cartwright P; University of Kansas*	Nonparametric bootstrapping of RNASeq data in polymorphic polyps of *Hydractinia symbiolongicarpus*
2:20 PM	33.5	DPCB	*Bruders R, Kohn AB, Kocot KM, Swalla BJ, Norekian T, Moroz LL; University of Washington, University of Florida, Auburn University*	Gone with the Wnts: genomic insights into Wnt signaling in the ctenophore, *Pleurobrachia bachei*
2:25 PM	33.6	DPCB	*Swore JJ, Kohn AB, Kocot KM, Swalla BJ, Norekian T, Moroz LL; University of Florida, Auburn University, University of Washington*	On the origins of glutamatergic signaling: insights from the ctenophore genome (*Pleurobrachia bachei*)

1:00 - 3:00 pm
Continental Ballroom 7

Session 34: Population Genetics

Chair: Michael W. Hart

1:00 PM	34.1	DEE	*Hart M, Sunday J, Popovic I, Learning K, Konrad C; Simon Fraser University*	Selection and gene flow in gamete recognition molecules: daughters of immigrants meet sons of locals in a sexual conflict
1:20 PM	34.2		*Rastorgueff P-A, Chevaldonné P, Lejeusne C; Aix-Marseille Université*	Unexpected patterns of connectivity and phylogeographic breaks in Mediterranean marine cave mysids
1:40 PM	34.3	DEE	*Dolcemascolo P, Dileo K; Montclair State University, NJ Division of Fish and Wildlife*	The genetics of colonization: evidence for a recent range expansion in *Hyla cinerea*
2:00 PM	34.4	DEE	*Chu KH, Tsang LM, Wu TH; The Chinese University of Hong Kong*	High genetic divergence among Hong Kong stream faunal populations: implications for biodiversity conservation of freshwater ecosystems
2:20 PM	34.5	DEE	*Fox AM, Schrey AW, McCoy ED, Mushinsky HR; University of South Florida, Armstrong Atlantic State University*	Are roads a barrier to gene flow in a sand burrowing lizard, the Florida sand skink, *Plestiodon reynoldsi*
2:40 PM	34.6		*Glazier AE, Etter RJ, Jennings RM; University of Massachusetts, Boston*	Bathymetric patterns of genetic variation: implications for evolution in the deep Atlantic

1:00 - 3:00 pm
Continental Ballroom 9

Session 35: Ecomorphology

Co-Chairs: Matthew Shawkey, Rita Mehta

1:00 PM	35.1	DVM	*Morris JS, Brandt E; University of Utah*	Sexual dimorphism in the gray wolf (*Canis lupus*): specialization for male-male competition or for male provisioning?
1:20 PM	35.2	DCB	*Sustaita D, Rubega M, Hartman G; University of Connecticut*	When biomechanics meets biogeochemistry: functional correlates of loggerhead shrike (Passeriformes: Laniidae) feeding ecology based on stable isotopes analysis
1:40 PM	35.3		*Judge JL, Haszprunar G; University of California, Berkeley, Ludwig-Maximilians University Munich*	A 3D investigation of the morphology of lepetellid limpets (*Lepetella sierrai*): hypotheses on feeding ecology and symbiosis
2:00 PM	35.4	DEE	*Harvey TA, Prum RO; Yale University*	3D imaging spectroscopy for measuring organismal hyperspectral patterns
2:20 PM	35.5		*Campos EO, Bradshaw HD, Daniel TL; University of Washington, Seattle*	Exploring plant-pollinator interactions using 3D printed flowers
2:40 PM	35.6	DCPB	*Shawkey MD, D'Alba L, Vinther J, Ahmed M, Liu S; University of Akron, College of Wooster, University of Bristol, Lawrence Berkeley National Lab*	Melanin chemistry and color in feathers

1:00 - 3:00 pm
Continental Ballroom 8

Session 36: Energetics

Scott McWilliams

1:00 PM	36.1	DCPB	*McWilliams SR, Bauchinger U, Bolser JA, Alan RR, Smith AD, Seeram NP, Pierce BJ, Boyles M, Langlois L, Gerson A, Price E, Guglielmo C; University Rhode Island, Kingston, Sacred Heart University, University Western Ontario, London*	The stress of stopping over: oxidative stress associated with long-duration flights and its implications for the ecology of migrants at stopover sites
1:20 PM	36.2		*Bennett MM, Owings A, Yocum G, Rinehart J, Greenlee K; North Dakota State University, United States Department of Agriculture, Fargo*	Flight metabolic rate as an expression of quality in temperature stressed alfalfa leafcutting bees, *Megachile rotundata*
1:40 PM	36.3	DCPB	*Middleton KM, Coats BR; University of Missouri, University of Chicago*	Energy metabolism of small muscle phenotype mice compared to inbred strains in response to exercise
2:00 PM	36.4	DCPB	*McCue MD; St. Mary's Univ*	Direct measurement of starvation-induced shifts in endogenous fuel oxidation in mice
2:20 PM	36.5		*Davis MJ, Swanson BO; Gonzaga University*	Wave energetics in fiddler crabs: variability in signaling investment
2:40 PM	36.6	DCPB	*Dunkin RC, Williams TM, Koopman HN; University of California, Santa Cruz, University of North Carolina, Wilmington*	Adaptations of elephant skin for non-evaporative and evaporative heat loss

6:30-7:30 pm
Continental Ballroom 4/5/6

Bartholomew Lecture

			Sweeney A; University of Pennsylvania	Animal photonics: an integrated, comparative view

FRIDAY POSTER SESSION P1

Grand Ballroom, 3:00-5:00 PM

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

Even # - Authors present from 3:00 - 4:00 pm; Odd # - Authors present from 4:00 - 5:00 pm

Behavior: Communication

P1.1	DCB	*Hunter A, Wilson RS; The University of Queensland*	Power, accuracy & deception: using evolutionary theory to improve scoring success in soccer penalties
P1.2	DAB	*Dougherty LF, Caldwell RL; University of California, Berkeley*	Mechanisms, ultrastructure and behavioral function of flashing in *Ctenoides ales*: “electric scallops”
P1.3	DAB	*Wang DL, Papaj DR; The University of Arizona*	The role of larval dietary carotenoids in an adult butterfly’s vision and nectar-foraging behavior
P1.4		*Welklin JF, Reichard DG, Ketterson ED; Indiana University*	Low-amplitude song: a meta-analysis of its prevalence and functions in North American birds
P1.5		*Sheedy RR, Hoese WJ; California State University Fullerton*	How do black phoebe, *Sayornis nigricans*, songs differ along a gradient of noise pollution?
P1.6		*Marson KM, Anderson C, Klein A, Cook M, Earley RL; University of Alabama, Tuscaloosa*	Female ornaments and male mate choice in convict cichlids
P1.7	DAB	*Ossip-Klein AG, Oyola Morales JR, Vital C, Zúñiga-Vega JJ, Hews DK, Martins EP; Indiana University, Bloomington, Cornell University, Universidad Autónoma de Ciudad Juárez, Universidad Autónoma de México, Indiana State University, Terre Haute*	Cryptic differences in coloration across four *Sceloporus* lizard species and implications for visual signal evolution
P1.8		*Cain PW, Gardner B, Thaker M, Hews DK; Indiana State University, Indian Institute of Science*	Fluctuating asymmetry in visual signals of male *Sceloporus undulatus* lizards
P1.9	DAB	*Pruett JA, Vital C, Zúñiga-Vega JJ, Martins EP, Hews DK; Indiana State University, Universidad Autónoma de Ciudad Juarez, México, Faculdad de Ciencias, Universidad Nacional Autónoma de México, Indiana University*	Behavioral responses to conspecific chemicals of two *Sceloporus* species differing in signaling morphology
P1.10		*Slowinski SP, Whittaker DJ, Ketterson ED; Indiana University, Bloomington, BEACON Center for the Study of Evolution in Action, Michigan State University*	Odor sharing among kin in birds: assessing whether female songbirds transfer preen oil to their nestlings during brooding
P1.11		*Vlautin CT, Ferkin MH; University of Memphis*	Female meadow voles, *Microtus pennsylvanicus*, do not alter their over-marking in response to female conspecifics that differ in nutritional status

Behavior: Habitats

P1.12	DIZ	*Tessitore KA, Contino GJ, Iyengar EV*; Muhlenberg College*	Hiding from the enemy: behavioral responses of isopods to bluegill sunfish kairomones
P1.13	DIZ	*Odierno JA, Jacobs MW; McDaniel College*	Decoration preference in the Pacific crab *Oregonia gracilis*
P1.14	DIZ	*Hein SR, Jacobs MW; McDaniel College*	Decoration preference and habitat selection in early stage juveniles and megalopae in the decorator crab *Oregonia gracilis*
P1.15		*Wallace BP, Welch AM; College of Charleston, SC*	Habitat preference of southern toads (*Anaxyrus terrestris*) in response to substrate salinity
P1.16		*Peterson AN, Summers AP, Bizzarro JJ; University of Washington, Friday Harbor Labs*	Substrate preference of the Pacific sand lance, *Ammodytes hexapterus*

P1.17	DIZ	*McKee A, Voltzow J, Pernet B; California State University, Long Beach, University of Scranton, Pennsylvania*	Substrate attributes determine gait in a terrestrial gastropod
P1.18	DCB	*Monaenkova D, Gravish N, Goodisman M, Goldman D; Georgia Institute of Technology*	Effect of moisture content on nest construction activity of fire ants

Biodiversity, Biogeography and Population Ecology

P1.19		*Beauchamp KA, Cadien DB, Duggan RM, Pilgrim EM; City of San Diego, County Sanitation District of Los Angeles County, City and County of San Francisco Department of Water, Power and Sewer, US Environmental Protection Agency*	Morphological and molecular investigation of species in the family Leptocheliidae (Crustacea: Peracarida: Tanaidacea) from the Northeastern Pacific Ocean
P1.20	DEE	*Clamp JC, Song W; North Carolina Central University, Ocean University of China*	An international research coordination network for biodiversity of ciliates
P1.21	DIZ	*Munguia A, Mooi R; University of California, Davis, California Academy of Sciences, San Francisco*	The Philippines as the center of sea urchin diversity: an in depth study from intertidal to abyss
P1.22	DEE	*Samuni-Blank M, Weinstein A; Technion-Israel Institute of Technology, Haifa, Insectour blog, insectour.blogspot.com*	Species richness in our urban backyard
P1.23		*Venesky M, Liu X, Sauer E*, Rohr J; The University of South Florida, Chinese Academy of Sciences*	Linking manipulative experiments to field data to test the dilution effect
P1.24	DEE	*Barthell JF, Hranitz JM, Redd JR, Brewster TN, Chicas-Mosier AM, Dinges CW, Hayes CA, Rivera-Vega KM, Williams MI, Petanidou T, Wells H; University of Central Oklahoma, Bloomsburg University of Pennsylvania, Clarkson University, Oklahoma State University, Bowdoin College, Fordham University, College of New Jersey, University of the Aegean, University of Tulsa*	Plant competition in a Greek island ecosystem: a perturbation experiment
P1.25	DIZ	*Campbell DG, Jacobs MW; McDaniel College, Friday Harbor Laboratories*	Home harbor advantage? Local adaptation of *Botrylloides violaceus* populations in the San Juan Islands
P1.26		*Maldonado K, López-Morgado N, Píriz G, Anguita S, Reyes C, Chaura R, Sabat P; Universidad De Chile, Chile, Universidad De La Serena, La Serena, Chile, Universidad Austral De Chile, Valdivia, Chile*	Testing the temporal consistency of dietary individual specialization in Rufous collared-sparrows from different ecological environments: the role of environmental variability
P1.27		*Peters JM, Carleton SA, Craig C, Martinez Del Rio M; Harvard University, New Mexico State University, USGS, University of Wyoming*	Effects of land use on seasonal foraging behavior in white-winged doves of Arizona: insights from stable isotope analysis
P1.28		*Ramirez-Otarola N, Sabat P, Bozinovic F, Martinez Del Rio C; University de Chile, Santiago, Pont. University Cat. de Chile, Santiago, University of Wyoming, Laramie*	Assessing the isotopic niche of passerine birds: analysis of the carbon and nitrogen isotopic composition of tissues and diet
P1.29	DEE	*Snyder TJ, Dolcemascolo P, Araya-Jara LV, Hazard L, Monsen KJ; Montclair State University*	Habitat use and population demographics of two aquatic turtle species in a temperate forest lake
P1.30		*Springthorpe SK; Salem College*	Models for predicting the population dynamics of lasiurine bat species and their prey in western North Carolina
P1.31		*Weiss AK, Pakes MJ, Lindberg DR; University of California, Berkeley*	Abiotic influences on the distribution and abundance of tropical cave-dwelling *Macrobrachium* spp.

P1.32		*Bovery CM, Wyneken J; Florida Atlantic University*	Spatial and temporal distributions of sea turtles in the Florida Gulf Stream
P1.33	DEE	*Cockett PM, Bird CE; Texas A&M University - Corpus Christi*	Biogeographic patterns in the reproductive timing of broadcast-spawners
P1.34	DEE	*Downs LK, Barrile GM, Bower CD, Hranitz JM, Klinger JM, Moore JT; Bloomsburg University, Bloomsburg*	Island dwarfism affects female fecundity in Fowler's toad: quantity versus quality?
P1.35		*Ellis E, Simon C, Marshall D, Hill K, Owen C, Kamp P; University of California, Santa Barbara, University of Connecticut, Storrs, University of Waikato*	Differential Pleistocene diversification and phylogeographic patterns on New Zealand's North Island
P1.36		*Moore JT, Barrile GM, Bower CD, Hranitz JM; Bloomsburg University*	Co-occurrence of anurans in freshwater habitats on a Mid-Atlantic coast Barrier Island
P1.37	DEE	*Shabel A, Brim M*; University of California, Berkeley*	Ecological factors and the biogeography of two morphologically divergent species of African clawless otter (*Aonyx*)
P1.38		*Stiller J, Rousset V, Pleijel F, Chevaldonné P, Vrijenhoek R, Rouse G; SIO, UCSD, University of Gothenburg, Station Marine d'Endoume Marseille, MBARI*	Phylogeny, biogeography and systematics of hydrothermal vent and methane seep *Amphisamytha* (Ampharetidae, Annelida)
P1.39		*Fulbright MF, Gienger CM; Austin Peay State University, Center of Excellence for Field Biology*	Habitat selection and body temperatures of free-ranging cottonmouths, *Agkistrodon piscivorus*

Complementary to Symposium: Coping with Uncertainty

P1.40	DEE	*Krause JS, Perez JH, Sweet SK, Asmus A, Rich ME, Schas J, Word KR, Gough L, Wingfield JC, Boelman NT; University of California, Davis, Columbia University, University of Texas, Arlington, Columbia University*	Impacts of changing seasonality and the potential for trophic mismatches in the Arctic
P1.41	DCPB	*Vleck D, Vleck C, Foote C, Winkler D; Iowa State University, Ames, Cornell University Ithaca*	Telomeres: ghosts of stressors past and harbingers of things to come?
P1.42	DCPB	*Young RC, Kitaysky AS, Schultner J, Welcker J; University of Alaska Fairbanks, Norwegian University of Science and Technology, Norwegian Polar Institute*	Environmental determination of life-expectancy in long-lived seabirds: an inter-ocean comparison of kittiwake chicks' responses to stress
P1.43	DEE	*Buehler DM; University of Toronto*	Applying animal eco-physiological techniques in urban ecosystems: mini review
P1.44		*Gomez SF, Takagi KK, Wright WG; Chapman University*	Hermit-crab assay reveals heterogeneity in deterrence by actively secreted chemical defenses in *Aplysia californica*
P1.45	DCB	*Sharma N, Dhawale N, Venkadesan M; National Centre for Biological Sciences, Bangalore*	Limits on the body size and shape of animals
P1.46		*Perez JH, Wingfield JC, Ramenofsky M; University of California, Davis*	The effects of Methimazole treatment on vernal migration, in white-crowned sparrows
P1.47		*Quach LN, Perez JH, Krause JS, Chmura HE*, Word KR, Schas J, Ramenofsky M, Wingfield JC; University of Calfironia, Davis*	Adrenocortical responses to stress on the leading edge of a northward range expansion in white-crowned sparrows

Complementary to Symposium: Ecological Epigenetics

P1.48		*Robertson MH, Richards CL, Hughes AR; University of South Florida*	Genotypic and epigenetic response to community structure in *Spartina alterniflora*
P1.49		*Foust CM, Schrey AW, Richards CL; University of South Florida, Armstrong Atlantic State University*	Genetic and epigenetic population structure in *Spartina alterniflora*

P1.50	DCPB	*Reynolds JA, Denlinger DL; Ohio State University*	Do epigenetic mechanisms regulate diapause and the maternal block of diapause in the flesh fly, *Sarcophaga bullata?*
P1.51	DEE	*Robbins T, Schrey A*, Richards C, Langkilde T; Penn State University, Armstrong Atlantic State University, University South Florida*	Fire ant invasion status accounts for variation in DNA methylation of lizard populations

Complementary to Symposium: Integrating Genomics/Vision

P1.52		*Randel N, Jékely G; Max Planck Institute for Developmental Biology, Germany*	Mechanism of negative phototaxis in Platynereis larvae
P1.53	DEE	*Yue J, Holland LZ, Yu J, Putnam NH; Rice University, University of California, San Diego, Academia Sinica*	Functional characterization of the asymmetron lucayanum genome

Complementary to Symposium: Phenotypic Plasticity of Evolution of Gender Roles

P1.54		*Carrillo-Baltodano A, Collin R; Smithsonian Tropical Research Institute, Panama City*	Sex-change in *Crepidula* cf. *marginalis* (Gastropoda: Calyptraeidae) is a response to physical contact with conspecifics
P1.55	DCPB	*Bicudo JE; University of São Paulo*	Metabolic rates and phenotypic flexibility in indigenous populations of the Upper Rio Negro, Amazon, Brazil

Complementary to Symposium: Understanding First Order Phenoytypes

P1.56		*Pungor JR, Albertin CB, Kang S, Ragsdale CW; Stanford University, University of Chicago*	Molecular characterization of the octopus visual system
P1.57		*Walker JF, Monteiro A; Purdue University, Yale University*	Determining the putative source of a morphogen underlying black spot development in *Pieris rapae* butterflies
P1.58	DEDB	*Helm RR, Dunn CW; Brown University*	The evolution of direct development in Scyphozoa
P1.59		*Geber A, Smalls T, Palmer M, Ambrose B; Columbia University, The New York Botanical Garden*	Transcriptome analyses of the rhizophore in *Selaginella apoda*
P1.60	DEE	*Muir CD, Davis PA, Conesa MÀ, Roldán E, Galmés J, Moyle LC; Indiana University, University of the Balearic Island's*	Through thick and thin: the adaptive significance of leaf trait variation in wild tomatoes
P1.61	DEDB	*Smith FW, Goldstein B, Jockusch EL; University of Connecticut, University of North Carolina*	The Tardigrade *Hypsibius dujardini* and body plan evolution within Panarthropoda
P1.63	DPCB	*Churches N, Kohn AB, Kocot KM, Swalla BJ, Moroz LL; University of Washington, University of Florida, Auburn University*	Collagens in the ctenophore *Pleurobrachia bachei*: remarkable expansion and diversity of genes controlling the extracellular matrix in basal metazoans
P1.64		*Vickrey AI, Domyan E, Kronenberg Z, Shapiro MD; University of Utah*	The developmental basis of head crests in the domestic pigeon
P1.65		*Gai L, Ellis NA, Miller CT; Swarthmore College, University of California, Berkeley*	The roles of BMP6 and AP2 in tooth number determination in threespine stickleback
P1.66	DEDB	*Barnett AA, Schmidt-Ott U; Southern Illinois University, University of Chicago*	Developing an RNA interference protocol for the mite ar-*Chegozetes longisetosus*
P1.67		*Fozouni P, Richter DJ, King N; University of California, Berkeley*	Illuminating the biology of the common unicellular ancestor of animals and choanoflagellates

Complementary to Symposium: When Predators Attack

P1.68	DNB	*Jackson JM, Lenz PH*; University of Hawaii at Manoa*	Selectivity and capture success in larval clownfish *Amphiprion ocellaris* preying on evasive copepods
P1.69	DCB	*Nair AM, Stewart WJ, McHenry MJ; University of California, Irvine*	Optimal approach strategies for fish predators based on lateral line sensation
P1.70	DCB	*Muijres FT, Dickinson M; University of Washington, Seattle*	Escape responses in freely flying fruit flies

P1.71	DNB	*Liao JC, Ballo AW, Akanyeti O; The Whitney Lab for Marine Bioscience, University of Florida Gainesville*	Signal transmission properties of the zebrafish larval lateral line in response to neuromast deflections
P1.72		*Neth L; University of Hawaii, Manoa*	Levels of lipid peroxidation in corals species, Porites lobata, in Maunalua Bay, Oahu, Hawaii
P1.73	DCB	*Waters SP, Leonard K, Porter ME, Long JH, Liew CW, Root RG; Lafayette College, California State University, Channel Islands, Vassar College*	Automated shape modeling for undulatory swimmers using Blum's Medial Axis
P1.74	DCB	*Kane EA, Higham TE; University of California, Riverside*	Predicting three-dimensional predator accuracy during dynamic capture events in centrarchid fishes
P1.75	DCB	*Mansfield S, Evangelista D; University of California, Berkeley*	Design of a phased array acoustic tracking system for flight biomechanics tracking studies
P1.76		*Bendrick-Chartier EM, Leung NY, Oakley TH; University of California, Santa Barbara*	Localized inhibition of cnidocyte firing by light in the sea anemone *Anthopleura sola*
P1.77		*Pandit MM, Weiland TJ, Switzer C, Iwasaki JM, Combes SA; Indiana University Bloomington, Middlebury College, Harvard University*	Costs and benefits of aerial predation in dragonflies
P1.78		*Brady PC, Travis KA, Maginnis T, Cummings ME; University of Texas at Austin, University of Portland*	The polaro-cryptic mirror: a biological adaptation for open-ocean camouflage
P1.79	DVM	*Mandecki JL; The University of Chicago*	Retinal topography in pectoral fin swimmers

Ecomorphology

P1.80		*Grossi B, Canals M; University of Chile*	Rethinking theoretical gravity hypothesis of sexual size dimorphism and its effects on locomotor energetics
P1.81	DVM	*Maie T, Schoenfuss HL, Blob RW; Clemson University, St. Cloud State University*	Musculoskeletal determinants of pelvic sucker function in Hawaiian gobiid fishes: interspecific comparisons, allometry, and many-to-one mapping
P1.82		*Zani PA, Becich NB*; University of Wisconsin, Stephens Point, Pomona College*	Color-morph-specific predation on clay models of side-blotch lizards, *Uta stansburiana*
P1.83	DVM	*Ferrer E; University of California, Berkeley*	Geometric morphometric analysis of varanid skulls reveals comparable disparity among regions despite varying species diversity
P1.84	DEE	*Rader JA, Newsome SD, Chesser RT, Martinez Del Rio C; University of Wyoming, National Museum of Natural History, Smithsonian Institution*	Phenotype-environment correlations in *Cinclodes* ovenbirds: linking morphology to isotopic niche
P1.85		*Tulga S, Ferrer E, Werning S; University of California, Berkeley*	Parthenogenetic whiptail lizards vary more between year classes than by size, age or habitat
P1.86	DEE	*Green PA, Crofts S, Sigwart JD; University Massachusetts, Amherst, University Washington, Seattle, Queen's University Belfast, Marine Station*	Functional morphology in chitons (Polyplacophora): influences of environment and ocean acidification
P1.87	DVM	*Montuelle SJ, Vessel C, Williams SH; Ohio University*	*In vivo* measurement of cranial kinesis in *Gekko gecko* using XROMM methodology
P1.88	DPCB	*Felice RF; Ohio University*	Form and function in the avian caudal skeleton: a phylogenetic comparative investigation
P1.89		*Crane RL, Merz RA; Swarthmore College*	Are they stuck in the mud: sediment properties and the burrowing abilities of two species of lugworm in False Bay, Washington
P1.90	DCB	*Gabler MK, Fish FE, Beneski JT, Mulvany S, Moored KW; West Chester University, Pennsylvania, University of South Florida, Tampa, Princeton University New Jersey*	The hydrodynamics of ground effect in relation to the head shape of the spotted eagle ray

P1.91		*Robinson AP, Labonte D, Muir MJ, Federle W; University of Cambridge*	Slippery when wet: the roles of ridge morphology and surface energy in the pitcher plant trapping zone
P1.92	DIZ	*Full T, Robinson HE, Holzman R, Shavit U, Koehl MAR; University of California, Berkeley, Tel Aviv University, Technion*	Sea anemone tentacles flutter and flap in water flow in the field
P1.93		*Ortiz LA, Coughlin DJ, Goodrich KR; Widener University*	Twisty twigs: biomechanics of storm resistance in distal branches of pawpaw
P1.94	DAB	*Vega CM, Dougherty A, Adeyemi T, Hristov N, Ashley-Ross MA; Wake Forest University, Winston-Salem State University, Center for Design Innovation*	See you on the flip side: tarantula post-molt flipping
P1.95	DVM	*Harvey TA, Bostwick KS, Marschner S; Yale University, Cornell University*	Spatially- and directionally-varying reflectance of millimeter-scale feather morphology
P1.96		*Mehrabani H, Tse KL*, Ray NA, Evangelista DA; University of California, Berkeley*	Development of bio-inspired surfaces to prevent ice formation
P1.97	DCB	*Landrigan J, Sprayberry JDH; Muhlenberg College*	Effects of wind speed on floral motion characteristics
P1.98	DVM	*Berg CL, Chow JS, McGee MD, Wainwright PC; University of California, Davis*	Divergent feeding kinematics in two Amazonian cichlids

Energetics and Metabolism

P1.99	DCPB	*Castellanos L, Silverberg R, Morgan T, Williams CM, Hahn DA; University of Florida, Gainesville, Kansas State University, Manhattan*	Evolution of energy metabolism in cold-adapted *Drosophila melanogaster*
P1.100		*Andrew JL, Powers DR, Wethington SM; George Fox University, Hummingbird Monitoring Network*	Use of torpor by a high- and mid-elevation hummingbird species in Southeastern Arizona
P1.101		*Milbergue M, Blier P, Vezina F; University of Quebec in Rimouski*	Do small wintering birds adjust their metabolic performance in response to perceived level of cold?
P1.102	DEE	*Jooste E, Boyles JG, Hallam TG, McCracken GF; Southern Illinois University, University of Tennessee*	Feeding, foraging, and energetics of small bats at high latitudes
P1.103		*Hogan BM, Wilcoxen TE, Horn DJ; Millikin University*	The impact of bird feeding actvities on antioxidant capacity and stress physiology of Central Illinois birds
P1.104	DCPB	*Reynolds JA, Poelchau M, Armbruster P, Denlinger DL; Ohio State University, Georgetown University*	Transcriptional changes in key metabolic enzymes contribute to metabolic restructuring during diapause in the mosquito, *Aedes albopictus*
P1.105	DCPB	*Arquisola B, Albach B, McCue MD*; St. Mary's University*	Egg laying hens produce artificially enriched ^{13}C proteins for tracer studies
P1.106		*Grebe EM, Gienger CM; Austin Peay State University*	Resting metabolism of the eastern box turtle, *Terrapene carolina*
P1.107	DCPB	*Campbell JB, Duell ME, Klok CJ, Harrison JF; Arizona State University*	Water loss, respiration, and critical PO
P1.108	DCPB	*Belanich JR, Secor SM; University of Alabama, Tuscaloosa*	Postprandial metabolic response and specific dynamic action of scorpions
P1.109	DIZ	*Houlton C, Knoll J, Gladkowski L, Rich D, Holford K; Purdue University North Central*	Affects of eyestalk ablation on hemolymph protein levels in the crayfish, *Procambarus clarkii*
P1.110		*Hubble CN, Wilcoxen TE, Horn DJ; Millikin University*	Using multiple measures of individual condition to examine the impact of commercial bird food on wild birds
P1.111	DCPB	*Corder KR, Schaeffer PJ; Miami University*	Regulation of adipose storage by temperature and light cycles following migration in the gray catbird, *Dumetella carolinensis*

P1.112	DCPB	*Sharick JT, Vazques-Medina JP, Ortiz RM, Crocker DE; Sonoma State University, University of California, Merced*	Oxidative stress in fasting adult breeding northern elephant seals
P1.113		*Owings AA, Yocum G, Rinehart J, Kemp W, Greenlee K; North Dakota State University, Fargo, USDA-ARS Red River Valley Agricultural Research Center, Fargo*	Critical PO_2 of developing *Megachile rotundata*, the alfalfa leaf-cutting bee
P1.114		*Crocker-Buta SP, Secor SM; University of Alabama, Tuscaloosa*	Determinates and repeatability of specific dynamic action for the corn snake *Pantherophis guttatus*
P1.115	DCPB	*Veleta K, Tokar DR, Canzano J, Hahn DA, Hatle JD; University of North Florida, University of Florida*	Vitellogenin RNAi treatment halts oocyte growth without decreasing protein translation
P1.116	DCPB	*Marunde M, Samarajeewa DA, Nguyen M, Hand SC, Menze MA; Eastern Illinois University, Louisiana State University*	Improved tolerance to salt and water stress in *Drosophila melanogaster* cells conferred by late embryogenesis abundant protein
P1.117	DCPB	*Shaughnessy CA, Radloff J, Bystriansky JS, Balfry SK; DePaul University, Vancouver Aquarium*	Osmoregulation in wolf eel (*Anarrhichthys ocellatus*) during acclimation to dilute seawater
P1.118	DCPB	*Bystriansky JS, Sackville M, Yoo J, Tattersall K, Alonge MM, Judd SM, Farrell AP, Brauner CJ; DePaul University, University of British Columbia*	Preparation for freshwater migration in adult pink salmon (*Oncorhynchus gorbuscha*)

Evolutionary Developmental Biology I

P1.119	DVM	*Reider M, Connaughton VP; American University*	Effects of rearing temperature and thyroid hormone inhibitor Methimazole (MMI) on eye development and general morphology in zebrafish
P1.120	DEDB	*Melicher D, Torson A; North Dakota State University*	Understanding novel evolutionary changes in morphology using next-generation sequencing technology
P1.121	DEDB	*Khalili S, Whalen W, Magie CR*; California State University, Fresno, Quinnipiac University*	Rho GTPase function during early development in the cnidarian, *Nematostella vectensis*
P1.122	DEDB	*Von Dassow M; Duke University Marine Lab*	The mechanism of blastula expansion in sand dollars
P1.123	DEDB	*Moustakas-Verho JE, Christensen M, Kallonen A, Hämäläinen K, Jernvall J; Institute of Biotechnology, University of Helsinki*	Supersize me: cellular dynamics controlling size in the mammalian molar
P1.124		*Weber CJ, Von Dassow M; University of Washington, Seattle, Duke University Marine Lab*	Environment and the mechanics of development: effects of salinity on the sand dollar blastula
P1.125	DEDB	*Chang E, Yang M, Sherwood DR, Matus DQ; Duke University*	The evolution of anchor cell invasion during rhabditid nematode vulval development
P1.126		*Sweet HC, Woltman RA, Wood ME, Armstrong JM, Spiecker BJ, Border CT, Rogge BJ; Rochester Institute of Technology*	Development of a vitellaria larva in the brooding brittle star *Ophioplocus esmarki*
P1.127		*Lohman BK, Sirotkin HI, Bell MA; University of Texas at Austin, Stony Brook University*	A whole-mount method for trypsin clearing and collagen type II antibody staining
P1.128	DEDB	*Morris ZS; The University of Texas at Austin*	Determining the onset of ossification and reconstructing ontogeny in vertebrates: a comparison of clearing and staining, histological and computed tomography methods
P1.129	DEDB	*Rodriguez AM, Hawkins MB, Stock DW; University of Colorado, Boulder, Harvard University*	The zebrafish as a model for the evolution and development of breeding tubercles in fishes
P1.130		*Bruce HS, Eisen MB, Patel MB; University of California, Berkeley*	The topology of Hox gene networks during limb morphogenesis of the crustacean *Parhyale hawaiensis*

Evolutionary Physiology and Adaptation

P1.131	DPCB	*Jaffe AL, Slater GJ, Alfaro ME; Harvard University, University of California, Los Angeles*	The evolution of island gigantism and body size variation in tortoises and turtles
P1.132	DVM	*Fraser A, Segev T, Graw WA, Suchocki L, Hall MI; Midwestern University*	Comparative morphology of owl and hawk extraocular muscles
P1.133	DEE	*Roberts KT, Heidl SJ, Dahlhoff EP, Smiley JT, Rank NE; Sonoma State University, Santa Clara University, White Mountain Research Center*	Effects of environmental and genetic variation on survival and development of a montane insect in the presence of natural enemies
P1.134		*Cave EJ, Gunn T, Bedore C, Kajiura S, Kerstetter D; Florida Atlantic University, Nova Southeastern University*	Sexual dimorphism in the dentition of pelagic stingrays, *Pteroplatytrygon violacea*
P1.135	DEE	*Wallace GT, Neufeld CJ; Whitman College, University of Washington*	Latitudinal variation in the cold tolerance of the intertidal copepod *Tigriopus californicus*
P1.136	DCPB	*Mineo PM, Schaeffer PJ; Miami University*	Thermal acclimation of locomotor performance in the Eastern newt
P1.137	DEE	*Kim TL*, Neufeld C; Northwestern University, University of Washington*	Variation in thermal tolerance between life stages of the intertidal copepod *Tigriopus californicus*
P1.138	DEE	*Abolins-Abols M, Ketterson ED; Indiana University*	Interaction between HPA and HPG axes in two rapidly diverging Oregon junco (*Junco hyemalis thurberi*) populations
P1.139	DCPB	*Menzel EJ, Secor SM; University of Alabama*	Exploring the phenotypic plasticity of intestinal responses for snakes
P1.140		*Dayan DI, Oleskiak MF; University of Miami, Miami FL*	Phenotypic plasticity and adaptation in *Fundulus* glycolytic muscle physiology
P1.141	DIZ	*Currie AE, Podolsky RD; University of Maryland, College Park*	Effects of temperature on ouabain-insensitive ATPase activity in tube feet of northern and southern populations of the sea urchin *Arbacia punctulata*
P1.142	DEE	*D'elia G, Feijoo M, Lessa EP, Naya DE*, Pardiñas UFJ, Teta P, Tomasco IH, Valdez L; Universidad Austral de Chile, Chile, Universidad de la Republica, Uruguay, Centro Nacional Patagonico, Argentina*	Comparing digestive and renal traits among populations of the rodents *Abrotrhix olivacea* and *A. longipilis*
P1.143		*Cavieres G, Nuñez-Villegas M, Sabat P; Universidad de Chile*	Can the thermal conditions experienced during ontogeny have consequences on phenotypic flexibility in Phyllotis darwini?
P1.144	DEE	*Franco LM, Contreras CI, Cortes PA, Nespolo RF; UACH, Valdivia*	Aerobic power, huddling and the efficiency of torpor in the South American marsupial, Dromiciops gliroides
P1.145		*Lang SA, Cole MC, Kristan DM; California State University San Marcos*	Short-term re-feeding after calorie restriction partially restores resistance to parasite infection
P1.146		*Clavijo-Baquet S, Petit M, Vézina F; Pontificia Universidad Católica de Chile, Université du Québec à Rimouski*	Testing causal relationships between metabolic rates and fitness in black capped chickadee (Poecile atricapillus): implications for the evolution of endothermy
P1.147	DEE	*Kuo C-Y, Irschick DJ; University of Massachusetts Amherst*	A costly antipredator behavior in a gradient of predation pressure: tail autotomy in the side blotched lizard *Uta stansburiana*
P1.148		*Starr MJ, Collin R; Smithsonian Tropical Research Institute*	Enzyme activity in early life stages of planktotrophic slipper snails (Gastropoda: Calyptraeidae)
P1.149	DEE	*Sperling EA, Knoll AH, MacDonald FA, Johnston DT; Harvard University*	A basin redox transect at the dawn of animal life
P1.150		*Haslett S, Proudfoot G, Crespi E, Warne R; Southern Illinois University Carbondale, Vassar College*	Integrating stress physiology across breeding and migrating life stages in owls

Genomics, Proteomics and Molecular Evolution

P1.151	DEDB	*Dabe EC, Kohn AB, Bobkova Y, Kocot K, Citarella M, Bostwick CJ, Winters GC, Swalla BJ, Moroz LL; University of Florida,Whitney Lab for Marine Biosciences, University of Washington*	Epigenomic signatures in basal metazoans: DNA methyltransferase in Pleurobrachia bachei
P1.152	DEE	*McKenney E, Wu S, Yoder AD, Rodrigo A; Duke University*	MMAP: a pipeline for metagenomic analysis of complex microbial populations
P1.153	DEE	*Passow CN, Kelley JL, Tobler M; Oklahoma State University, Stanford University*	Characterization of the Poecilia mexicana transcriptome: a model for adaptation and speciation research
P1.154		*Dorfman RE, Li D, Benner I, Lefebvre S, Carpenter EJ, Komada T, Stillman J; San Francisco State University*	Transcriptomic analysis of the effects of ocean acidification and increased temperature in the coccolithophore *Emiliania huxleyi*
P1.155	DPCB	*Terusaki AT, Puengyam P, Tsukimura B; California State University, Fresno, Prince of Songkla University, Thailand*	Cloning of a putative elongation factor 1? Gene from the ovaries of the ridgeback shrimp, *Sicyonia ingentis*
P1.156	DCPB	*Hernandez D, Schuman M, Tomanek L; Cal Poly, San Luis Obispo*	Proteomic changes in gill tissue during acute aerial heat stress in tidally entrained *Mytilus californianus*
P1.157	DCPB	*Mier JS, Zuzow M, Tomanek L; California Polytechnic State University, San Luis Obispo*	Comparison of the proteomic responses in adductor muscle tissue of *Mytilus galloprovincialis* and *M. trossulus* to acute heat shock
P1.158	DCPB	*Salzberg R, Zuzow M, Tomanek L; California Polytechnic State University, San Luis Obispo*	Proteomic changes in the mantle tissue of the mussel congeners *Mytilus galloprovincialis* and *M. trossulus* in response to acute heat stress
P1.159	DCPB	*Chilton H, Tomanek L, Zuzow M; California Polytechnic State University, San Luis Obispo*	The proteomic response of *Mytilus galloprovincialis* and *Mytilus trossulus* to acute oxidative stress in the presence of sirtuin inhibitors
P1.160	DCPB	*Elder H, Todgham A, Tomanek L; California Polytechnic State University, San Luis Obispo, California State University, San Francisco*	Changes in global protein abundance patterns in the intertidal owl limpet *Lottia gigantea* in response to acute heat stress
P1.161		*Fowler A, Zuzow M, Tomanek L; California Polytechnic State University, San Luis Obispo*	The proteomic response of tidally-entrained California ribbed mussel *Mytilus californianus* to hypoxia stress
P1.162	DCPB	*Zuzow M, Chilton H, Fangue N, Todgham A, Tomanek L; Cal Poly, San Luis Obispo*	Proteomic responses of *Sebastes melanops* to ocean acidification associated stress
P1.163		*Leung NL, Taketa DA, Torres E, Oakley TH; UCSB, California State University Los Angeles*	Origin of luciferase genes in cypridinid ostracods (Crustacea)
P1.165		*Alves C, Perry E*, Craig C, Miller-Sims V, Kimmerer W, Cohen CS; Connecticut College, Romberg Tiburon Center, San Francisco State University*	Wide range of genetic variability of mitochondrial COI in introduced species of copepods in the San Francisco Estuary
P1.167	DEE	*Macias A, Yuan F, Monteiro A, Briscoe A; University of California, Irvine, Yale University*	Visual transcriptomics of seasonal forms of the butterfly *Bicyclus anynana*
P1.169		*McCoy RC, Boggs CB, Petrov DA; Stanford University*	Evaluating methods of demographic inference and testing for balancing selection using genomic data from the checkerspot butterfly *Euphydryas gillettii*
P1.170	DEE	*Alvarez MF, Schrey AW, Richards CL; University of South Florida, Armstrong Atlantic State University*	Trends in ecological microarray studies

P1.171	DCPB	*Baumgartner MF, Tarrant AM*, Lysiak NSJ, Hansen BH, Aruda AM, Altin D, Nordtug T, Olsen AJ; Woods Hole Oceanographic Institution, SINTEF, Trondheim Norway, BioTrix, Norwegian University Science and Tech*	Identifying markers of preparation for dormancy and the terminal molt in *Calanus finmarchicus*
P1.172		*Ryan JF, Børve A, Hejnol A; Sars International Centre for Marine Molecular Biology*	Are acoelomorphs deuterostomes? Evidence from the genome of nemertodermatid *Meara stichopi* (Acoelomorpha)

Neurobiology: Neurotransmitters and Neurochemistry

P1.173	DAB	*Waalkes WC, Bergman DA; Grand Valley State University*	Nonylphenol effects on chemosensory orientation behavior of the crayfish, *Orconectes propinquus*
P1.174	DNB	*Nuhar A, Boisette B, Carroll MA, Catapane EJ; Medgar Evers College*	Manganese accumulations in gill mitochondria of *Crassostrea viginica*?
P1.175	DNB	*Mangiamele LA, Keeney ADT, D'Agostino EN, Thompson RR; Bowdoin College*	Pheromone exposure influences preoptic arginine vasotocin gene expression and inhibits social approach behavior in response to rivals, but not potential mates
P1.176	DNB	*Ogunnoiki J, Jackson K, Catapane EJ, Carroll MA; Medgar Evers College*	Neurotoxic effects of manganese on GABAergic innervation in the bivalve mollusc *Crassostrea virginica*
P1.177	DNB	*Cain SD, Zungul-Hasty LS, Kelsey P*; Eastern Oregon University*	The distrubution of GABAergic neurons in The CNS of nudibranch molluscs
P1.178	DNB	*Opoku R, Chekayev Y, Carroll MA, Catapane EJ; Medgar Evers College*	Manganese treatments decreases immunofluorescence emissions of post-synaptic dopamine D2 receptors
P1.179		*Kim GR; PuKyung National University, Republic of Korea*	Cloning and expression study of the five pandalopsis japonica (the Morotoge shrimp) nicotinic acetylcholine receptor subunits
P1.180	DNB	*Ojo C, Rogers K, Adams T, Catapane EJ, Carroll MA; Medgar Evers College*	Chelating agents reverse neurotoxic effects of manganese on dopaminergic innervation of gill of the bivalve mollusc *Crassostrea virginica*
P1.181	DNB	*Mekdara PJ, Shinkawa N, Mekdara NT, Goto JJ, Muller UK; California State University, Fresno*	Acute effects of BMAA-induced neurodegeneration in *Drosophila*
P1.181A	DCB	*Husain DI, Maxkwee K, Mekdara PJ, Lent DD, Goto JJ, Muller UK; California State University, Fresno*	Assessing the role of glutamate in insect motor control
P1.182	DNB	*Lafleur K, Rotibi M, Catapane EJ, Carroll MA; Medgar Evers College*	Effects of antioxidants and anti-inflammatory agents on neurotoxic effects of manganese on dopaminergic innervation of gill of the bivalve mollusc *Crassostrea virginica*
P1.183	DCPB	*Sanderlin AG, Rose EK, Yeoh AJ, Gillen CM, Itagaki H; Kenyon College*	Immunocytochemical localization of the amino acid cotransporter KAAT1 and neuromodulators in the midgut of larval *Manduca sexta*

Complementary to Special Session Honoring Ken Nagy

P1.184		*Brown TK, Merscheim M, Davidson E; CSU San Marcos*	Energetics of Blainville's horned lizards, *Phrynosoma blainvillii*, in disturbed and undisturbed habitats
P1.185	DCPB	*Gleiss AC, Whitlock RE, Dale JJ, Clark TD, Block BA; Hopkins Marine Station, Stanford University, Finnish Game and Fisheries Research Institute, Helsinki, Australian Institute of Marine Science, Townsville*	Influence of ambient temperature on specific dynamic action in bluefin tuna
P1.186	DCPB	*Henen BT; United States Marine Corps*	It's about time: chelonian physiological ecology and conservation
P1.187	DCPB	*Bachman G; University of Nebraska, Lincoln*	Cooling and hibernation effects on leukocyte numbers in the ornate box turtle *Terrapene ornata ornata*
P1.188	DCPB	*Ellis HI, Bowman R; University of San Diego, Archbold Biological Station*	Energy budgets for Florida scrub-jays: a changing landscape matters

P1.189		*Girard I; University of Wisconsin-Madison*	High cost of paternal care in the kit fox, *Vulpes macrotis*

Swimming and Flying

P1.190	DCB	*Choudhury S*, Manikkam DK, Berg O, Muller UK; California State University Fresno*	Exploring asynchronous flight-muscle mechanics in insects through a bio-mimetic flapping machine
P1.191	DCB	*Twyman CA, Hales K, Socha JJ; Virginia Tech*	How do flying snakes land on a branch? Kinematics and impact forces of landing in *Chrysopelea ornata*
P1.192	DCB	*Cam S, Evangelista D*, Ho M, Huynh T, Krivitskiy I, Lin Y, Stevenson R, Dudley R; University of California, Berkley*	Cute baby birds and flight control: a coming of age story of intrigue, flips, falls from great heights, and high speed cameras
P1.193	DCB	*Nakata T, Henningsson P, Liu H, Bomphrey RJ; University of Oxford, Chiba University*	Aerodynamic performance of gliding dragonflies with three-dimensional corrugated wings
P1.194	DAB	*Murphy BJ, Enstrom DA, Cochran WW, Bowlin MS; University of Michigan-Dearborn, Illinois Natural History Survey*	Wingbeat frequency and altitude shifts in the migratory flight of the Swainson's thrush *Catharus ustulatus*
P1.195	DCB	*Volz LJ, Taylor EM, Simpson KB, Field BS, McCloud ES, Davis JL; University of Southern Indiana*	Flexural stiffness & false head behavior in lycaenidae hind wings
P1.196	DVM	*Schunk C, Chiu C, Swartz SM, Breuer KS; Brown University*	Velocity fields in the near-wake of *E. fuscus*
P1.197	DCB	*Kwong A, Doong J, Evangelista D; University of California, Berkeley, Stanford University*	Methods for quantifying disturbance force and sensitivity of simple shapes to turbulent incident air velocities
P1.198	DCB	*Crandell KE; University of Montana, Missoula*	The function of avian distal wing bones during flight
P1.199	DCB	*Kolpas A, Fish FE*, Meade A, Dudas MA, Moored KW; West Chester University, Dudas'Diving Duds, Princeton University*	Mathematical analysis of three-dimensional open water maneuverability by mantas (*Manta birostris*)
P1.200	DVM	*Reynaga CM, Ferry LA, Clark AJ; University of California, Santa Cruz, Arizona State University, College of Charleston*	A comparative study of body shape and swimming kinematics in pholid and stichaeid fishes
P1.201	DCB	*Lucas KN, Johnson N, Costello JH, Colin SP; Roger Williams University, Texas A&M University, Providence College*	Convergent inflexion patterns of flexible margins of oscillating animal propulsors during swimming and flight
P1.202	DCB	*Taz H, Sharpe SS, Goldman DI; Wesleyan College, Georgia Institute of Technology*	Limb drag during sand-swimming
P1.203	DCB	*Crawford CH, King BD, Clark AJ; College of Charleston*	Material properties of taut and slack skins in elongate fishes
P1.204	DVM	*Taft NK, Lauder GV, Shubin N; University of Wisconsin-Parkside, Harvard University, University of Chicago*	Morphological variation in the pectoral fin lepidotrichia in basal actinopterygian fishes
P1.205		*Kohannim S, Iwasaki T*; UCLA*	Resonance in fish swimming to minimize muscle tension
P1.206	DCB	*Stevenson RA, Evangelista D, Looy CV; University of California, Berkeley*	Reconstruction of the flight characteristics of winged seeds of Late Paleozoic conifers
P1.207	DVM	*Feo TJ, Prum RO; Yale University*	Uncovering the morphological and developmental basis of vane asymmetry in flight feathers

Vertebrate Endocrinology

P1.208	DCE	*Guardado D, Bentley GE, Perfito N; University of California, Berkeley*	Melatonin and the reproductive axis of European starlings
P1.209	DCE	*Kangas KA, Guerrero V, Bentley GE; University of California, Berkeley, Integrative Biology and Helen Wills Neuroscience Institute*	Awaking a sleeping dogma: de novo hypothalamic melatonin synthesis in passerines

P1.210		*Chan H, Demathieu SL, Lopes PC, Johnston N, Krause JS, Bentley GE; University of California, Berkeley, GABBA, University of Porto, University of California, Davis, Helen Wills Neuroscience Institute*	Neuroendocrine basis of cooperative breeding in the sociable weaver
P1.211	DCE	*McCaffrey A, Garcia J, Priyamvada L, Yao A, Heckman K, Schreiber A; St. Lawrence University*	Estradiol induces thymus gland apoptosis via both estrogen and glucocorticoid receptor pathways in Xenopus laevis tadpoles
P1.212	DCE	*Muzzio AM, Noyes PD, Stapleton HM, Lema SC; CalPoly, San Luis Obispo, Duke University*	The Organic Anion Transporting Protein (OATP) family in a teleost fish model
P1.213		*Bailey AM, Long KL, Greives TJ, Zhao S, Kriegsfeld LJ, Demas GE; Indiana University, Bloomington, University of California, Berkeley*	Seasonal differences in RFamide peptide regulation of the reproductive endocrine axis in Siberian hamsters
P1.214		*Simkins JS, Benowitz-Fredericks ZM, Kenny TC; Bucknell University*	Effect of pre-hatch aromatase inhibition on post-hatch immunity in chickens (*Gallus gallus*)
P1.215	DCE	*Wallace KR, Callaghan M, Murray J, Bell J; CSU East Bay, CSU Monterey Bay, CSU Maritime*	Exploration of the role of indoleamines in the cyclical behavior of Tritonia diomedea
P1.216	DCE	*Rendon NM, Demas GE; Indiana University, Bloomington*	Timing matters: exogenous melatonin mimics short-day increases in aggression in female Siberian hamsters (*Phodopus sungorus*)
P1.217	DCE	*Nemeth Z, Ramenofsky M; University of California, Davis*	Blocking testosterone action indirectly increases migratory restlessness during fall migration
P1.218	DCE	*Walti KA, Sanders KE, Lema SC; CalPoly, San Luis Obispo*	Multiple AVT receptors in teleost fish: Identification and tissue distribution of two distinct V2-type AVT receptor cDNAs in Amargosa pupfish
P1.219		*Park D, Daniels KD, Freel KL, Propper CR; Kangwon National University, South Korea, Northern Arizona University, Flagstaff*	Small diel temperature increases affect the time to metamorphosis in the Arizona tiger salamander (*Ambystoma tigrinum*) alone and in combination with ammonium perchlorate exposure
P1.220	DCE	*Cimino RL, Richmond JP; University of North Florida*	Assessing seasonality of the free-ranging Florida manatee (*Trichechus manatus latirostris*)
P1.221	DCE	*Moore BC, Brinkman E, Boggs ASP, Mendoza R; Louisiana Tech University, Arkansas Game and Fish Commission, Medical University of South Carolina, Universidad Autónoma de Nuevo León, Mexico*	Assessment of circulating sex steroid hormones and vitellogenin content in male and female breeding spotted gar (*Lepisosteus oculatus*)
P1.222		*Castro DJ, Robinson CD, Johnson MA; Trinity University*	The effect of variation in endocrine mechanisms on natural display behavior in Caribbean *Anolis* lizards
P1.223	DCE	*Navara KJ, Pinson SE, Little T; The University of Georgia*	High dose testosterone causes oocyte reabsorption in chickens
P1.224	DCE	*Mcavoy KA, Benowitz-Fredericks ZM; Bucknell University*	Influence of maternal yolk testosterone on aromatase activity in the pre-optic area of the brain in 3-day-old domestic chickens
P1.225	DAB	*Ambardar M, Grindstaff JL; Oklahoma State University*	Testosterone production in response to aggression: physiological or behavioral constraint?
P1.226		*Pusch EA, Navara KJ, Thompson J; University of Georgia*	Effects of short-term food restriction on gonadotropin inhibitory hormone (GnIH) receptor mRNA expression the brain and testes of zebra finch (*Taeniopygia guttata*)
P1.227	DCE	*Edmonds KE; Indiana University Southeast*	Effects of photoperiod, melatonin, and gonadal steroids on gastrointestinal development in the male marsh rice rat (*Oryzomys palustris*)

Saturday Schedule of Events

All events take place in the Hilton San Francisco Union Square

EVENT	TIME	LOCATION
Poster Session 2 Set Up	7:00-8:00 AM	Grand Ballroom
Registration	7:30 AM-4:00 PM	Yosemite Foyer
Exhibit Hall	9:30 AM-5:00 PM	Grand Ballroom
Poster Session 2 Even Numbers Viewing	3:00-4:00 PM	Grand Ballroom
Poster Session 2 Odd Numbers Viewing	4:00-5:00 PM	Grand Ballroom
Poster Session 2 Teardown	5:00-5:30 PM	Grand Ballroom
Coffee Break/PM Poster Session Cash Bar	9:30-10:30 AM/3-5 PM	Grand Ballroom
SPECIAL LECTURE		
Howard Bern Lecture	6:30-7:30 PM	Continental 4-6
SYMPOSIA ORAL PRESENTATIONS		
S3: Vertebrate Land Invasions - Past, Present and Future	7:50 AM-3:00 PM	Continental 4
S4: Understanding First Order Phenotypes: Transcriptomics for Emerging Models	8:20 AM-3:00 PM	Continental 5
S5: Hormone-Mediated Sex Ratio Adjustment in Vertebrates	8:00 AM-3:00 PM	Continental 6
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 37: Comp to Symp: When Predators Attack: Sensing and Motion...I	8:20-9:40 AM	Imperial A
Session 38: Comp to Symp: When Predators Attack: Sensing and Motion...II	10:00-11:40 AM	Imperial A
Session 39: Wing Shape	7:40-9:40 AM	Plaza A
Session 40: Robotic, Mathematical & Physical Models (General)	8:00-9:40 AM	Imperial B
Session 41: Robotic, Mathematical & Physical Models: Swimming & Flying	10:00 AM-Noon	Imperial B
Session 42: Muscle Physiology and Biochemistry: Molecules of Movement	8:00-9:40 AM	Plaza B
Session 43: Muscle Physiology: Biomechanics & Locomotion	10:00 AM - Noon	Plaza B
Session 44: Comp to Symp: Coping with Uncertainty: ... Part II	8:00-9:40 AM	Yosemite B
Session 45: Comp to Symp: Coping with Uncertainty: ... Part III	10:00 AM-Noon	Yosemite B
Session 46: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part IV	8:20-10:00 AM	Yosemite A
Session 47: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part V	10:20 AM-Noon	Yosemite A
Session 48: Cell and Molecular Physiology	7:40-9:40 AM	Yosemite C
Session 49: Social Behavior	8:00-9:40 AM	Continental 2/3
Session 50: Molecular Evolution and Population Genetics	8:00-9:40 AM	Continental 8
Session 51: Evolutionary Developmental Biology, Part I	7:40-9:40 AM	Continental 1
Session 52: Biophysics Ecology	7:40-9:40 AM	Continental 7
Session 53: Life Histories	8:00-10:00 AM	Continental 9
Session 54: Reef Ecology	7:40-9:40 AM	Golden Gate 6/7
Session 55: Special Session Honoring Bruce Sidell, Part I	10:00 AM-Noon	Plaza A
Session 56: Stress-Development	10:00-11:40 AM	Yosemite C
Session 57: Behavioral Variation	10:00 AM-Noon	Continental 2/3
Session 58: Vertebrate Evolution and Phylogenetics	10:00-11:40 AM	Continental 8
Session 59: Evolutionary Developmental Biology, Part II	10:00 AM-Noon	Continental 1
Session 60: Community Ecology	10:00 AM-Noon	Continental 7
Session 61: Skulls & Teeth II	10:20 AM-Noon	Continental 9
Session 62: Biogeography	10:00 AM-Noon	Golden Gate 6/7
Session 63: Special Session Honoring Howard Bern	1:00-3:00 PM	Imperial A
Session 64: General Insect Flight	1:00-3:00 PM	Plaza B
Session 65: Stress	1:00-3:00 PM	Yosemite C
Session 66: Neurobiology: Sensorimotor Integration	1:00-3:00 PM	Continental 2/3
Session 67: Phylogenetics and Computational Methods	1:20-2:55 PM	Continental 8
Session 68: Comp to Symp: Coping with Uncertainty: Integrating Physiology...Part IV	1:00-2:50 PM	Yosemite B
Session 69: Special Session Honoring Bruce Sidell, Part II	1:00-3:00 PM	Plaza A
Session 70: Comp to Symp: Physiological Responses to Simultaneous Shifts...Part VI	1:00-3:00 PM	Yosemite A
Session 71: Evolutionary Developmental Biology III: Cell Differentiation	1:00-3:00 PM	Continental 1
Session 72: Robotic, Mathematical & Physical Models: Terrestrial	1:00-3:00 PM	Imperial B
Session 73: Population Ecology	1:20-3:00 PM	Continental 7
Session 74: Tail Function	1:00-3:00 PM	Continental 9
Session 75: Respiration & Lung Changes	1:00-3:00 PM	Golden Gate 6/7

Saturday Schedule of Events (Continued)

COMMITTEE & BOARD MEETINGS		
Invert Biology Editors Meeting	7:00 AM-8:00 AM	Mason
SICB Division Secretaries	Noon-1:00 PM	Mason
Educational Council	Noon-1:00 PM	Powell
Advisory Committee	8:00-10:00 PM	Powell
Student Support Committee	8:30-9:30 PM	Mason
BUSINESS MEETINGS		
DCE Meeting	5:15-6:15 PM	Continental 1
DVM Meeting	5:15-6:15 PM	Continental 2/3
DIZ Meeting	5:15-6:15 PM	Continental 7
DNB Meeting	5:15-6:15 PM	Continental 8
DPCB Meeting	5:15-6:15 PM	Continental 9
WORKSHOPS AND PROGRAMS		
Public Affairs Workshop-Beyond public outreach: citizen science	Noon-1:00 PM	Continental 5
NSF Workshop-Developing proposals and the new review process	Noon-1:00 PM	Continental 1
SOCIAL EVENTS		
SRC Breakfast	6:30-8:00 AM	Lori's Diner on Sutton
DCE Social	7:30-10:00 PM	Cityscape
DVM/DCB/DEDB/DPCB Dessert Social	7:30-10:00 PM	Golden Gate

SATURDAY PROGRAM
SYMPOSIA

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

7:50 am - 3:00 pm
Continental Ballroom 4

Symposium S3: Vertebrate Land Invasions - Past, Present and Future

Sponsored by: SICB Society-Wide; SICB Divisions: DVM, DAB, DCB, DCPB, DEDB, DEE, DPCB, DNB
Organized by: Alice Gibb, Miriam Ashley-Ross, Richard Blob, Tonia Hsieh

7:50 AM				Introduction
8:00 AM	S3-1.1		*Coates MI; University of Chicago*	Vertebrate diversity and phylogeny across the fish-to-tetrapod transition
8:30 AM	S3-1.2	DCB	*Anderson P, Friedman M, Ruta M; University of Massachusetts, Amherst, University of Oxford, UK, University of Lincoln, UK*	Diversity and disparity of the vertebrate feeding apparatus across the invasion of land
9:00 AM	S3-1.3		*Pierce SP, Hutchinson JR, Clack JA; The Royal Veterinary College, UK, University Museum of Zoology, Cambridge, UK*	Historical evolution of early tetrapod movement
9:30 AM	S3-1.4	DEDB	*Davis MC; Kennesaw State University*	The deep homology of the tetrapod limb: combining fossil and genetic datasets
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S3-1.5	DCPB	*Martin KL, Moravek CL, Carter AL; Pepperdine University, Charleston Southern University*	Brave new propagules: terrestrial embryos of aquatic fish
11:00 AM	S3-1.6		*Wilson JM, Chew SF, Ip YK; CIMAR, Portugal, Nanyang Tech. University, Singapore, National University Singapore, Singapore*	Metabolic and osmoregulatory challenges of emersion in fishes
11:30 AM	S3-1.7	DCPB	*Jew CJ, Wegner NC, Graham JB; University of California, San Diego, Scripps Institution of Oceanography*	Physiology in deep time: using extant vertebrates to model behavioral and functional aspects of the Devonian land transition
NOON LUNCH BREAK				
1:00 PM	S3-2.1	DCB	*Van Wassenbergh S, Michel K; University Antwerpen, Belgium*	Feeding and swallowing on land
1:30 PM	S3-2.2		*Knuesel J, Karakasiliotis K, Crespi A, Ryczko D, Cabelguen J-M, Ijspeert A-J; École Polytechnique Fédérale de Lausanne, Switzerland, Groupe de Recherche sur le Système Nerveux Central, Université de Montréal, Canada, INSERM U862, France*	Gait transitions between swimming and walking in salamander: lessons from numerical modeling and robotics
2:00 PM	S3-2.3	DVM	*Kawano SM, Blob RW; Clemson University*	Comparative appendicular function during terrestrial locomotion: implications for the invasion of land
2:30 PM	S3-2.4	DVM	*Gibb AC, Ashley-Ross MA, Hsieh ST; Northern Arizona University, Wake Forest University, Temple University*	How is a morphology that is under strong selection for swimming performance "repurposed" for terrestrial locomotion?

8:20 am - 3:00 pm
Continental Ballroom 5

Symposium S4: Understanding First Order Phenotypes: Transcriptomics for Emerging Models

Sponsored by: DEDB, DAB, DCE, DIZ
Organized by: Suzy Renn, Antonia Monteiro, Arkhat Abzhanov

8:20 AM				Introduction
8:30 AM	S4-1.1		*Jones C; University of North Carolina*	RNAseq on draft genomes; perils and pitfalls

9:00 AM	S4-1.2		*Lee HN, Hsu TY, Brem RB*; University of California, Berkeley*	Evolution of an iron response regulon in a wild population of Saccharomyces cerevisiae
9:30 AM	S4-1.3	DEDB	*Lehr N, Sikhakolli U, Wang Z, Lopez-Giraldez F, Li N, Trail F, Townsend JP*; Yale University, Michigan State University*	Comparative phylogeny, ecology, and transcriptomics of fungal fruiting body development
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S4-1.4	DEE	*Wheat CW; University of Helsinki, Finland*	RNA-seq for ecologists - fundamentals and practicalities
11:00 AM	S4-1.5	DEDB	*Fischer AHL, Cosentino C, Smith J; MBL, Università degli Studi Magna Graecia Catanzaro*	The first steps toward a *Nematostella* gene interaction network
11:30 AM	S4-1.6		*Stajich JE, Joneson S, Abramyan J, Ahrendt S, Ramamurthy R, Sain D, Shiu SH, Rosenblum EB; University of California, Riverside, University of Wisconsin - Waukesha, University of British Columbia, Michigan State University, University of California, Berkeley*	Tools and pipelines for comparative genomics with application to evolution in Fungi
NOON LUNCH BREAK				
1:30 PM	S4-2.1	DPCB	*Dunn CW; Brown University*	The comparative biology of gene expression
2:00 PM	S4-2.2	DEE	*Pespeni MH; Indiana University*	Evolutionary and ecological genomics in a changing world: integrating Next-Gen data with environmental variation to reveal local adaptation
2:30 PM	S4-2.3		*Hiller M, Bejerano G*; Stanford University*	A “forward genomics” approach links genomic and phenotypic evolution in a clade of related species

8:00 am - 3:00 pm
Continental Ballroom 6

Symposium S5: Hormone-Mediated Sex Ratio Adjustment in Vertebrates

Sponsored by: DCE, DCPB, DAB
Organized by: Janet Leonard

8:00 AM	S5-1.1	DEDB	*Crews D; University of Texas at Austin*	Targets for hormone-mediated sex ratio adjustment in vertebrates
8:30 AM	S5-1.2	DCE	*Bowden RM, Clairardin SG, Paitz RT; Illinois State University*	Early hormonal influences on temperature dependent sex determination in turtles
9:00 AM	S5-1.3	DCE	*Navara KJ; University of Georgia*	Stress, hormones, and sex: how do we solve the puzzle of sex ratio adjustment in birds?
9:30 AM	S5-1.4		*Groothuis TGG, Goerlich VC, Dijkstra C; University of Groningen, University of Bielefeld D*	The role of maternal hormones in avian sex ratio manipulation
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S5-1.5	DEE	*Badyaev AV; University Arizona*	From emergence to evolution: phenotypic integration of complex offspring sex-bias
11:00 AM	S5-1.7		*Catalano RA, Saxton K, Bruckner T, Pearl M, Anderson E, Goldman-Mellor S, Margerison-Zilko C, Subbaraman M, Currier R, Kharrazi M; University of California, Berkeley, California Department of Public Health*	Hormonal evidence supports the theory of selection in utero
NOON LUNCH BREAK				
1:30 PM	S5-2.1		*Nagahama Y; Ehime University*	Genetic and hormonal regulation of gonadal development and sexual plasticity in fish

2:00 PM	S5-2.2	DNB	*Maruska KP, Fernald RD; Louisiana State University, Baton Rouge, Stanford University*	Social regulation of male reproductive plasticity in an African cichlid fish
2:30 PM	S5-2.3		*Godwin J, Slane MA, Gemmell NJ; North Carolina State University, University of Otago*	Neuroendocrine regulation of sexual plasticity in fishes

SATURDAY PROGRAM
MORNING SESSIONS

8:20 - 9:40 am
Imperial A

Session 37: Complementary to Symposium: When Predators Attack: Sensing and Motion in Predator-Prey Interactions I

Co-Chairs: Sonke Johnsen, Brian E. Dalton

8:20 AM	37.2	DIZ	*Sweeney AM, Johnsen S, Gagnon Y, Morse DE, Stramski D; University of Pennsylvania, Duke University, Scripps Institute of Oceanography, UCSB*	Jurassic marine photonics: squid dynamic iridescence and predation by large extinct marine reptiles
8:40 AM	37.3	DIZ	*Johnsen S, Nilsson D-E, Warrant EJ; Duke University, Lund University*	Why do giant squid have giant eyes?
9:00 AM	37.4	DAB	*Alupay JS, Caldwell RL; University of California, Berkeley*	The costs and benefits of losing an arm: autotomy in the octopus *Abdopus aculeatus*
9:20 AM	37.5	DCB	*Liao JC, Chambers LM, Akanyeti O; The Whitney Lab for Marine Bioscience, University of Florida Gainesville, Robotics Laboratory, University of Bristol, UK*	Pressure across the head of a freely-swimming rainbow trout (*Onchorynchus mykiss*) in uniform flow

9:40 AM BREAK IN EXHIBIT HALL

10:00 - 11:40 am
Imperial A

Session 38: Complementary to Symposium: When Predators Attack: Sensing and Motion in Predator-Prey Interactions II

Chair: Sonke Johnsen

10:00 AM	38.1		*Thomas WH, Fung JK, Thomas F; University of Hawaii-Windward Community College*	Water quality of Kāne'ohe Bay using indicator species *Tripneustes Gratilla*
10:20 AM	38.2	DEE	*Hein AM, McKinley SA; University of Florida*	Sensory signals and predator search performance at the low prey density limit
10:40 AM	38.3	DAB	*Gardiner JM, Atema J, Hueter RE, Motta PJ; Mote Marine Laboratory, Boston University, University of South Florida*	Sensory switching in sharks: the role of multimodal stimuli in prey tracking and capture
11:00 AM	38.4		*Dalton BE, Cronin TW, Carleton KL; University of Maryland, Baltimore County*	Coexpression of spectrally distinct opsins: a novel mechanism of photoreceptor tuning?
11:20 AM	38.5	DAB	*Schwalbe MAB, Webb JF; University of Rhode Island*	The contributions of sensory morphology and prey detection behavior to trophic niche differentiation in two sand-feeding Lake Malawi cichlids

11:40 AM LUNCH BREAK

7:40 - 9:40 am
Plaza A

Session 39: Wing Shape

Chair: Anand Krishnan

7:40 AM	39.1	DCB	*Jackson BE, Hedrick TL; University of North Carolina at Chapel Hill*	Hovering with a high speed wing: how cliff swallows push the envelope of wing shape

8:00 AM	39.2		*Kruyt JW, Quicazan-Rubio EM, Van Heijst GJF, Altshuler DL, Lentink D; Stanford University, Wageningen University, University of California, Riverside, Technical University of Eindhoven, University of British Columbia*	Small aspect ratio differences impact hover efficacy among 12 hummingbird species
8:20 AM	39.3		*Santhanakrishnan A, Miller LA, Lowe A, Robinson A, Hedrick TL; Georgia Institute of Technology, University of North Carolina, Chapel Hill, California Institute of Technology*	Clap and fling in tiny insect flight: role of the porous flow introduced by bristled wings
8:40 AM	39.4	DCB	*Ray R, Henningsson P, Nakata T, Bomphrey RJ*; CRUK London Research Institute, UK, University of Oxford, UK*	Wing shape characteristics exaggerated by RNA interference modulate aerobatic performance in fruit flies
9:00 AM	39.5	DCB	*Crall JD, Kovac M, Cornwall M, Wood RJ, Pierce NE, Combes SA; Concord Field Station, Harvard University, Imperial College London, Museum of Comparative Zoology, Wyss Institute*	Shaping up: aerodynamics and evolution of butterfly wing planform
9:20 AM	39.6	DCB	*Muijres FT, Johansson LC, Bowlin MS, Winter Y, Hedenström A; University of Washington, Seattle, Lund University, Sweden, University of Michigan-Dearborn, Humboldt University, Germany*	Comparing aerodynamic efficiency in birds and bats suggests better flight performance in birds

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Imperial B

Session 40: Robotic, Mathematical & Physical Models (General)

Chair: Eric D. Tytell

8:00 AM	40.1	DCB	*Tytell ED; Tufts University*	The intrinsic dynamical properties of muscle are self-stabilizing for rhythmic movements
8:20 AM	40.2	DCB	*Kenaley CP, Lauder GV; Harvard University*	BassBot: a biorobotic model of the teleost feeding system
8:40 AM	40.3	DVM	*Yaniv S, Elad D, Holzman R*; Tel Aviv University*	Computational model of aquatic feeding: scaling of suction feeding dynamics from larval to adult fish
9:00 AM	40.4		*Baird AJ, Miller LA; University of North Carolina, Chapel Hill*	Tubular heart pumping in tunicates and other invertebrates
9:20 AM	40.5	DCB	*Potvin J, Goldbogen JA, Shadwick RE, Pyenson ND; Saint Louis University, Cascadia Research Collective, University of British Columbia, Smithsonian Institution*	Fish versus krill – comparing the energetic costs of engulfment by rorqual whales lunge-feeding on slow and fast prey

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Imperial B

Session 41: Robotic, Mathematical & Physical Models: Swimming & Flying

Chair: Jean Potvin

10:00 AM	41.1	DCB	*Qian F, Goldman DI; Georgia Tech*	Locomotion on heterogeneous granular substrates
10:20 AM	41.2		*Neveln ID, Bale R, Bhalla APS, Curet OM, Lauder GV, Patankar NA, MacIver MA; Northwestern University, Brown University, Harvard University*	Knifefish surge like eels while heaving like trout

10:40 AM	41.3	DCB	*Delepine MB, Barannyk OL, Shadwick RE; University of British Columbia, Vancouver, University of Victoria, BC*	Performance of thunniform propulsion: a high biofidelity experimental study
11:00 AM	41.4	DCB	*Potvin J, Reyes P, McQuilling M, Goldbogen JA, Shadwick RE; Saint Louis University, Cascadia Research Collective, University of British Columbia*	Rorqual whale hydrodynamics and body drag during non-feeding transport, as revealed by Computational Fluid Dynamics (CFD)
11:20 AM	41.5		*Parslew B; The University of Manchester, UK*	Simulating and visualising flapping-wing flight
11:40 AM	41.6	DCB	*Eberle AL, Reinhall PG, Mountcastle AM, Daniel TL; University of Washington, Seattle, Harvard University*	Fluid-solid coupled model of flapping flexing insect wings reveals multiple maxima for flight forces

NOON LUNCH BREAK

8:00 - 9:40 am
Plaza B

Session 42: Muscle Physiology and Biochemistry: Molecules of Movement

Chair: Peter J. Reiser

8:00 AM	42.1	DCB	*Pace CM, Monroy JA, Nishikawa KC; Northern Arizona University*	The role of titin in force enhancement along the length-tension curve
8:20 AM	42.2	DCB	*Taylor KR, Nishikawa KC; Northern Arizona University*	The effects of a titin mutation on tremor frequency during shivering thermogenesis
8:40 AM	42.3	DCB	*Fuqua RD, Monroy JA, Nishikawa KC; Northern Arizona University*	Residual force enhancement: evidence for $Ca^{2}+$ activation of titin
9:00 AM	42.4	DCPB	*Covi JA, Bader BD, Chang ES, Mykles DL; University of North Carolina at Wilmington, Colorado State University, Bodega Marine Laboratory*	Comparative assessment of Smad expression in two models of muscle atrophy for the blackback land crab, *Gecarcinus lateralis*
9:20 AM	42.5	DCPB	*Reiser PJ, Bicer S; Ohio State University*	Cardiac, slow and fast troponin-t isoform expression patterns in dog and rat extraocular muscles

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Plaza B

Session 43: Muscle Physiology: Biomechanics & Locomotion

Chair: Emanuel Azizi

10:00 AM	43.1	DVM	*Azizi E, Abbott EM; University of California, Irvine*	Anticipatory motor patterns limit muscle stretch during landing in toads
10:20 AM	43.2	DCB	*Rivera ARV, Choudhury U, Richards CT; Rowland Institute at Harvard*	Tendon function during swimming: does compliance enhance performance?
10:40 AM	43.3	DVM	*Holt NC, Miara M, Wakeling JM, Biewener AA; Concord Field Station, Simon Fraser University*	The effect of muscle fibre recruitment on force-velocity properties and the implications for Hill-type models
11:00 AM	43.4	DCB	*Lee SSM, Biewener AA, De Boef Miara M, Arnold AS, Wakeling JM; Simon Fraser University, Harvard University*	A two-element Hill-type model to predict muscle forces
11:20 AM	43.5	DVM	*Abbott EM, Azizi E; University of California, Irvine*	The timing of muscle recruitment alters series elastic function during lengthening contractions
11:40 AM	43.6	DCPB	*Mahalingam S, Welch KC*; University of Toronto, University of Toronto Scarborough*	Neuromuscular modulation of kinematic performance in hovering hummingbirds

NOON LUNCH BREAK

8:00 - 9:40 am
Yosemite B

Session 44: Complementary to Symposium: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World - Part II

Chair: Bob Syrgley

8:00 AM	44.1		*Srygley RB; USDA-Agricultural Research Service*	Dietary effects on enzymatic immunity of migrating Mormon crickets
8:20 AM	44.2	DCE	*Hanauer RE, Ketterson ED; Indiana University*	Does corticosterone deposited in feathers in autumn predict circulating corticosterone during breeding?
8:40 AM	44.3		*Williams CT, Sheriff MJ, Barnes BM, Buck CL; University of Alaska Anchorage, University of Alaska Fairbanks*	Phenology of hibernation and reproduction in free-living arctic ground squirrels
9:00 AM	44.4	DAB	*Davidowitz G, Raguso RA, Goyret J, Von Arx M, Contreras HL; University of Arizona, Cornell University, University of La Verne*	Relative humidity - nectar concentration interactions in hawkmoth foraging
9:20 AM	44.5	DAB	*Thawley CJ, Robbins TR, Langkilde T; Pennsylvania State University*	Survival at what cost?: Consequences of a native lizard's adaptations to invasive fire ants

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Yosemite B

Session 45: Complementary to Symposium: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World - Part III

Chair: Tony Williams

10:00 AM	45.1	DEE	*Williams TD; Simon Fraser University*	Mid-winter temperatures, not spring temperatures, predict breeding phenology and fecundity in the European starling
10:20 AM	45.2	DEE	*Crossin GT, Phillips RA, Lattin CR, Romero LM, Williams TD; Dalhousie University, British Antarctic Survey, Tufts University, Simon Fraser University*	Corticosterone mediated costs of reproduction facilitate a tradeoff between current and future reproduction
10:40 AM	45.3		*Kennedy LV, Guglielmo CG; University of Western Ontario*	Dynamics of fat and lean mass in refuelling migrant passerines measured using quantitative magnetic resonance
11:00 AM	45.4	DEE	*Levy O, Buckley LB, Keitt TH, Angilletta MJ; Arizona State University, Tempe, University of North Carolina at Chapel Hill, The University of Texas at Austin*	Modeling the costs of thermoregulation in lizards: the interplay between competition, climate and vegetation cover in *Sceloporus undulatus*
11:20 AM	45.5		*Vuarin P, Dammhahn M, Henry PY; UMR 7179 CNRS-MNHN, Muséum National d'Histoire Naturelle, France, Behavioral Ecology & Sociobiology Unit, German Primate Center, Germany*	Torpor-based compensation of energy shortage: a review of evidences from field experiments
11:40 AM	45.6	DEE	*Madliger CL, Love OP; University of Windsor, Ontario*	Fitness consequences of individual variation in stress hormone levels: why repeatability and plasticity of physiological traits matter

NOON LUNCH BREAK

8:20 - 10:00 am
Yosemite A

Session 46: Complementary to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part IV

Chair: Tony Williams

8:20 AM	46.1	DCPB	*Dowd WW, Felton C, Heymann HM, Kost LE, Somero GN; Loyola Marymount University, Hopkins Marine Station of Stanford University*	Small-scale spatial and temporal variation in metabolic and antioxidant enzyme capacities within a population of rocky intertidal mussels (*Mytilus californianus*)
8:40 AM	46.2	DCPB	*Boardman L, Sørensen JG, Grout TG, Terblanche JS; Stellenbosch University, South Africa, Aarhus University, Silkeborg, Denmark, Citrus Research International, South Africa*	Cross tolerance between modified atmospheres and low temperature in insects
9:00 AM	46.3		*Padilla-Gamino JL, Kelly MW, Evans TG, Hofmann GE; University of California, Santa Barbara*	Multiple climate change variables interact to reduce the physiological performance of sea urchin larvae in future oceans
9:20 AM	46.4	DCPB	*Tomanek L; California Polytechnic State University*	Environmental stress proteomics of blue mussel (Genus *Mytilus*) congeners
9:40 AM	46.5		*Kelly MW, Padilla-Gamino JL, Hofmann GE; Unversity of California, Santa Barbara*	Natural variation, and the capacity to adapt to ocean acidification in the sea urchin Strongylocentrotus purpuratus

10:00 AM BREAK IN EXHIBIT HALL

10:20 am - Noon
Yosemite A

Session 47: Complementary to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part V

Chair: Allison Smith

10:20 AM	47.1	DEE	*Smith KA, Dunne JP, Sarmiento JL; Princeton University, NOAA Geophysical Fluid Dynamics Laboratory*	Predicting the effect of multiple stressors on respiratory niches in the pelagic ocean over the next century
10:40 AM	47.2		*Evans TG, Hofmann GE; California State University East Bay, University of California Santa Barbara*	Ocean acidification in the Northeast Pacific: a genomics perspective
11:00 AM	47.3	DCPB	*Kelley AL, Derivera CE; Portland State University*	Intraspecific variation in heat shock response and cell-cycle modulation in the invasive *Carcinus maenas*, the European green crab, on the west coast of North America
11:20 AM	47.4	DCPB	*Place SP; University South Carolina*	Using functional genomics to characterize the physiological response of polar fishes to a multistressor scenario
11:40 AM	47.5	DIZ	*Mann W, Burge C, Mydlarz L; The University of Texas at Arlington, Cornell University*	The effects of climate change on the immunocompetence of the Caribbean sea fan coral

NOON LUNCH BREAK

7:40 - 9:40 am
Yosemite C

Session 48: Cell and Molecular Physiology

Chair: Elisabeth A. Calhoun

7:40 AM	48.1	DCPB	*Hoekstra LA, Siddiq M, Montooth KL; Indiana University*	Physiological mechanisms of pleiotropy revealed by the accelerating effect of temperature
8:00 AM	48.2		*Connor KM, Gracey AY; University of California, Irvine, University of Southern California*	Molecular and biochemical observations of *Mytilus californianus* under constant submergence

8:20 AM	48.3		*Munro D, Pichaud N, Paquin F, Blier PU; University du Québec à Rimouski, Canada, University of New South Wales, Sydney, Australia*	Low hydrogen peroxide production in mitochondria of the long-lived *Arctica islandica*: underlying mechanisms of increased longevity
8:40 AM	48.4	DCPB	*Calhoon EA, Jimenez AG, Harper JM, Jurkowitz MS, Williams JB; Ohio State University, University of Michigan*	The relationship between life history in temperate and tropical bird species and lipids in fibroblast mitochondrial membranes
9:00 AM	48.5	DCPB	*Baris TZ, Oleksiak MF, Crawford DL; University of Miami, Rosenstiel School of Marine and Atmospheric Science*	Evolution of two genomes: impact of sequence divergence on mitochondrial function
9:20 AM	48.6	DIZ	*Kingston A, Hanlon RT, Cronin TW; University of Maryland, Baltimore County, Marine Biological Laboratory*	Immunolabeling and diverse expression of opsin in the skin of the squid, *Doryteuthis pealeii*

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Continental Ballroom 2/3

Session 49: Social Behavior

Chair: Jonathan Pruitt

8:00 AM	49.1	DAB	*Pruitt JN, Riechert SE; University of Pittsburgh, University of Tennessee*	The differential reproductive success of spider lineages is dictated by their ability to "outrun" their parasitic inquilines
8:20 AM	49.2	DAB	*Greene MJ; University of Colorado Denver*	The organization of "wars" by pavement ants
8:40 AM	49.3		*Ondrasek NR, Wade AC, Burkhard T, Hsu K, Nguyen T, Post J, Zucker I; University of California, Berkeley, University of Southern California*	Environmental modulation and endocrinological correlates of same-sex affiliative behavior in female meadow voles
9:00 AM	49.4	DAB	*Solomon-Lane TK, Pradhan DS, Willis MC, Crutcher JB, Grober MS; Georgia State University, Atlanta, Rhodes College, Memphis*	Playing the margins: the fitness consequences of individual behavioral variation in the bluebanded goby (*Lythrypnus dalli*)
9:20 AM	49.5	DAB	*De Leeuw JR, Livingston KR, Porter ME, Porter JH*; Indiana University, Vassar College*	When swarm intelligence isn't: common goals alone explain emergence of group coordination in asocial embodied robots

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Continental Ballroom 8

Session 50: Molecular Evolution and Population Genetics

Chair: Joel W. McGlothlin

8:00 AM	50.1		*Lins LSF, Ho SYW, Wilson GDF, Lo N; University of Sydney, Australian Museum*	Evidence for Permo-Triassic colonization of the deep sea by isopods
8:20 AM	50.2		*McGlothlin JW, Feldman CR, Brodie, Jr. ED, Pfrender ME, Brodie III ED; Virginia Tech, University of Nevada, Reno, Utah State University, University of Notre Dame, University of Virginia*	Evolutionary history of tetrodotoxin-resistant sodium channels in snakes
8:40 AM	50.3		*Merner MJ, Berendzen PB; University of Northern Iowa*	Hox gene evolution in North American suckers (Cypriniformes: Catostomidae), a tetraploid family of fishes
9:00 AM	50.4		*Faircloth BC, Gowaty PA, Drummond H, Winker K, Glenn TC; University of California, Los Angeles, Smithsonian Tropical Research Institute, Panama, Universidad Nacional Autónoma de México, University of Alaska Museum, University of Georgia*	Ultraconserved elements are abundant, universal markers for population genetic and behavioral studies

9:20 AM	50.5	DEE	*Chavez AA, Gorman C*, Lostroh CP, Nishiguchi MK; New Mexico State University, Colorado College*	Genetic switches control host specificity in a squid-*Vibrio* symbiosis

9:40 AM BREAK IN EXHIBIT HALL

7:40 - 9:40 am
Continental Ballroom 1

Session 51: Evolutionary Developmental Biology, Part I

Chair: Chris Rose

7:40 AM	51.1	DVM	*Rose CS; James Madison University*	The cellular basis of cartilage growth and shape change in frogs
8:00 AM	51.2	DIZ	*Shipley MS, Patz KS, Nedved BT, Hadfield MG*; University of Hawaii at Manoa*	Mechanisms of metamorphic remodeling in *Hydroides elegans* (Polychaeta)
8:20 AM	51.3	DIZ	*Morse MPATR; University of Washington, Friday Harbor Labs*	Edward S. Morse 1838-1925. History of scholarly exchanges in marine zoology between US and Japan
8:40 AM	51.4	DEDB	*Maliska ME, Lowe E, Weber C, Pierce T, Brown CT, Swalla BJ; University of Washington, Michigan State University*	Molgulid ascidians have a radical heterochronic shift in the metamorphic gene network
9:00 AM	51.5	DEDB	*Bishop CD, Krug PJ; St. Francis-Xavier University Nova Scotia, California State University*	Differential use of nitric oxide to regulate metamorphosis is related to larval selectivity: an eco-devo test using the sea slug *Alderia willowi*, a species with a settlement dimorphism
9:20 AM	51.6	DEDB	*Epel D; Stanford University*	Epigenetics as a stress response and its differing roles in the embryo and in the adult

9:40 AM BREAK IN EXHIBIT HALL

7:40 - 9:40 am
Continental Ballroom 7

Session 52: Biophysics Ecology

Chair: Mia Adreani

7:40 AM	52.1	DEE	*Adreani MS, Steele MA; California State University, Northridge*	Estimating fecundity, spawning frequency, season length of temperate reef fish; a comparison of natural and artificial reefs
8:00 AM	52.2	DEE	*Burnett NP, Helmuth B, Villarta K, Williams GA; University of California, Berkeley, University of South Carolina, Hong Kong University*	Feeding patterns and their implications for energy budgets in tropical limpets
8:20 AM	52.3	DCPB	*Du X, Crawford DL, Oleksiak MF; University of Miami*	Effects of PAHs on respiration and gene expression in primary hepatocytes isolated from natural populations of *Fundulus heteroclitus*
8:40 AM	52.4	DEE	*Kaspari M, Clay NA, Yanoviak SP, Revzen S, Czekanski-Moir J, Lucas J, Kay A; University of Oklahoma, University of Michigan, University of St. Thomas*	On the evolution of ant thermal performance: clues from a Neotropical forest
9:00 AM	52.5	DEE	*Elsberry LA, Burnaford JL; California State University, Fullerton*	Regional comparisons of the effects of summer and winter low tide conditions on photosynthetic recovery in a high intertidal alga
9:20 AM	52.6	DEE	*Wolcott TG, Dean AG, Sichitiu ML; North Carolina State University*	A networked “Citizen Science” monitoring system for estuarine environment and biota

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 10:00 am
Continental Ballroom 9

Session 53: Life Histories

Chair: Sarah Werning

8:00 AM	53.1	DIZ	*Teichholtz PJ; University of Michigan*	Developmental mode, poecilogony, and population structure of the pyramidellid snail *Boonea impressa*
8:20 AM	53.2	DEE	*Janzen F, Warner D, Bronikowski A, Miller D; Iowa State University, University Alabama, Birmingham, Penn State University*	Miles to go before I sleep: reduced fitness at older ages in a long-lived reptile
8:40 AM	53.3	DIZ	*Summers MM, Rouse GW; Scripps Institution of Oceanography, UCSD*	Untangling the trees of obligate symbionts: myzostomes and echinoderms
9:00 AM	53.4	DVM	*Werning S; University California, Berkeley*	Osteohistological differences between marsupials and placental mammals reflect both growth rates and life history strategies
9:20 AM	53.5	DEE	*Skibiel AL, Speakman J, Hood WR*; Harvard University, University of Aberdeen, Auburn University*	The costs of current reproduction are not traded against maternal survival or subsequent reproductive performance in the Columbian ground squirrel
9:40 AM	53.6	DEDB	*Pires Da Silva A, Chaudhuri J, Kache V, Bose N, Schroeder F, Von Reuss S; University of Texas at Arlington, Cornell University, Ithaca, Max Planck Institute for Chemical Ecology, Germany*	Evolution of selfing and the extension of lifespan

10:00 AM BREAK IN EXHIBIT HALL

7:40 - 9:40 am
Golden Gate 6/7

Session 54: Reef Ecology

Chair: Peter J. Edmunds

7:40 AM	54.1		*Rippe J, Stocking J, Reidenbach M; University of Virginia, Charlottesville*	Coral-macroalgae dominance shift may impact flow-mediated recovery from bleaching
8:00 AM	54.2		*Bramanti L, Edmunds PJ; California State University Northridge*	Demographic models can forecast climate change effects on scleractinian corals: the *Pocillopora damicornis* case study
8:20 AM	54.3	DIZ	*Zamudio S, Bramanti L, Edmunds PJ; California State University, Northridge*	Temperature-induced maternal effects on the phenotype of larvae released by the brooding coral *Pocillopora damicornis*
8:40 AM	54.4	DEE	*Davies SW, Treml E, Kenkel CD, Matz MV; University of Texas at Austin, The University of Queensland*	Understanding connectivity of *Acropora* corals across remote islands using genetics and biophysical modeling
9:00 AM	54.5	DEE	*Kahn AS, Yahel G, Tunnicliffe V, Leys SP; University of Alberta, Edmonton, Ruppin Academic Center, Israel, University of Victoria, British Columbia*	Glass sponge reefs significantly impact water properties in a marginal sea, the Strait of Georgia
9:20 AM	54.6		*Hofmeister JKK; University of California, Berkeley*	Factors influencing distribution and abundance of octopus inside and outside of a marine protected area in a kelp forest rocky reef ecosystem

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Plaza A

Session 55: Special Session Honoring Bruce Sidell, Part I

Sponsored by: The Company of Biologists, The Journal of Experimental Biology and the DCPB
Co-Chairs: Rich Londraville, Kristin O`Brien

10:00 AM	55.1		*Driedzic WR; Memorial University, NL, Canada*	Glycerol production and cellular uptake mechanisms in rainbow smelt
10:20 AM	55.2	DCPB	*Crockett EL; Ohio University*	Risky fats and antioxidant arsenals in cold- and warm-bodied fishes
10:40 AM	55.3	DCPB	*Londraville RL, Liu Q, Dalman MR, Bagatto B; University of Akron*	Leptin function in zebrafish
11:00 AM	55.4	DCPB	*Grove TJ, Whittington AC, Nienow TE, Whittington CL, Fort TJ; Valdosta State University, Florida State University, University of South Florida*	From muscle to molecule: function and structure of the calcium-binding protein calsequestrin from a eurythermal teleost
11:20 AM	55.5	DCPB	*Rodnick KEN; Idaho State University*	Does glucose metabolism limit rainbow cardiac performance in rainbow trout at high temperatures?
11:40 AM	55.6	DCPB	*Kinsey ST; University of North Carolina Wilmington*	Why are muscle fibers so large? Solving diffusion problems to attain maximal cell size

NOON LUNCH BREAK

10:00 - 11:40 am
Yosemite C

Session 56: Stress-Development

Co-Chairs: Michael J. Sheriff, Oliver P. Love

10:00 AM	56.1	DEE	*Sheriff MJ, Love OP; University of Alaska Fairbanks*	Maternal stress as a driver of adaptive phenotypic responses in offspring
10:20 AM	56.2	DCE	*Love OP, Bourgeon S, Madliger CL, Harris C, Williams TD; University of Windsor, ON, Norwegian Polar Institute, Tromsø, Simon Fraser University, BC*	Feather corticosterone predicts offspring performance in a context-dependent manner
10:40 AM	56.3	DCE	*Carruth LL, Shahbazi M; Georgia State University*	Early developmental stress alters HVC but not RA size in male zebra finches
11:00 AM	56.4	DCE	*Bebus SE, Small TW, Schoech SJ; University of Memphis*	Developmental corticosterone exposure is correlated with exploratory behavior and learning flexibility in Florida scrub-jays (*Aphelocoma coerulescens*)
11:20 AM	56.5	DAB	*Crino OL, Driscoll SC, Prather CT, Breuner CW; University of Montana*	Does developmental stress modulate reproductive tactics in the zebra finch?

11:40 AM LUNCH BREAK

10:00 am - Noon
Continental Ballroom 2/3

Session 57: Behavioral Variation

Chair: Sarah Zohdy

10:00 AM	57.1	DAB	*Zohdy S, Kemp AD, Tecot S, Wright PC, Jernvall J; Emory University, University of Texas, Austin, University of Arizona, Stony Brook University, University of Helsinki*	Of lice and lemurs: personality traits and parasite dynamics in wild brown mouse lemurs *Microcebus rufus*
10:20 AM	57.2		*Rosier RL, Langkilde T; Pennsylvania State University*	Potential competitors drive boldness variation in the absence of predation
10:40 AM	57.3	DAB	*Keiser CN, Mondor EB; University of Pittsburgh, Georgia Southern University*	Maternal predation risk induces transgenerational behavioral plasticity in a parthenogenetic insect

11:00 AM	57.4	DEE	*Williams-Sieg KA, Miles DB; Ohio University*	Behavioral plasticity mediates life history tradeoffs in response to habitat disturbance
11:20 AM	57.5	DAB	*Foltz SL, Davis JE, Ross AE, Rock RP, Moore IT; Virginia Tech, Radford University*	Food supplementation of urban and rural sparrows: effects on corticosterone, weight, and territorial aggression
11:40 AM	57.6		*Gracceva G, Herde A, Koolhaas JM, Palme R, Eccard JA, Groothuis TGG; Institute of Behavioural Neurosciences, University of Groningen, University of Potsdam, University of Veterinary Medicine, Vienna*	Turning shy on winter's day: effects of season on personality and stress response in Microtus arvalis

NOON LUNCH BREAK

10:00 - 11:40 am
Continental Ballroom 8

Session 58: Vertebrate Evolution and Phylogenetics

Chair: Graham Slater

10:00 AM	58.1	DPCB	*Slater GJ, Friscia AR; Smithsonian Institute, University of California, Los Angeles*	Where should we expect to find early bursts of trait evolution? A case study using Carnivora
10:20 AM	58.2	DPCB	*Santini F, Carnevale G, Sorenson L, Alfaro ME; University di Torino, University of California, Los Angeles*	Testing adaptive radiation scenarios in marine fishes by combining phylogenomic and paleobiological data
10:40 AM	58.3	DPCB	*Moseley MA, Cox CL, Chippindale PT; University of Texas at Arlington, University of Virginia*	Phylogeography of the four lined skink, *Plestiodon tetragrammus*
11:00 AM	58.4	DVM	*Criswell KE, Finarelli JA, Friedman M, Garwood R, Coates MI; University of Chicago, University College Dublin, Oxford University, University of Manchester and Diamond Light Source*	*Deltoptychius*: investigating the roots of the chimaeroid cranial condition
11:20 AM	58.5	DPCB	*Salcedo NJ; College of Charleston, Charleston*	Monotypic genera: two unique armored catfish species (Siluriformes: Loricariidae), with naked snouts

11:40 AM LUNCH BREAK

10:00 am - Noon
Continental Ballroom 1

Session 59: Evolutionary Developmental Biology, Part II

Chair: Andy Baxevanis

10:00 AM	59.1	DEDB	*Edsinger-Gonzales E, Bredeson JV, Leung AV, Zimmerman CR, Diaz DE, Trew DF, Brusco DG, Whitburn E, Martinez G, Ingle H, Rubado-Mejia JV, Mugglestone LE, Lazen J, Scott MA, Colston TJ, Trew T, Werner P, Giorgi G, Rowning BA, Rokhsar DS; University of California Berkeley, Merritt College*	Ciliogenesis, neurogenesis, and the intersection of aneural and neural larval swimming behaviors in the genome-enabled marine snail *Lottia gigantea*
10:20 AM	59.2		*Von Dassow G, Emlet RB, Maslakova SA; University of Oregon*	How the pilidium larva feeds
10:40 AM	59.3	DEDB	*Barnett AA, Thomas RH; Southern Illinois University*	The delineation of the fourth walking leg segment is temporally linked to posterior segmentation in the mite *Archegozetes longisetosus* (Acari: Oribatida, Trhypochthoniidae)

11:00 AM	59.4	DEE	*Ryan JF, Pang K, Schnitzler CE, Koch BJ, Nguyen A-D, Moreland RT, Mullikin JC, Wolfsberg TG, Martindale MQ, Baxevanis AD*; NHGRI/NIH and Sars Intl. Centre for Marine Mol. Biol., Kewalo Marine Lab, University Hawaii, National Human Genome Research Institute, NIH*	The genome of the ctenophore, *Mnemiopsis leidyi*: insights into the genetics of innovation and the evolution of multicellularity
11:20 AM	59.5	DCPB	*Burggren WW; University of North Texas*	Transgenerational effects of parental hypoxia on vertebrate and invertebrate larvae
11:40 AM	59.6	DEDB	*Schwab DB, Kijimoto T, Moczek AP; Indiana University - Bloomington*	Genetic, developmental, and ecological determinants of resource allocation tradeoffs in the horned beetle, *Onthophagus taurus*

NOON LUNCH BREAK

10:00 am - Noon
Continental Ballroom 7

Session 60: Community Ecology

Chair: Michael Middlebrooks

10:00 AM	60.1	DEE	*Gorsich EE, Ezenwa VO, Jolles AE; Oregon State University*	Consequence of co-infection for survival: immunity and disease persistence
10:20 AM	60.2	DIZ	*Gehman AM; University of Georgia*	Predation and parasitism: it's not all bad news
10:40 AM	60.3	DEE	*Newton C, Guidone M, Thornber CS; Northeastern University, Sacred Heart University, University of Rhode Island*	Impacts of invasive *Gracilaria vermiculophylla* on the reproductive ecology of native benthic invertebrates
11:00 AM	60.4	DEE	*Savoca MS, Nevitt GA; University of California, Davis*	Tritrophic interactions involving a global climate regulator mediate foraging in marine top predators: evidence from a 50-year seabird dietary database in the Southern Ocean
11:20 AM	60.5	DIZ	*Middlebrooks ML, Bell SS, Curtis NE, Pierce SK; University of South Florida*	Molecular analysis demonstrates that proximity is a poor indicator of food source for a photosynthetic herbivore
11:40 AM	60.6	DIZ	*Williams LE, Defur PL; Virginia Commonwealth University*	The effects of river sediment contaminants and moderate hypoxia on the blue crab (*Callinectes sapidus*) in the tidal freshwater James River

NOON LUNCH BREAK

10:20 am - Noon
Continental Ballroom 9

Session 61: Skulls & Teeth II

Chair: Robert Druzinsky

10:20 AM	61.1	DCB	*Crofts S; University of Washington, Seattle*	The effects of tooth structure and loading on the distribution and magnitude of strain in durophagous teeth
10:40 AM	61.2	DVM	*Naveh G, Brumfeld V, Charles C, Klein OD, Weiner S, Druzinsky RE*; Weizmann Institute, Israel, École Normale Supérieure de Lyon, France, University of California, San Francisco, University of Illinois at Chicago*	The role of enamel in the mechanical properties of the incisors of rodents
11:00 AM	61.3		*Porro LB, Iriarte-Diaz J, O'Reilly J, Ross CF; University of Chicago*	*In vivo* cranial bone strain during feeding in the agamid *Uromastyx geyri*
11:20 AM	61.4	DCB	*Ross CF, Herrel A, Porro LB, Evans SE, Fagan MJ, Murray KD; University of Chicago, CNRS/MNHN, University College London, University of Hull*	Cranial bone strain in the teiid lizard *Tupinambis merianae* and the diversity of optimality criteria in vertebrate skulls

11:40 AM	61.5	DCB	*Iriarte-Diaz J, Ross CF; University of Chicago*	3D kinematics, motor control and bone strain during feeding in non-human primates

NOON LUNCH BREAK

10:00 am - Noon
Golden Gate 6/7

Session 62: Biogeography

Co-Chairs: Ronald M. Bonett, Sarah L. Boyer

10:00 AM	62.1	DEE	*Bentlage B; University of Maryland*	Species distributions in the open oceans: integrating distribution models and population genomics
10:20 AM	62.2	DEE	*Bonett RM, Trujano-Alvarez AL, Williams MJ, Timpe EK; University of Tulsa, Louisiana State University, University of Connecticut*	Biogeography and body size shuffling of aquatic salamander communities on a shifting refuge
10:40 AM	62.3	DPCB	*Boyer SL, Baker CM, Popkin-Hall ZR, Lauko DI, Wiesner HA, Kozak KH, Luxbacher AE; Macalester College, University of Minnesota*	Historical biogeography of mite harvestmen from the Wet Tropics of Australia
11:00 AM	62.4		*Rognstad RL, Wethey DS, Hilbish TJ; University of South Carolina, Columbia*	The effects of rare events on climate-driven range expansion/contraction in marine communities
11:20 AM	62.5		*Yund PO, McCartney MA, Tilburg CE; The Downeast Institute, University of North Carolina - Wilmington, University of New England*	Is the southern range boundary of the northern blue mussel, *Mytilus trossulus*, determined by constraints on larval dispersal or thermal tolerance?
11:40 AM	62.6		*Churchill CKC, Alejandrino A, Valdés A, Ó Foighil D; University of California, Santa Barbara, Iowa State University, California State Polytechnic University, Pomona, University of Michigan, Ann Arbor*	Parallel sexual rekeying supports non-geographic planktonic speciation

NOON LUNCH BREAK

SATURDAY PROGRAM
AFTERNOON SESSIONS

1:00 - 3:00 pm
Imperial A

Session 63: Special Session Honoring Howard Bern

Co-Chairs: Stephen D. McCormick, Mark A. Sheridan

1:00 PM	63.1	DCE	*McCormick SD; USGS, Conte Anadromous Fish Res Ctr*	Downstream: the hormonal control of smolt development in salmon
1:20 PM	63.2	DCE	*Sheridan MA; North Dakota State University*	Control of animal growth: where are we and where do we go from here?
1:40 PM	63.3	DCE	*Causey DR, Reyes JA, Waggoner CM, Hamilton AW, Armstrong JL, Kelley KM; California State University Long Beach, Pacific Coast Environmental Conservancy, Orange County Sanitation District*	Protein expression screening in endocrine-disrupted, cortisol-producing interrenal tissue of urban ocean fish
2:00 PM	63.4	DCE	*John-Alder H, Pollock N, Pazdzior D, Feigin S; Rutgers University, New Brunswick*	Dihydrotestosterone reduces growth in a female-larger lizard
2:20 PM	63.5		*Nakamura M; University of the Ryukyus*	Differentiation and development of steroid-producing cells during ovarian differentiation in tilapia
2:40 PM	63.6	DCE	*Kelley KM, Reyes JA; California State University, Long Beach, Pacific Coast Environmental Conservancy*	Contaminant effects in fish: development of multiple measures screening approaches

1:00 - 3:00 pm
Plaza B

Session 64: General Insect Flight

Chair: Andrew M. Mountcastle

1:00 PM	64.1	DCB	*Iams SM, Beatus T, Guckenheimer J, Cohen I; Bowdoin College, Cornell University*	Roll-based sideways motion of mosquitoes in free flight
1:20 PM	64.2	DCB	*Ravi S, Crall J, Combes S; Harvard University*	On the flight of foraging bumblebees in the near-wake of objects
1:40 PM	64.3	DCB	*Mountcastle AM, Combes SA; Harvard University*	When wings collide: how collisions cause wing wear in bees and wasps
2:00 PM	64.4	DCB	*Zeng Y, Nunns H, Dudley H; University of California, Berkeley*	Flight with winglets in stick insects
2:20 PM	64.5		*Helms IV JA, Kaspari M; University of Oklahoma*	Found or fly: flight, reproduction and biomechanical tradeoffs in ant queens
2:40 PM	64.6	DAB	*Yanoviak SP, Dudley R; University of Louisville, University of California, Berkeley*	Aerial behaviors in wingless canopy arthropods

1:00 - 3:00 pm
Yosemite C

Session 65: Stress

Co-Chairs: Molly J. Dickens, Michelle Rensel

1:00 PM	65.1	DCE	*Dickens MJ, Bentley GE; University of California, Berkeley*	Endocannabinoid regulation of glucocorticoids – its for the birds
1:20 PM	65.2	DCE	*Rensel MA, Kosarussavadi S, Schlinger BA; University of California, Los Angeles*	Real-time measurement of hippocampal corticosterone in a songbird
1:40 PM	65.3	DCE	*Sobolewski ME, Brown JL, Mitani JC; University of Michigan*	Anticipatory stress, territoriality and hunting in wild chimpanzees
2:00 PM	65.4	DCE	*Lattin CR, Romero LM; Tufts University*	Seasonal variation in intracellular glucocorticoid receptor binding in the immune tissues of a wild bird
2:20 PM	65.5	DAB	*Cooper LN, Ross AE, Foltz SL, Moore IT, Davis JE; Radford University, Virginia Tech*	Stop on red: neophobia and corticosterone in house sparrows (*Passer domesticus*)
2:40 PM	65.6		*Sparkman AM, Palacios MG, Bronikowski AM; Westmont College, California, National Council for Scientific and Technologic Research, Argentina, Iowa State University*	Long-term elevation of indicators of physiological stress in captive garter snakes

1:00 - 3:00 pm
Continental Ballroom 2/3

Session 66: Neurobiology: Sensorimotor Integration

Chair: Duane McPherson

1:00 PM	66.1		*Nair S, Barocas J, Hadjisolomou S, Grasso FW; Brooklyn College, City University of New York*	Chemosensory and mechanosensory mediation of inter-sucker coordination in *Octopus bimaculoides*
1:20 PM	66.2		*Samson JE, Mooney TA, Gussekloo SWS, Hanlon RT; Woods Hole Oceanographic Institution and Wageningen University, Wageningen University, Marine Biological Laboratory*	Behavioral responses to sound stimuli in cuttlefish (*Sepia officinalis*)
1:40 PM	66.3	DAB	*Brothers JR, Ernst DA, Hankins K, Lohmann KJ; University of North Carolina, Chapel Hill*	Ontogeny of navigational responses to regional magnetic fields in loggerhead sea turtle hatchlings

2:00 PM	66.4	DNB	*Kirouac LE, Naimie AA, Bixby KA, Boroski CJ, Lawlor KE, Ramseyer TF, Watson, Iii WH, Newcomb JM*; New England College, University of New Hampshire*	A circadian clock regulates both crawling and swimming in the nudibranch *Melibe leonina*
2:20 PM	66.5	DIZ	*Ernst DA, Brothers JR, Lohmann KJ; University of North Carolina at Chapel Hill*	Nomadic ghosts: patterns of burrow occupancy in the ghost crab *Ocypode quadrata*
2:40 PM	66.6	DAB	*Kriengwatana B, Aitken SDT, Garcia L, Farrell TM, MacDougall-Shackleton SA; University of Western Ontario, Unviersity of Western Ontario*	Decline in conditions during the juvenile period impair behavioral flexibility, while consistently poor developmental conditions impair spatial memory of zebra finches

1:20 - 2:55 pm
Continental Ballroom 8

Session 67: Phylogenetics and Computational Methods

Co-Chairs: David C. Blackburn, Michael Alfaro

1:20 PM	67.1	DPCB	*Brazeau MD; Naturalis Biodiversity Center*	Taking a step back: computational problems for morphological data revisited
1:40 PM	67.2	DPCB	*Price SA, Schmitz L, Anderson PSL, Boettiger CL, Wainwright PC; University of California, Davis, Keck Science Department, Claremont McKenna, Pitzer and Scripps College, University of Massachusetts, Amherst*	Comparing disparity between traits using the Ornstein-Uhlenbeck model: a test of functional constraint on the eyes of labrids
2:00 PM	67.3	DPCB	*Smith AJ, Rosario MV, Eiting TP, Dumont ER; UMass, Amherst*	A conundrum of covariation: the effects of missing data on disparity analysis
2:20 PM	67.5	DPCB	*Mahler DL, Ingram T, Revell LJ, Losos JB; University of California, Davis, Harvard University, UMass, Boston*	Testing for exceptional among-island convergence in Greater Antillean *Anolis*: introduction and application of a novel comparative method
2:40 PM	67.6	DPCB	*Blackburn DC, Cannatella DC, Sukumaran J, Wake DB; California Academy of Sciences, University of Texas, Austin, Duke University, University of California, Berkeley*	The impact of taxonomic progress on knowing the Tree of Life: an example from amphibians
2:45 PM	67.7	DPCB	*Alfaro ME, Faircloth BC; UCLA*	Using sequence capture of UCEs and flanking regions to resolve phylogenetic relationships within actinopterygian fishes
2:50 PM	67.8	DPCB	*Sigwart JD, Schroedl M; Queen's University Belfast, Zoologische Staatssammlung Munich*	Consensus and confusion in molluscan phylogeny

1:00 - 2:50 pm
Yosemite B

Session 68: Complementary to Symposium: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World - Part IV

Chair: Jessica Meir

1:00 PM	68.1	DCPB	*Schultz EM, Hahn TP; University of California, Davis*	The environmental and physiological factors modulating immunity in an opportunistic breeder
1:20 PM	68.2	DCE	*Brazeal KR, Hahn TP; University of California Davis*	Comparing the effects of testosterone treatment on onset and continuity of plumage molt between two species of cardueline finch
1:40 PM	68.3	DCE	*Ouyang JQ, Hau M; Princeton University, Max Planck Institute for Ornithology*	Corticosterone and brood abandonment in a passerine bird

2:00 PM	68.4	DAB	*Watts HE, Vilgalys TP; Loyola Marymount University, Los Angeles*	Shifts in reproductive timing in house finches in relation to temperature
2:20 PM	68.5	DCE	*Gonzalez-Gomez PL, Merrill L, Venegas C, Pantoja J, Vasquez RA, Wingfield JC; University of California Davis, Oklahoma State University, Universidad de Chile*	Seasonal modulation of testosterone and stress response in a highly stable environment
2:40 PM	68.6	DCPB	*Meir JU; University of British Columbia*	Energy expenditure is independent of dive function in a deep diving vertebrate, the northern elephant seal
2:45 PM	68.7	DCE	*Langkilde T, Freidenfelds NA, Thawley CJ, Robbins TR, Graham SP; Pennsylvania State University*	Are invasive species stressful?

1:00 - 3:00 pm
Plaza A

Session 69: Special Session Honoring Bruce Sidell, Part II

Co-Chairs: Rich Londraville, Kristin O`Brien

1:00 PM	69.1	DCPB	*Somero G; Stanford University*	Lessons from cold-adapted enzymes: can protein adaptation to temperature be simple and quick?
1:20 PM	69.2		*Moerland TS, Whittington AC; Kent State University, Florida State University, Tallahassee*	Time travel in the lab: exploring thermal compensation in Antarctic fish parvalbumins
1:40 PM	69.3		*Detrich HW, Yan YL, Titus T, Allard C, Albertson RC, Postlethwait JH; Northeastern University, Boston, University of Oregon, Eugene, University of Massachusetts, Amherst*	Evolutionary developmental biology of notothenioid fishes: through the genomic looking glass
2:00 PM	69.4	DCPB	*O'Brien KM; University of Alaska Fairbanks*	Multiplying mitochondria in the cold: how do fish do it and why?
2:20 PM	69.5		*Egginton S; University of Birmingham, UK*	Control of branchial artery tone in Antarctic fish
2:40 PM	69.6	DCPB	*Beers JM; Stanford University*	Relationships between hemoprotein expression and cardiovascular physiology of Antarctic notothenioids: form, function, and future implications

1:00 - 3:00 pm
Yosemite A

Session 70: Complementary to Symposium: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World - Part VI

Co-Chairs: Sherry Tamone, Piero Calosi

1:00 PM	70.1	DCPB	*Garland MA, Paganini A, Stillman J, Tomanek L; California Polytechnic State University, San Luis Obispo, San Francisco State University*	The proteomic response of the porcelain crab, *Petrolisthes cinctipes*, following acclimation to fluctuating temperature, pH, and aerial exposure treatments
1:20 PM	70.2	DEE	*Roberts JA, Kooijman SALM, Coulson GC, Munn AJ, Kearney MR; University of Melbourne, Australia, Vrije University, Amsterdam, University of Wollongong, Australia*	Using biophysics and Dynamic Energy Budget theory to investigate how a large mammal responds to varying environmental conditions
1:40 PM	70.3		*Groom DJE, Toledo MCB, Welch KC; University of Toronto, Universidade de Taubate*	The effect of elevation on hummingbird flight energetics: metabolic cost of flight in a changing environment
2:00 PM	70.4		*Anderson DA, Southwood Williard A, Scharf FS; University of North Carolina Wilmington*	Osmoregulatory disruption due to acute cold stress in a juvenile estuarine fish

2:20 PM	70.5	DCE	*Warne RW, Kirschman LJ*, Crespi EJ, Brunner JL; Southern Illinois University, Washington State University*	Stress effects on immune function and disease emergence in amphibians
2:40 PM	70.6	DPCB	*Calosi P, Turner LM, Hawkins M, Nightingale G, Bertolini C, Truebano-Garcia M, Ford A, Spicer JI; Plymouth University, University of Portsmouth*	The effect of exposure to multiple environmental challenges on multiple physiological responses: an inter-individual approach

1:00 - 3:00 pm
Continental Ballroom 1

Session 71: Evolutionary Developmental Biology III: Cell Differentiation

Co-Chairs: Leslie S. Babonis, David Matus

1:00 PM	71.1	DEDB	*Babonis LS, Martindale MQ; Kewalo Marine Lab, University of Hawaii*	Examining a cnidarian novelty: form and function of the nematosomes in *Nematostella vectensis*
1:20 PM	71.2	DCE	*Das S, Najar FZ, Lai HC, Wiley G, Gaffney PM, Roe BA, Durica DS; University of Okahoma, OMRF*	NGS analyses of genes expressed during limb regeneration in the crab, *Uca pugilator*
1:40 PM	71.3		*De Jong D, Cavaco N, Seaver E; University of Hawaii, Honolulu*	Dynamic Hox gene expression during *Capitella teleta* juvenile development and posterior regeneration
2:00 PM	71.4	DEDB	*Matus DQ, Chang E, Sherwood DR; Duke University*	Patterning of cell cycle arrest during formation of the nematode uterine-vulval connection
2:20 PM	71.5	DEDB	*Windsor PJ, Leys SP; University Alberta*	Tracing cell identity through metamorphosis in a freshwater sponge larva
2:40 PM	71.6	DEDB	*Kohn AB, Moroz LL; University of Florida, Whitney Lab*	Single-cell RNA-seq and cell-specific DNA methylation profiling for comparative and integrative biology: toward genomic portraits of individual blastomeres and identified neurons

1:00 - 3:00 pm
Imperial B

Session 72: Robotic, Mathematical & Physical Models: Terrestrial

Chair: Kevin Peterson

1:00 PM	72.1		*Zarrouk D, Pullin A*, Fearing R; University of California, Berkeley*	Locomotion analysis of dynamic in-plane hexapod
1:20 PM	72.2		*Haldane DW, Fearing RS; University of California, Berkeley*	Using dynamic similarity scaling to inspire the design of a high-speed hexapedal millirobot
1:40 PM	72.3	DCB	*Aguilar JA, Lesov A, Wiesenfeld K, Goldman DI; Georgia Tech*	The role of natural frequency in a jumping robot
2:00 PM	72.4	DCB	*Birkmeyer PM, Gillies AG, Fearing RS; University of California, Berkeley*	Dynamic climbing of near-vertical surfaces with a legged robot
2:20 PM	72.5		*Peterson K, Dudley R, Fearing RS; University of California, Berkeley*	Hybrid aerial and terrestrial robots and their implications for avian flight evolution
2:40 PM	72.6		*Kohut NK, Zarrouk D, Pullin AO, Haldane DW, Fearing RS; University of California, Berkeley*	Rapid terrestrial turning in robots using tails inspired from lizards

1:20 - 3:00 pm
Continental Ballroom 7

Session 73: Population Ecology

Co-Chairs: Shannon McCauley, Arianne Cease

1:20 PM	73.1		*Sloan LM, Marks SB; Humboldt State University*	Population structure and life history of western pond turtles, *Actinemys marmorata*, in lentic habitats in the Trinity River Basin, CA

1:40 PM	73.2	DEE	*Cease AJ, Elser JJ, Hao S, Harrison JH; University of Sydney, Arizona State University, Institute of Zoolog, Chinese Academy of Sciences*	Low plant nitrogen content and high population density enhance migratory characters in a polyphenic locust
2:00 PM	73.4		*Nater OHA, Dillon ME; University of Wyoming, Laramie*	Thermal time: a tool for predicting climate-induced shifts in native bee phenology
2:20 PM	73.5		*Morgan SG, Shanks A, MacMahan J, Reneirs A, Brown J, Griesemer C; Bodega Marine Laboratory, University of California, Davis*	Differential transport across the surf zone of reflective and dissipative shores as a determinant of larval supply
2:40 PM	73.6	DEE	*Lattanzio M, Miles D; Ohio University*	Functional and phenotypic responses of lizards to disturbance

1:00 - 3:00 pm
Continental Ballroom 9

Session 74: Tail Function

Chair: Eric McElroy

1:00 PM	74.1	DVM	*McElroy EJ, Bergmann PJ; College of Charleston, Clark University*	The evolution of tail size, tail autotomy, and locomotor performance in lizards
1:20 PM	74.2	DCB	*James CJ, McElroy EJ; College of Charleston*	The effect of autotomy on locomotor performance in the green anole, *Anolis carolinensis*
1:40 PM	74.3	DCB	*Chadwell BA, Young JW, Shapiro LJ; NEOMED, University of Texas, Austin*	A comparative look at tail movement during narrow branch locomotion
2:00 PM	74.4	DCB	*Jusufi A, Byrnes GT, Full RJ; University of California, Berkeley*	Gliding geckos perch on a tree trunk assisted by active tails
2:20 PM	74.5	DVM	*Rupert JE, Moreira AS, Butcher MT; Youngstown State University, University of Costa Rica, San Jose*	Analysis of myosin heavy chain (MHC) isoforms in the prehensile tails of didelphid marsupials: functional differences in arboreal versus terrestrial opossums
2:40 PM	74.6	DVM	*Maia A, Couto A, Adriaens D; Ghent University, Belgium*	How seahorses hang on to their life

1:00 - 3:00 pm
Golden Gate 6/7

Session 75: Respiration & Lung Changes

Chair: Colleen Farmer

1:00 PM	75.1	DVM	*Farina SC, Ferry LA; Cornell University, Arizona State University*	Functional morphology of ventilation in four species of sculpins (Scorpaeniformes)
1:20 PM	75.2	DCPB	*Diaz S, Shirkey NJ, Thaler CD, Cardullo RA, Hammond KA*; University of California, Riverside*	Phenotypic changes in lung function after acclimation to high altitude in deer mice
1:40 PM	75.3	DCB	*Piscitelli MA, Lillie MA, Raverty SA, Shadwick RE; University of British Columbia, Vancouver, British Columbia Ministry of Agriculture, Food, and Fisheries*	A comparative study of cetacean respiratory mechanics: implications for diving and health assessment
2:00 PM	75.4	DVM	*Farmer CG, Schachner ER, Sarrazin JC; University of Utah*	Structure & function in sauropsid lungs
2:20 PM	75.5	DCB	*Pendar H, Socha JJ; Virginia Tech*	The mechanism of tracheal collapse in beetles: a multi-linked system

2:40 PM	75.6	DCPB	*Greenlee KJ, Socha JJ, Eubanks HB, Lee W-K, Kirkton SD; North Dakota State University, Virginia Tech, Jackson State University, Argonne National Laboratory, Union College*	Developmental changes in tracheal system structure and function in the caterpillar, *Manduca sexta*

6:30-7:30 pm
Continental Ballroom 4/5/6
Bern Lecture

			Ketterson ED; Indiana University	Synthesizing research on the adaptable snowbird: geographic variation, seasonality, and evolutionary endocrinology

SATURDAY POSTER SESSION P2

Grand Ballroom, 3:00-5:00 PM

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

Even # - Authors present from 3:00 - 4:00 pm; Odd # - Authors present from 4:00 - 5:00 pm

Behavior: Reproduction and Parenting

P2.1	DEE	*Heiniger J, Dickman C, Wilson RS; The University of Queensland, University of Sydney*	The life and times of a sex addict in northern Australia: understanding the breeding dynamics of the world's largest semelparous mammal
P2.2	DAB	*Friesen CR, Uhrig EJ, Mason RT; Oregon State University*	The effect of mating with vasectomized males on subsequent mating behavior in female red-sided garter snakes
P2.3	DAB	*Smith VL, Rosenthal GG; Texas A&M University*	Neuroendocrine mechanisms of female reproductive behavior in the swordtail *X. birchmanni*
P2.4	DIZ	*Shows A, Jensen DA*, Shuster SM; Northern Arizona University*	Seasonal variation in abundance and reproductive activity in the calcareous sponge, *Leucetta losangelensis* (de-Laubenfels)
P2.5	DAB	*Thompson DM, Fillmore B, Ligon DB; Missouri State University, Tishomingo National Fish Hatchery*	Direct and remote methods of assessing turtle nesting behavior
P2.6	DAB	*Cupp, Jr PV; Eastern Kentucky University*	Posthatching brooding behavior in green salamanders, *Aneides aeneus*
P2.7	DAB	*Harris BN, De Jong TR, Yang V, Saltzman W; University of California, Riverside*	Effect of chronic variables stress on paternal behavior in California mouse fathers

Behavior: Temperature

P2.8	DEE	*O'Connell C, Villar-Leeman C, Fricke E, Gannon D, Gannon J, Mauck RA; Kenyon College, Bowdoin College*	The heat is on: air temperature, burrow temperature, and reproductive success in a long-lived seabird
P2.9	DIZ	*Schram JB, Schoenrock KM, McClintock JB, Amsler CD, Amsler MO, Angus RA; University of Alabama at Birmingham*	Sub-lethal impacts of ocean acidification and elevated temperature on two molluscs from the western Antarctic Peninsula
P2.10		*Fonner CW, Woodley SK; Duquesne University, Pittsburgh*	The effects of elevated temperature on locomotory activity, plasma corticosterone, and white blood cells in the semi-terrestrial salamander *Desmognathus ochrophaeus*
P2.11		*Conover AE, Muñoz MM, Boronow K, Cooke E, Shields I, Landestoy MA, Losos JB, Gastel J; Stuyvesant High School, Harvard University, Trinity University, Sociedad Ornitologica de la Hispaniola*	Does parasite load affect thermoregulation in a diverse clade of Caribbean anoles?
P2.12	DAB	*Stahlschmidt ZR, Adamo SA; Dalhousie University*	What contributes to variability in behavioral thermoregulation?

Cell & Molecular Physiology

P2.13	DCPB	*Samarajeewa DA, Harder A, Toner M, Chakraborty N, Menze MA; Eastern Illinois University, Harvard University, University of Michigan at Dearborn*	Ice nucleation protein reduces cryogenic injury in eukaryotic cells
P2.14	DCPB	*Wagner JT, Podrabsky JE; Portland State University*	Mechanisms underlying photorepair and photoprotection of Ultraviolet-C irradiated *Austrofundulus limnaeus* embryos and implications for a novel developmental stage
P2.15	DCPB	*Culpepper KM, Podrabsky JE; Portland State University*	Expression levels of cell cycle regulator Akt (PKB) reveals contradictory results during diapause and anoxia-induced dormancy in embryos of the annual killifish *Austrofundulus limnaeus*
P2.16	DCPB	*Romney A, Podrabsky J; Portland State University*	MicroRNA regulation of alternative phenotypic development of the annual killifish, *Austrofundulus limnaeus*

P2.17	DCPB	*Riggs CL, Podrabsky JE; Portland State University*	The role of microRNA in extreme anoxia tolerance of annual killifish embryos
P2.18		*Ji-Hyun L, Hyun-Woo K; Pukyong National University, Republic of Korea*	Characterization of low density lipoprotein receptor (LDLR) gene superfamily members in decapod crustaceans
P2.19	DCPB	*Champagne AM, Allen HC, Williams JB; Ohio State University*	Tests on the organization of lipids in the avian stratum corneum
P2.20	DIZ	*Fay SA, Swiney K, Foy R, Stillman JH; University of California, Berkeley, National Marine Fisheries Service, AK*	*De novo* assembly of the *Paralithodes camtschaticus* (Red King Crab) transcriptome to inform its response to ocean acidification
P2.21	DCPB	*Cooper-Mullin C, Jimenez AJ, Van Brocklyn JR, Williams JB; The Ohio State University*	A protocol for wild avian muscle cell culture
P2.22	DCPB	*Almeida Mansilla E, Dyal J, Lewis JM, Brim D, Clyman T, Blank JM; California Polytechnic State University*	Influence of acute exercise and ethanol on mitochondrial biogenesis pathways

Complementary to Symposium: Physiological Responses to Similtaneous Shifts

P2.23	DIZ	*Debrish A, Magana C, Brummitt S, Adams N; California Polytechnic State University*	Exposure of adult purple sea urchins, *Strongylocentrotus purpuratus*, to solar ultraviolet radiation (sUVR) affects embryo resistance
P2.24	DCPB	*Boles SE, Hettinger A, Gaylord B, Sanford E, Todgham AE; San Francisco State University, Bodega Marine Laboratory, University of California, Davis*	Physiological cost of future ocean conditions on larval development in the native Olympia oyster, *Ostrea lurida*
P2.26	DCPB	*Carey N, Sigwart JD*; Queen's Univerity Belfast*	Environmentally-driven changes to metabolic scaling relationships in grazing mollusks
P2.27		*Paganini AW, Stillman JH; San Francisco State University, University of California, Berkeley*	Physiological responses of the porcelain crab *Petrolisthes cinctipes* to simultaneous exposure to increased variability of *p*CO2, temperature and emersion
P2.28		*Yu PC, Kapsenberg L, Hofmann GE; University of California, Santa Barbara*	Ocean acidification and thermal stress in a polar ectotherm—physiological responses of the larvae of *Sterechinus neumayeri* to a potential future ocean
P2.29	DCPB	*Bjelde BE, Miller NA, Todgham AE; San Francisco State University*	The role of oxygen in determining upper temperature tolerance in the fingered limpet under emersed and immersed conditions
P2.30	DCPB	*McLean KM, Todgham AE; San Francisco State University*	Effect of food availability on thermal tolerance of juvenile Dungeness crabs in the San Francisco Estuary
P2.31	DCPB	*Pasparakis C, Bjelde BE, Todgham AE; San Francisco State University*	Effects of repeated heat stress and recovery on thermal tolerance of the fingered limpet, *Lottia digitalis*
P2.32	DCPB	*Matoo O, Dickinson G, Ivanina A, Beniash E, Sokolova I*; University of North Carolina at Charlotte, University of Pittsburgh*	Elevated CO_2, temperature and salinity interactively affect biomineralization and shell properties of hard shell clams *Mercenaria mercenaria*
P2.33	DCPB	*Sokolova I, Ivanina A, Beniash E; University of North Carolina at Charlotte, University of Pittsburgh*	Elevated CO_2 levels affect cellular uptake and homeostasis of trace metals in hard shell clams *Mercenaria mercenaria*
P2.34	DCPB	*Dilly GF, Hofmann G; University of California, Santa Barbara*	The transcriptome of Antarctic sea urchin (*Sterechinus neumayeri*) larvae
P2.35	DCPB	*Rivest EB, Chen C-S, Fan T-Y, Li H-H, Edmunds PJ, Hofmann GE; University of California, Santa Barbara (UCSB), National Museum of Marine Biology and Aquarium (NMMBA), California State University Northridge, UCSB*	Energetic consequences of ocean acidification and warming for coral larvae
P2.36	DCPB	*Miller NA, Paganini AW, Stillman JH; San Francisco State University, University of California, Berkeley*	Differential thermal tolerance and energetic trajectories during ontogeny in porcelain crabs, genus *Petrolisthes*

P2.37	DEE	*Zavala NA, Rank NE, Dahlhoff EP; Santa Clara University, Sonoma State University*	Effects of variation at mitochondrial and nuclear genes on mitochondrial enzyme function and locomotor performance of a leaf beetle
P2.38		*Wall CB, Edmunds PJ; California State University Northridge*	Elevated pCO_2 increases ammonium excretion in juvenile colonies of the scleractinian *Seriatopora caliendrum*

Complementary to Symposium: Coping with Uncertainty

P2.39	DCB	*Horner AM, Jayne BC; Brown University, University of Cincinnati*	The axial motor pattern and kinematics of terrestrial locomotion of the African lungfish, *Protopterus annectens*
P2.40	DVM	*Dial TR, Summers AP, Brainerd EL; Brown University, University of Washington*	Tradeoffs in anguilliform locomotion over complex substrates in Stichaeid fishes
P2.41		*Dabruzzi TF, Ribero L, Polgar G, Bennett WA; University of West Florida, University of Malaya*	The life less aquatic: water loss resistance in mudskippers and its role in emergent behavior
P2.42	DAB	*Pronko AJ, Perlman BM, Ashley-Ross MA; Wake Forest University*	Going out for a bite: how the mangrove rivulus *Kryptolebias marmoratus* leaves the water to capture terrestrial prey

Complementary to Symposium: When Predators Attack

P2.43	DEE	*Bleicher SS, Kotler BP, Brown JS; University of Illinois at Chicago, Ben-Gurion University of the Negev*	Response of prey to evolutionarily novel predators with a constraint-breaking adaptation: what do gerbils think of sidewinder rattlesnakes?
P2.44	DVM	*Gerry SP, Bisaccia M, Ellerby DJ; Fairfield University, Wellesley College*	Correlating fast-start performance to morphology in juvenile bluegill
P2.45	DVM	*Darakananda K, Connolly E, Hitchcock A, Jeong J, Quist A, Robbins A, Ellerby D; Wellesley College*	Preferred escape trajectories are not associated with performance benefits in the bluegill sunfish
P2.46	DVM	*Bird DJ, Davydov Y, Amirkhanian A, Van Valkenburgh B; University of California Los Angeles*	Cribriform plate morphology as proxy for olfactory innervation in felids and canids
P2.47	DCB	*Sustaita D; University of Connecticut*	The kinematics of a shrike bite: force, velocity, and an argument for power in loggerhead shrikes (Passeriformes: Laniidae)
P2.48		*Baettig CG, Miller LB, Hastings PA, Mehta RS; University of California, Santa Cruz, Scripps Institution of Oceanography, University of California, San Diego*	Kinematics of feeding in sarcastic fringeheads, Neoclinus blanchardi (Teleostei: Blenniiformes)
P2.49	DAB	*MacDonald IA, Gibb AC; Northern Arizona University*	Cranial movements of the Pacific sandfish are coupled with descent into the substrate: are fish fluidizing sand using the opercular pump?
P2.50	DCB	*Whitenack LB, Ryerson W; Allegheny College, University of Connecticut*	Thermal effects on jumping kinematics in plethodontid salamanders
P2.51	DCB	*Sinderbrand CS, Bartol IK; Old Dominion University*	Biomechanics and behavior of anti-predator responses in squid *Lolliguncula brevis*
P2.52	DCB	*Khorshidchehr DM, Ryan DS, Feitl KE, McHenry MJ, Muller UK; California State University Fresno, University Wageningen, University of California Irvine*	Escape trajectories of larval zebrafish to vertical and horizontal suction stimuli
P2.53	DCB	*Wigton RA, Bartol IK; Old Dominion University*	Hydrodynamic and kinematic turning performance of brief squid *Lolliguncula brevis*
P2.54	DVM	*Thornton SW, McLellan WA, Rommel SA, Pabst DA; University of North Carolina Wilmington*	Functional morphology of dorsal acoustic structures in pygmy (*Kogia breviceps*) and dwarf (*K. sima*) sperm whales

DEE Best Student Poster: Ray Huey Award

P2.55	DIZ	*Bagge LE, Johnsen S; Duke University*	Looking at invisibility: anti-reflective structures and strategies in hyperiid amphipods

P2.56	DVM	*Chow JS, Berg CL, Hymes M, McGee MD, Wainwright PC; University of California, Davis*	Convergent feeding kinematics in elongate cichlids
P2.57	DEE	*McCann MJ; Stony Brook University*	Nutrient stoichiometry, species traits, and regime shifts in freshwater ponds
P2.58		*Nelson HR, Griffin JN, McCoy MW, Nifong JC, Silliman BR; Brown University, University of Florida*	Despite resource partition, multiple predators reduce mortality risk for foundation species
P2.59	DCB	*Zeng Y, Tang J, Singhal S, Gonzales C, Rahim F, Naing G, Aziz A, Dudley R; University of California, Berkeley, Universiti Kebangsaan Malaysia*	Stepwise flight reduction evolved along ecological gradient
P2.60	DEE	*Lasala JA, Harrison JS, Frick M, Williams K, Rostal DC; Florida Atlantic University, Georgia Southern University, Caretta Research Project*	New microsatellite analyses may confound current population models for loggerhead sea turtles (*Caretta caretta*)

Education and Policy

P2.61	DEE	*Schoenle LA, Christopherson GL; Virginia Tech, University of Arizona*	Wildfire's wild survivors: how bird populations are affected by a changing habitat
P2.62	DEE	*McCulloch KJ, Briscoe AD; University of California, Irvine*	Sexual dimorphism and species divergence following UV opsin duplication in *Heliconius* butterflies
P2.63		*Switzer CM; Harvard University*	Inspiring future scientists in primary school, using place-based inquiry
P2.64		*Seymoure B, Borchert J, Lessios N, Ligon R, Ganesh T, Webber A; Arizona State University*	Graduate Partners in Science Education: a graduate student-led program focused on hands-on science education for middle school students
P2.65	DIZ	*Spain DD, Reed KD, Buselli M; Dominican University of California*	Assessing communication skills in an introductory science research class
P2.66	DEE	*Hoese WJ, Sandquist DR; California State University Fullerton*	NSF undergraduate research and mentoring in biology at CSU Fullerton: Southern California ecosystems research program
P2.67	DCPB	*Carroll MA, Skeete D, Catapane EJ; Medgar Evers College*	*STEP into Science* at Medgar Evers College, a successful strategic plan
P2.68	DEE	*Baluch DP, Traynor K, Cease AJ*, Coloumbe M, Stout V, Sweazea K; Arizona State University, University of Sydney*	Jumpstarting STEM Careers

Evolutionary Developmental Biology II

P2.69	DEE	*Maciel J, Pinon M, Zaragoza D, Cordero G, Neuman-Lee L, Strickland J, Thol S, Warner D, Mitchell T, Reedy A, Janzen F*; Iowa State University, Kelly High School, Chicago, Utah State University, US Fish & Wildlife Service, University Alabama, Birmingham*	Planting a TREE: designing a program to facilitate ecological research, outreach, education, and mentoring for underrepresented students
P2.70		*Blacquiere LD, Hoese WJ; California State University, Fullerton*	Assessment of student conceptions of evolutionary trees
P2.71	DEDB	*Faltine-Gonzalez DZ, Babonis LS, Martindale MQ; Kewalo Marine Lab, University of Hawaii*	Do opsins regulate cnidocyte firing in *Nematostella vectensis*?
P2.72		*Torson AS, Kemp WP, Rinehart JP, Yocum GD, Bowsher JH; North Dakota State University, USDA-ARS Red River Valley Agricultural Research Center*	Seasonal timing and gene expression in the blue orchard bee *Osmia lignaria*
P2.73	DEDB	*Lash JL, Sherman RL; Nova Southeastern University, Dania Beach, Nova Southeastern University, Fort Lauderdale*	A preliminary comparative study of vascular corrosion casts of the spiral intestine of select acipenseriformes and elasmobranchs

P2.74	DEDB	*Cho S-J, Timbang L, Ahn A, Regalado SG, Weisblat DA; University of California, Berkeley*	Gene loss, gene duplication and Hox cluster fragmentation in the leech *Helobdella*
P2.75		*Sajuthi A, Carrillo-Zazueta BB, Hu B, Lin C, Speiser D, Oakley T, Rivera A; University of the Pacific, University of California, Santa Barbara*	A putative gene regulatory network for eye development differs in male and female *Euphilomedes carcharodonta* (Crustacea; Ostracoda; Myodocopida)
P2.76		*Helfrich LW, Johansson KB, Diamond J, Fischer AHL, Lyons D, Henry JJ, Smith J; Marine Biological Laboratory, Duke University, University of Illinois at Urbana-Champaign*	From transcriptome to interactome: getting the slipper snail ready for the ball
P2.77	DEDB	*Herath BJ, Bowsher JH; North Dakota State University, Fargo*	Are Hox genes involved in the genetic regulation of the novel abdominal appendages in male Sepsid fly, *Themira biloba?*
P2.78	DPCB	*Sanford RS, Kohn AB, Swalla BJ, Moror LL; University of Florida, Whitney Lab, University of Washington, Friday Harbor Labs*	Identification of the LIM Homeobox gene family in the ctenophore *Pleurobrachia bachei*
P2.79	DPCB	*Wain AR, Moore FBG; The University of Akron*	Neurotransmitter-induced multicellularity?: the effects of a biogenic amine (serotonin) on colony formation and gene transcription in *Salpingoeca rosetta*

Evolutionary Developmental Biology III

P2.80	DEDB	*Cordero GA; Iowa State University, Ames*	Deep phylogenetic character reversal enhances scapula functionality in shell-closing systems of recent turtle lineages
P2.81	DEDB	*Young NM; University of California, San Francisco*	Macroevolutionary diversity of amniote limb proportions is congruent with predictions from developmental interactions
P2.82	DVM	*Manzo WJ, Gardner E, Menon J; William Paterson University*	Programmed cell death by reactive oxygen species in tail of tadpoles, *Xenopus laevis*
P2.83	DCE	*Cheng C, Ko A, Suzuki Y; Wellesley College*	A potential novel factor involved in the regulation of metamorphosis onset in the red flour beetle, *Tribolium castaneum*
P2.84	DEE	*Wargelin LJ, Massey K, Bowling M, Young RS, Bouchard SS; Otterbein University*	Carryover effects of larval density on body composition, growth, and feeding in Gray Treefrogs, *Hyla versicolor*, post-metamorphosis
P2.85	DEDB	*MacNeil KEA, Bishop CD; St. Francis Xaviery University*	The curious shapes of sea urchin larvae: a comparative investigation into a putative olfactory structure
P2.86	DCE	*Rock K, Bradshaw E*, Mayer M, Skeels M, Schreiber A; St. Lawrence University*	Maternal transfer of mercury and its redistribution in tissues of metamorphosing Xenopus laevis tadpoles
P2.87	DCE	*Davis T, Kitts J, Chavez A, Pond B, Bachman N, Ingalls J, Temkin M, Horn R, Miller B, Schreiber A; St. Lawrence University*	Pharmacological suppression of matrixmetalloprotease (MMP) activity with doxycycline inhibits intestinal remodeling and enteric neuronal development during Xenopus laevis metamorphosis

Evolutionary Developmental Biology IV

P2.88		*Nakanishi N, Sogabe S, Degnan B; University of Queensland*	Metamorphosis in the demosponge Amphimedon queenslandica
P2.89	DEDB	*O'Brien DM, Smith FW, Jockusch EL; University of Connecticut*	An analysis of the notch regulatory gene fringe in metamorphic appendage patterning of the red four beetle *Tribolium castaneum*
P2.90		*Hussain YH, Riffell JA; University of Washington*	Finding the path between sperm chemotaxis and fertilization success

P2.91		*Pincus NB, Demarais AA; University of Puget Sound*	Determining the potential activity of Wnt signaling in zebrafish oocyte maturation through examination of β-catenin and dishevelled mRNA concentrations
P2.92	DCPB	*Newel MS, Bourne GB; University of Calgary, AB, Canada*	The 'assassin' snail, Clea (*Anentome*) *helena* (Gastropoda: Buccinidae), as a model for developmental and environmental physiology

Evolutionary Ecology and Life History Evaluation

P2.93		*Koryu K, Lynch VJ, Wagner GP; Yale University*	On the evolutionary origin of endometrial stromal cells
P2.94	DEDB	*Bickel R, Cleveland H, Barkas J, Belletier N, Stern DL, Davis GK*; University of Nebraska, Lincoln, Bryn Mawr College, Janelia Farm, HHMI*	Potential patterning differences underlying oviparous and viviparous development in the pea aphid
P2.95		*Vander Linden A, Clancy D, Cohen CS; Romberg Tiburon Center, San Francisco State University*	Inter-colony fusion in the invasive colonial tunicate *Didemnum vexillum*
P2.96	DEE	*Bower CD, Barrile GM, Downs LK, Klinger JM, Moore JT; Bloomsburg University*	Investigation of the island rule in anurans: a comparative study of *Hyla cinerea* and *Anaxyrus fowleri*
P2.97	DEE	*Snyder NM, Clark ME, Reed WL; North Dakota State University, Fargo*	Growth and immune system function in juvenile Franklin's gull
P2.98		*Gaudreau MG, Bergmann PJ; Clark University, Worcester, MA*	Patterns of abiotic niche evolution in salamanders along different niche axis spatial scales
P2.99	DEE	*Warner DA, Harrison A, Reedy A; University of Alabama at Birmingham, Harvard University, University of Virginia*	Spatial and temporal variation in phenotypic selection in the lizard *Anolis sagrei*
P2.100	DEE	*Carlson BE, McGinley S, Rowe MP; The Pennsylvania State University, Sam Houston State University*	Morphological and behavioral sexual dimorphism in scorpions as compensation for locomotor costs of reproduction
P2.101	DEE	*Barrile GM, Bower CD, Downs LK, Klinger JM, Moore JT, Klinger TS, Hranitz JM; Bloomsburg University*	A comparison of larval and post-metamorphic growth and development between island and mainland populations of Fowler's toad
P2.102		*Roscow RF, Cruz A; University of Colorado, Boulder*	Brood parasitism and variation in early growth rates of African Rift Lake cichlids
P2.103	DEE	*Stager M, Cheviron ZA; University of Illinois at Urbana-Champaign*	Signatures of natural selection across the mitochondrial genome in *Tachycineta* swallows
P2.104		*Lopez SR, Boyd C, Kristan DM; California State University San Marcos*	A method to identify sex of post-infective third stage nematode larvae: a stepping stone to understanding parasite life history
P2.105	DAB	*Kimmitt AA, Reichard DG, Welklin JW, Ketterson ED; University of Mary Washington, Indiana University, Bloomington*	Differential courtship effort by mated and unmated males in a free-living songbird
P2.106		*Squire MK, Rosenthal GG; Texas A&M University*	Reproductive skew in a hybrid population of swordtail fish
P2.107	DEE	*Downs CJ, St. Juliana JR, Wielebnowski N, Krasnov BR, Khokhlova IS; Ben-Gurion University of the Negev, Israel, Indiana State University, Terre Haute, Ivy Tech Community College Wabash Valley, Terre Haute, Chicago Zoological Society, Brookfield Zoo*	Are ectoparasites always harmful to their hosts?

Evolutionary Morphology

P2.108	DCPB	*Finkler MS; Indiana University Kokomo*	Possible consequences of delayed nest emergence for hatchling snapping turtles (*Chelydra serpentina*): the timing of entry into aquatic environments influences body size, metabolic rate, and hematology

P2.109	DEE	*Matterson KM, Thacker RT, Freeman CJ; University of Alabama at Birmingham*	Reduced irradiance alters cyanobacterial symbiont abundance and growth rate of three tropical sponges
P2.110	DCB	*Schmidt A, Biknevicius AR; Ohio University, Heritage College of Osteopathic Medicine*	The unsteadiness of steady locomotion
P2.111		*Marelli CA, Simons ELR; Midwestern University*	Microstructure and cross-sectional shape of limb bones in great horned owls and red-tailed hawks: how do these features relate to differences in flight and hindlimb usage?
P2.112	DPCB	*Law CJ, Dorgan KM, Rouse GW; Scripps Institution of Oceanography, UCSD*	Differences in polychaete musculature lead to distinct burrowing behaviors
P2.113	DIZ	*Francoeur AA, Dorgan KM; University of California, San Diego, Scripps Institution of Oceanography*	Mud versus sand: morphological and behavioral comparison of two species of burrowing orbiniid polychaetes
P2.114		*Srinivasan A, Gatto R, Shawkey MD; University of Akron*	Coffee-ring formation by melanosomes with high aspect ratios
P2.115		*Hackmann A, Federle W; University of Cambridge*	Functional morphology and efficiency of the antenna cleaner in *Camponotus rufifemur* ants
P2.116	DCB	*Bustamante, Jr. J, Loudon C; University of California, Irvine*	Cricket antennae shorten when bending (*Acheta domesticus* (L.))
P2.117		*Su A; Cleveland State University*	Comparative trabecular bone morphology in two locomotor-diverse primates
P2.118	DPCB	*Maayan I, Ritzman TB, Hutchins ED, Stapley J, Lasku E, Eckalbar WL, Wilson-Rawls J, Huentelman MJ, Bermingham E, Hsieh ST, Fisher RE, Kusumi K; Arizona State University, Smithsonian Tropical Research Institute, Translational Genomics Research Institute, Temple University, University Arizona College Med.-Phoenix*	Comparative appendicular osteology and evolutionary genetics of Panamanian anoles with divergent locomotor strategies
P2.118A	DVM	*Hall MI, Kamilar JM, Kirk EC, Carrano MT, Iwaniuk AN; Midwestern University, UT Austin, Smithsonian Institution, University of Lethbridge*	The relationship between scleral ring morphology and activity pattern in birds and dinosaurs

Feeding and Jaw Mechanics

P2.119	DCPB	*Moran CJ, Lerma C, Jimenez J, Gibb AC; Northern Arizona University*	Can members of the imperiled Gila species-complex be identified as morphologically distinct across life history stages?
P2.120	DCB	*Jeong J, Darakananda K, Hitchcock A, Connolly E, Quist A, Robbins A, Ellerby D; Wellesley College*	Behavioral thermoregulation not accompanied by locomotor performance acclimation in the medicinal leech
P2.121	DCB	*Reader L, Carrier D, Goller F; University of Utah*	Flexural stiffness of woodpecker tails with respect to foraging ecology
P2.123		*Miller LB, Mehta RS; University of California, Santa Cruz*	A descriptive study of the cranial morphology of opistognathidae: linking skull characteristics to burrow construction
P2.124	DVM	*Rade CM, Hernandez LP; George Washington University*	Pharyngeal jaw apparatus variation in cypriniform fishes
P2.125		*Borstein SR, McGee MD, Wainwright PC; California State University, Sacramento, University of California, Davis*	Mouthbrooding does not constrain craniofacial diversity in Lake Tanganyika cichlids
P2.126	DCB	*Marshall CD, Rosen DAS, Trites AW, Marsh A; Texas A&M University, University of British Columbia*	Feeding and suction performance in two basal otariid pinnipeds
P2.127	DVM	*Israel S, Deban SM; University of South Florida, Tampa*	Functional morphology of the smallest ballistic tongue

P2.128	DCB	*Shadwick RE, Whale JC, Lin SC, Goldbogen JA, Pyensnon ND; University of British Columbia, Cascadia Res. Collective, Smithsonian Institute*	Mechanical design in fin whale mandibles
P2.129		*Nowinowski I, Balaban J, Wilga C; University of Rhode Island*	Shape changes in the hyoid arch of four shark species
P2.130	DCB	*Larabee FJ, Suarez AV; University of Illinois, Urbana-Champaign*	Structure and composition of ant mandibles
P2.131	DCB	*Michel KB; University of Antwerp*	Kinematics and functional morphology of feeding in the Northern clingfish
P2.132	DVM	*Richardson JR, Larghi NP, Deban SM; University of South Florida, Tampa*	Does the unique desmognathine jaw morphology enhance bite force?

Invertebrate Endocrinology - Aquatic

P2.133	DNB	*Welsh C, Bess F, Catapane EJ, Carroll MA; Medgar Evers College*	Presence of octopamine and octopamine receptors in ganglia and tissues of *Crassoatrea virginica*
P2.134		*Chen H-Y, Roer RD, Watson RD; University of Alabama at Birmingham, University of North Carolina at Wilmington*	Molecular cloning of a cDNA encoding a putative plasma membrane calcium ATPase from Y-Organs of the blue crab (*Callinectes sapidus*)
P2.135	DCPB	*Pitts NL, Mykles DL; Colorado State University*	Examining the role of nitric oxide in the control of molting of the blackback land crab, *Gecarcinus lateralis*
P2.136		*Keller EK, Tamone SL, Ray L; University of Alaska Southeast*	Temporal secretion of ecdysteroids over the premolt period in two life histories of Tanner crab *Chionoecetes bairdi*
P2.137	DCE	*Mudron MR, Chang ES, Mykles DL; Colorado State University, UC Davis Bodega Marine Laboratory*	Myostatin expression in the blackback land crab (*Gecarcinus lateralis*) Y-organ during the molt cycle
P2.138	DCE	*Head TB, Mudron MR, Chang SA, Chang ES, Mykles DL; Colorado State University, UC Davis Bodega Marine Laboratory*	mTOR-dependent protein synthesis is required for ecdysteroid synthesis in the crustacean molting gland
P2.139	DCE	*Zander IA, Abuhagr AM, Chang ES, Chang SA, Mykles DL; Colorado State University*	Expression of molt-inhibiting hormone in brain and thoracic ganglion of green shore crab, *Carcinus maenas*

Invertebrate Endocrinology - Terrestrial

P2.140	DCE	*Abuhagr AM, Chang ES, Mykles DL; Colorado State University, UC Davis Bodega Marine Laboratory*	Comparing the effects of molt manipulation on mechanistic Target of Rapamycin (mTOR) in molting gland (Y-organ) of blackback land crab, *Gecarcinus lateralis* and green shore crab, *Carcinus maenas*
P2.141	DCPB	*Cosenza KS, Chang ES, Mykles DL; Colorado State University, UC Davis Bodega Marine Lab*	Effects of ecdysteroids on myostatin and mTOR signaling expression in crustacean skeletal muscle
P2.142		*Cale KM, Davis JE; Radford University*	Developmental investigation of juvenile hormone and royal jelly in Madagascar hissing cockroaches (*Gromphadorhina portentosa*)
P2.143		*Wadsworth T, Carriman A, Fuse M; San Francisco State University*	Establishing the presence of a circadian rhythm regulating ecdysis in the stick insect, *Carausius morosus*
P2.144		*Hong T, Miry S, Cisneros B, Fuse M; San Francisco State University*	Quantifying hemocyte population changes in *Manduca sexta* larvae after x-ray irradiation damage

Larval Ecology

P2.145	DCE	*Delalio L, Dion S, Bootes A, Tracka K, Kundu A, Maguire M, Smith WA; Northeastern University*	Direct effects of hypoxia and nitric oxide on the secretion of ecdysone by insect prothoracic glands
P2.146		*Ramos LS, Omondi C, Fuse M; San Francisco State University*	Developing a transfusion techique in the tobacco hornworm, *Manduca sexta*
P2.147		*Charpentier CL, Cohen JH; University of Delaware*	Fish kairomone-induced defenses during larval development of an estuarine crab

P2.148		*Bashevkin S, George S; Tufts University, Georgia Southern University*	The ups and downs of life in a halocline: The behavior of *P. ochraceus* larvae after prior exposure to low salinity
P2.149	DIZ	*Bashevkin S, Driver P, George S; Tufts University, Georgia Southern University*	Is the upward migration of *Pisaster ochraceus* larvae motivated by the presence of food at the halocline or the salinity they are acclimated to?
P2.150	DIZ	*Driver P*, George S; Georgia Southern University, Statesboro, Georgia*	Grazing by *Pisaster ochraceus* larvae and dispersion of algae at and below haloclines
P2.151	DIZ	*Jaeckle WB; Illinois Wesleyan University, Bloomington*	Seawater flow into the digestive system of actinotroch larvae (Phoronida)
P2.152	DIZ	*Kehr Smith AJ, Jaeckle WB; Illinois Wesleyan University*	Feeding modes by planulae of Nematostella vectensis (*Cnidaria: Anthozoa*)
P2.153	DIZ	*Oyarzun FX, Brante A; Universidad Católica de la Santísima Concepción*	Brooding behavior, hatching plasticity and intrafamilial conflict in the poecilogonous polychaete *Boccardia wellingtonensis*
P2.154	DIZ	*Smoot SC, Plante CJ, Podolsky RD; College of Charleston*	Variation in anti-microbial activity in egg masses of 19 mollusc species in relation to variation in habitat an deposition site
P2.155		*Von Dassow G, Maslakova SA; University of Oregon*	How the pilidium larva pees
P2.156	DIZ	*Von Dassow YJ, Rittschof D; Duke University*	Switch and bait: use of artificial egg masses to investigate predation on embryos
P2.157	DIZ	*Whitehill EAG, Moran AL; Clemson University*	Energy utilization by nonfeeding larvae is affected by rearing temperature
P2.158	DEE	*Wheeler JD, Anderson EJ, Helfrich KR, McGann BJ, Mullineaux LS; Woods Hole Oceanographic Institution (WHOI), Grove City College*	Vertical swimming and diving behaviour of competent larval oysters (*Crassostrea virginica*) in turbulence

Muscle Physiology and Biochemistry

P2.159	DCPB	*Marx J, Hoffman T, Sceia K, Patel S, Bailey A, Yatsonsky D, Biggers WJ; Wilkes University*	Oxidative stress induces settlement and metamorphosis of larvae of *Capitella teleta*
P2.160	DCPB	*Whittemore SB, Morris K, Medler S; SUNY Fredonia, University at Buffalo*	Stride frequency and body size in running ghost crabs
P2.161	DVM	*Walker RA, Dearolf JL, Richmond JP; Hendrix College, University of North Florida, Jacksonville*	Assessment of the oxidative capacity of the rectus throracis muscle in betamethasone treated fetuses
P2.162	DVM	*McGrail KA, Walker RA, Dearolf JL, Richmond JP; Hendrix College, University of North Florida, Jacksonville*	Effects of prenatal steroids on the citrate synthase activity of the fetal guinea pig (*Cavia porcellus*) diaphragm
P2.163	DVM	*Riley LA, Walker RA, Dearolf JL; Hendrix College*	The effect of prenatal steroids on the fatigue resistance of the fetal guinea pig diaphragm
P2.164	DVM	*O'Connell KJ, Walker RA, Dearolf JL; Hendrix College*	The effect of prenatal steroids on the fast-twitch fibers of the fetal guinea pig rectus abdominis
P2.165	DVM	*Brown JM, Chughtai A, Walker RA, Dearolf JL; Hendrix College, Conway, AR*	Effects of prenatal steroids on the fetal rectus thoracis
P2.166	DVM	*Kompelli AR, Dearolf JL, Richmond JP; Hendrix College, University of North Florida, Jacksonville*	The effect of betamethasone on the citrate synthase activity in fetal guinea pig rectus abdominus
P2.167	DNB	*Cornwell FJ, Brauer CL, Krajniak KG; Southern Illinois University Edwardsville*	The effects of APKQYVRFamide and other FMRFamide related peptides on the isolated crop-gizzard of the earthworm *Lumbricus terrestris*
P2.168	DNB	*Krajniak KG, Kerstein KW; Southern Illinois University Edwardsville*	Effects of APKQYVRFamide and FMRFamide on the Earthworm Body Wall

P2.169	DNB	*McCullough KA, Krajniak KG; Southern Illinois University Edwardsville*	The effects of APKQYVRFamide on the isolated intestine of the earthworm *Lumbricus terrestris*
P2.170	DNB	*Holsinger RC, Cooper RL; University of Kentucky*	The effect of regional phenotypic differences of *Procambarus clarkii* opener muscle on sarcomere length, fiber diameter, and force development
P2.171	DCB	*Meehan ST, Taylor KR, Nishikawa KC; Northern Arizona University*	Breathing with a spring: exploring the role of titin in respiration
P2.172	DVM	*McKinney ML, Walker RA, Dearolf JL, Richmond JP; Hendrix College, University of North Florida, Jacksonville*	The scalenus and diaphragm muscles' contributions to inspiration in the bottlenose dolphin (*Tursiops truncatus*)
P2.173	DVM	*Unser AJ, Dearolf JL, Richmond JP; Hendrix College, University of North Florida, Jacksonville*	Investigating the presence of a venous sphincter in the bottlenose dolphin (*Tursiops truncatus*) diaphragm
P2.174		*Arthur LH, Velten BP, Kinsey ST, McLellan WA, Pabst DA; University of North Carolina Wilmington*	Oxygen storage capacity of a primary locomotor muscle in two similarly-sized, pelagic dolphins
P2.175	DCPB	*Olson JM, Kearney C, Rivera G; Villanova University*	Antioxidant enzymes: acute and chronic responses to exercise-induced oxidative stress in gastrocnemius muscle of mice
P2.176		*Holtz SB, Dickson KA; California State University Fullerton*	Extraocular muscles as a potential heat source for cranial endothermy in tunas
P2.177	DCPB	*Zhang Y, King MO, Swanson DL; University of South Dakota*	Flight muscle size but not cellular aerobic capacity is correlated with thermogenic capacity in American goldfinches *Spinus tristis*
P2.178	DAB	*Campion A, Hwee D, Baehr L, Nemeth Z, Bodine S, Ramenofsky M; University of California, Davis*	Comparative study of the oxidative metabolism in skeletal muscle of migratory and nonmigratory white-crowned sparrows
P2.179	DCPB	*Dullen KR, Orczewska JI, Ortego M, O'Brien KM; University of Alaska Fairbanks*	Creatine kinase isoforms differ between hearts of red- and white-blooded Antarctic fishes
P2.180	DCPB	*Waddell DS, Haddock AN; University of North Florida*	Transcriptional regulation of Dual specificity phosphatase 4 (Dusp4) by Muscle specific RING Finger 1 (MuRF1)

Neurobiology: Structure and Development

P2.181	DCPB	*Olson TB, Waddell DS; University of North Florida*	Transcriptional regulation of Muscle Atrophy F-box (MAFbx) by Muscle RING Finger 1 (MuRF1)
P2.182	DCPB	*Brim DL, Tadros AK, Tomlinson VE, Kennett KM, Blank JM; California Polytechnic State University, San Luis Obispo*	Influence of ethanol ingestion on overload-induced muscular hypertrophy in the rat
P2.183	DNB	*Riede T; University of Utah, Salt Lake City*	New insights into laryngeal motor patterns generating rat ultrasound vocalizations
P2.184	DNB	*Petersen CL, Timothy M, Kim S, Bhandiwad AA, Mohr RA, Sisneros JA, Forlano PM; CUNY, Brooklyn College, University of Washington, Seattle*	Exposure to conspecific mate calls increases cFos response in catecholaminergic neurons and vocal-acoustic circuitry in male midshipman fish
P2.185		*Patton MS, Megahed T, Johnson MA; Trinity University*	Lateralization in aggressive behavior and brain morphology in the green anole lizard (*Anolis carolinensis*)
P2.186		*Katagi A, Draud M, Santagata S; Long Island University-Post, Brookville*	Brain development of *Amatitlania nigrofasciata* and the onset of aggressive and territorial behaviors
P2.187	DNB	*Johnson JI, Fenske BA, Buchanan KJ, Yalamarthy AS; Michigan State University*	The puddling claustrum
P2.188		*Paterson TL, Davis JE; Radford University*	Effect of captivity on hippocampal volume of *Passer domesticus*
P2.189	DNB	*Heesy CP, Kamilar JM; Midwestern University, Arizona State University*	Relative brain size decreases with limb loss in squamates

P2.190	DNB	*Fernandez WL, Nathan BP, Menze MA; Eastern Illinois University*	Decline in mitochondrial respiration in post-ovariectomy mice is ameliorated by beta-estradiol
P2.191		*Ornelas L, Kok L, Fuse M, Moffatt C*; University of California, San Diego, San Francisco State University*	Effect of caloric restriction on longevity and neurogenesis in the house cricket, *Acheta domesticus*
P2.192	DAB	*Grasso FW, Evans M, Basil JA, Prescott TJ; BCR Lab, Brooklyn College CUNY, ATLAS Lab, University Sheffield, UK, LIBE Lab*	Toward a fusion model of feature and spatial tactile memory in the Australian crayfish *Cherax destructor*
P2.193	DNB	*Maine AR, Powers SD, Lutterschmidt DI; Portland State University, Oregon*	Seasonal changes in neurogenesis in red-sided garter snakes: neurons or glial cells?
P2.194		*Asimes A, Roth TC; Kenyon College, Franklin and Marshall College*	The behavioral and neurological effects of hypoxia during the embryonic development of domestic chicks (*Gallus gallus*)
P2.195	DAB	*Krakauer AH, Blundell M, Scanlan T, Wechsler M, McCloskey E, Yu J, Patricelli GL; University of California, Davis*	Successful sage-grouse show greater laterality in social behaviors
P2.196	DNB	*Willis KL, Carr CE; University of Maryland*	Turtle hindbrain auditory circuits

Phylogeny, Populations Genetics and Biogeography

P2.197	DAB	*Liebl AL, Trotter JH, Kellogg SL, Fiorelli T, Martin LB; University S. Florida*	Variation in hippocampal-dependent behaviors and neurogenesis during a range expansion
P2.198		*Sheets EA, Ruiz GM, Rocha RM, Cohen CS; Romberg Tiburon Center for Environmental Studies and Department of Biology, San Francisco State University, Smithsonian Environmental Research Center, Departamento de Zoologia, Universidade Federal do Paraná*	Global population structure of the widely introduced tropical ascidian *Botrylloides nigrum*
P2.199		*Clancy DL, Davis T, Ruiz G, Cohen CS; San Francisco State University, Alaska Department of Fish and Game, Smithsonian Environmental Research Center*	Examining genetic diversity of an invasive colonial ascidian in Southeast Alaska
P2.200	DPCB	*Guerra VI, Cohen CS; Romberg Tiburon Center, San Francisco State University*	Population genetic diversity of the cryptogenic invasive *Ciona intestinalis* sp A on the Pacific coast of America
P2.201		*Parelli S, Dolcemascolo P, Monsen K; Montclair State University*	Examining mitochondrial genetic diversity in a population of eastern hognose snakes in Cape Cod, MA
P2.202		*Moore JM, Rouse GW, Wilson NG; Scripps Institution of Oceanography, The Australian Museum*	Does the Scotia Arc facilitate connectivity between South America and Antarctica? An example from the sea star *Porania antarctica*
P2.203	DEE	*Klinger JM, Barrile GM, Bower CD, Downs LK, Hranitz JM; Bloomsburg University*	Evaluation of cross-species microsatellite loci to investigate population genetics underlying a case of Island dwarfism in Fowlers toad
P2.204	DIZ	*Gross V, Miller WR, Hochberg R; University of Massachusetts Lowell, Baker University*	A new genus of marine tardigrada (Arthrotardigrada) from the southeastern United States
P2.205		*Ferree ED; Claremont Colleges*	Geographic variation in morphology of dark-eyed juncos and implications for population divergence
P2.206		*Garcia EL, Griswold CE, Carmichael A; San Diego State University, Summer Systematics Institute, California Academy of Sciences*	Phylogenetic investigation and species delimitation of South African araneoid spider genus Cyatholipus, Simon 1984
P2.207		*De Guzman HJ, Gambi MC, Calosi P, Giangrande A, Schulze A; Texas A&M University at Galveston, Stazione Zoologica Anton Dohrn, Italy, Marine Biology and Ecology Research Centre, UK, Università del Salento, Italy*	Genetic diversity of the sabellid polychaete *Amphiglena mediterranea* Leydig from shallow carbon dioxide vents and non-acidified control areas in the Mediterranean Sea

P2.208	DIZ	*Laumer CE, Giribet G, Curini-Galletti M; Harvard University, Università degli Studi di Sassari*	A new lithophoran proseriate with inverted genital pores from the New England coast
P2.209		*Vandepas LE, Rocha RM, Hirose E, Lee SCS, Oliveira LM, Swalla BJ; University of Washington, Universidade Federal do Paraná, Brazil, University of the Ryukyus, Okinawa, Japan, National University of Singapore*	The native range of *Phallusia nigra*: is it really black and white?
P2.210		*Stump E, Rocha L, Rocha C, Carpenter K; Old Dominion University, California Academy of Sciences*	Insights from a preliminary phylogeny of the Sharpnose Pufferfishes (genus *Canthigaster*)
P2.211	DIZ	*Beresic-Perrins RK, Govedich F, Rose D, Shuster SM; Northern Arizona University, Southern Utah University*	A description of a new *Helobdella* (Hirudinoidea: Glossiphoniidae) species, Helobdella blinnii found in Montezuma Well, Arizona
P2.212	DPCB	*Cox CL, Stringer JF, Streicher JW, Moseley MA, Chippindale PT; University of Virginia, The University of Texas-Arlington*	Cryptic genetic diversity and refugial dynamics in the flathead snake
P2.213		*Corbin KM, Alemseged Z; University of California, San Diego, California Academy of Sciences*	Is *Paranthropus* monophyletic? Incorporating modular relationships in a cladistic analysis
P2.214		*Sosa AE, German DP; University of California, Irvine*	Evolution of herbivory in the family Stichaeidae (Teleostei)
P2.215		*Buckner JC, Lynch Alfaro JW, Rylands AB, Alfaro ME; University of California, Los Angeles, Conservation International*	Statistical biogeography of the marmosets and tamarins

Symbiosis

P2.216	DPCB	*Popkin-Hall ZR, Boyer SL; Macalester College*	New species of mite harvestmen from Southeast Queensland, Australia greatly extend the known distribution of the genus Austropurcellia (Arachnida, Opiliones, Cyphophthalmi)
P2.217	DEE	*Smith RJ, Cohen S; San Francisco State University*	Phylogeography of *Leptasterias aequalis* near terrestrial runoff sources in the San Francisco Bay area
P2.218	DEE	*Blair PB, Freeman CF, Thacker RW; University of Alabama at Birmingham*	Distinguishing clades of the sponge-specific cyanobacterial symbiont *Synechococcus spongiarum* through high-resolution melting analysis and denaturing/temperature gradient gel electrophoresis
P2.219	DIZ	*Curtis NE, Middlebrooks ML, Schwartz JA, Pierce SK; Rollins College, University of South Florida*	PAM analysis of 3 sacoglossan species reveals differences in photosynthetic function and chloroplast longevity
P2.220	DEE	*Stengel A, Kohl KD, Dearing MD; University of Utah*	Isolation of toxin-degrading bacteria from the gut of an herbivorous rodent
P2.221	DEE	*Zappe ME, Thacker RW; University of Alabama at Birmingham*	Symbiotic microbial communities associated with haplosclerid sponges: stability across space and time
P2.222A		*Green E, Medina M; University of California, Merced*	A high-throughput protocol to genotype Symbiodinium using ITS2, a ribosomal DNA marker, for Montastraea faveolata
P2.222		*Cortes Garcia ME, Closek CJ, Medina M; University of California, Merced*	*Symbiodinium* changes under coral disease events in Montastraea faveolata
P2.223	DIZ	*Mazzillo Mays M, Kempf SC; Auburn University*	*Symbiodinium* mucilage and ultrastructural variation
P2.224	DEE	*Madden AA, Soriano JN, Ellis N, Grassetti A, Fierer N, Starks PT; Tufts University, University of Colorado, Boulder*	Fungal patterns across space and species: Comparative studies of the mycobiomes of sympatric paper wasp species

Sunday Schedule of Events

All events take place in the Hilton San Francisco Union Square

EVENT	TIME	LOCATION
Poster Session 3 Set Up	7:00-8:00 AM	Grand Ballroom
Registration	7:30 AM-3:00 PM	Yosemite Foyer
Exhibit Hall	9:30 AM-5:00 PM	Grand Ballroom
Poster Session 3 Even Numbers Viewing	3:00-4:00 PM	Grand Ballroom
Poster Session 3 Odd Numbers Viewing	4:00-5:00 PM	Grand Ballroom
Poster Session 3 Teardown	5:00-5:30 PM	Grand Ballroom
Coffee Break/PM Poster Session Cash Bar	9:30-10:30 AM/3-5 PM	Grand Ballroom
SYMPOSIA ORAL PRESENTATIONS		
S6: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology...	7:55 AM-3:00 PM	Continental 4
S7: Keeping Time during Animal Evolution: Conservation and Innovation of the Circadian Clock	8:00 AM-3:00 PM	Continental 5
S8: Assembling the Poriferan Tree of Life	8:00 AM-3:00 PM	Continental 2/3
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 76: Comp to Symp: Vertebrate Land Invasions: Past, Present, and Future, Part I	8:00-10:00 AM	Continental 6
Session 77: Comp to Symp: Vertebrate Land Invasions: Past, Present, and Future, Part II	10:20-11:40 AM	Continental 6
Session 78: Fish Feeding Kinematics & Physiology I	8:00-9:40 AM	Plaza A
Session 79: Fish Feeding Kinematics & Physiology II	10:00 AM-Noon	Plaza A
Session 80: Flows & Pumps I	8:00-9:40 AM	Imperial A
Session 81: Flows & Pumps II	10:00 AM-Noon	Imperial A
Session 82: Mechanisms Behind the Movement	8:00-9:40 AM	Imperial B
Session 83: Biomaterials I	10:00-11:40 AM	Imperial B
Session 84: Thermobiology I: Climate Change	8:00-10:00 AM	Plaza B
Session 85: Thermobiology II	10:20-11:40 AM	Plaza B
Session 86: Communication: Lovers	8:20-10:00 AM	Yosemite B
Session 95: Communication: Fighters	10:20 AM-Noon	Yosemite B
Session 87: Larval Ecology-Environment	8:20-9:40 AM	Yosemite A
Session 88: Animal Locomotion I	8:00-9:40 AM	Yosemite C
Session 89: Animal Locomotion II	10:00 AM-Noon	Yosemite C
Session 90: Evolutionary Ecology	8:20-9:30 AM	Continental 8
Session 91: Education and Policy I	8:40-10:00 AM	Continental 1
Session 92: Education and Policy II	10:20-11:40 AM	Continental 1
Session 93: Reproductive Physiology	8:00-9:40 AM	Continental 7
Session 94: Evo Devo Biology: Vertebrate Morphogenesis I - Fish, Frogs, Fingers and Lungs	8:00-9:40 AM	Continental 9
Session 96: Larval Ecology - Mechanisms	10:00 AM-Noon	Yosemite A
Session 97: Burrowing & Boring	10:00 AM-Noon	Continental 8
Session 98: Digestion	10:00 AM-Noon	Continental 7
Session 99: Evolutionary Developmental Biology: Character Development and Evolution	10:00 AM-Noon	Continental 9
Session 100: Structural & Functional Morphology	1:00-2:00 PM	Continental 6
Session 101: Hawkmoth Flight	1:00-3:00 PM	Plaza A
Session 102: Scaling Effects	1:00-3:00 PM	Imperial A
Session 103: Adaptation	1:00-3:00 PM	Imperial B
Session 104: Thermobiology: Coping with the Cold	1:00-3:00 PM	Plaza B
Session 105: Behavioral Ecology: Sensory	1:00-3:00 PM	Yosemite B
Session 106: Comp to Symp: Integrating Genomics with Comparative Vision ...	1:00-3:00 PM	Yosemite C
Session 107: Eco-Evo-Morpho	1:00-3:00 PM	Continental 8
Session 108: Neurobiology: Structure and Evolution	1:00-3:00 PM	Continental 1
Session 109: HPG Axis	1:00-2:40 PM	Continental 7
Session 110: Evolutionary Developmental Biology	1:00-3:00 PM	Continental 9
Session 111: Larval Ecology - Development	1:00-2:40 PM	Yosemite A

COMMITTEE & BOARD MEETINGS

Public Affairs Committee	Noon-1:00 PM	Mason
ICB Editorial Board	Noon-1:00 PM	Powell
Development Committee	Noon-1:00 PM	Sutter
Membership Committee	TBD	

BUSINESS MEETINGS

AMS Business Meeting/Lunch (bring your own lunch)	Noon-1:00 PM	Taylor
SICB Society Business Meeting & Awards Presentation	5:15-6:15 PM	Continental 5
TCS Business Meeting	6:15-7:15 PM	Continental 1

WORKSHOPS AND PROGRAMS

Broadening Participation Workshop “How to negotiate your first job”	Noon-1:00 PM	Continental 1
Xcitex ProAnalyst User Group Meeting	Noon-1:00 PM	Golden Gate 1
Student/Postoctoral Affairs Workshop on Elevator Talks	6:30-8:00 PM	Continental 2/3
DPCB Workshop: Comparative methods in R clinic	7:00-10:00 PM	Powell
Genomics for Non-Model organisms: Custom microarray development and analysis	7:00-10:00 PM	Continental 9

SOCIAL EVENTS

DIZ/DEE/AMS/TCS Social	6:30-8:30 PM	Golden Gate
DIZ Libby Hyman Auction	7:00-8:00 PM	Golden Gate
Broadening Participation Social	8:00-10:00 PM	Cityscape

SUNDAY PROGRAM
SYMPOSIA

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

7:55 am - 3:00 pm
Continental Ballroom 4

Symposium S6: Coping with Uncertainty: Integrating Physiology, Behavior and Evolutionary Ecology in a Changing World

Sponsored by: DAB, DCE, DEE, DCPB
Organized by: Bob Syrgley, Tony Williams

7:55 AM			*Nemeth Z, Bonier F, MacDougall-Shackleton S*	Introduction
8:00 AM	S6-1.1	DCE	*Wingfield JC; University of California, Davis*	Allostasis, resilience and coping with a changing world
8:30 AM	S6-1.2	DCE	*Perfito N, Calisi R, Hau M, Bentley GE; University of California, Berkeley, University of California, Davis, Max Planck Institute for Ornithology, Germany*	Integrating environmental signals for reproductive timing
9:00 AM	S6-1.3		*Visser ME, Schaper SV, Caro SP; Netherlands Institute of Ecology (NIOO-KNAW)*	Global climate change leads to natural selection on the physiological mechanisms underlying seasonal timing
9:30 AM BREAK IN EXHIBIT HALL				
10:00 AM	S6-1.4		*Kitaysky AS; University of Alaska Fairbanks*	Mechanistic links between climate variability, stress, and population processes in seabirds
10:30 AM	S6-1.5		*Boonstra R; University of Toronto Scarborough*	The role of the stress axis in coping with chronic uncertainty
11:00 AM	S6-1.6	DEE	*Diamond SE, Pelini SL, Ellison AM, Gotelli NJ, Sanders NJ, Dunn RR; North Carolina State University, Bowling Green State University, Harvard Forest, University of Vermont, University of Tennessee*	Using physiology to predict ectotherm responses to environmental change
11:30 AM	S6-1.7		*Sheldon BC; University of Oxford*	Constraints and the importance of adaptive plasticity to climate change
NOON LUNCH BREAK				
1:00 PM	S6-2.1		*Sih A; University of California, Davis*	Behavioral responses to human-induced rapid environmental change (HIREC)
1:30 PM	S6-2.2	DEE	*Ghalambor CK, Handelsman CA, Ruell EW; Colorado State University*	Plasticity, selection, and the potential for adaptation in newly established populations
2:00 PM	S6-2.3	DCE	*Crespi EJ, Warne RW, Ledon-Rettig CC; Washington State University, Southern Illinois University, North Carolina State University*	Integrating stress physiology with quantitative evolutionary models to predict population responses to environmental change: an amphibian perspective
2:30 PM	S6-2.4	DEE	*Snell-Rood EC, Morehouse NI; University of Minnesota, University of Pittsburgh*	The effects of changing nutrient inputs on sexual selection dynamics and life history evolution

8:00 am - 3:00 pm
Continental Ballroom 5

Symposium S7: Keeping Time during Animal Evolution: Conservation and Innovation of the Circadian Clock

Sponsored by: DCPB, DEE, DNB, DIZ, AMS
Organized by: Adam Reitzel, Ann Tarrant

8:00 AM	S7-1.1		*Müller WEG, Wang XH; University Medical Center, Mainz, Germany*	Metazoan circadian rhythm: an universal “Zeitgeber” existing from sponges to humans
8:30 AM	S7-1.2	DCPB	*Reitzel AM, Tarrant AM; University of North Carolina, Charlotte, Woods Hole Oceanographic Inst.*	Circadian clock of the starlet sea anemone *Nematostella vectensis*: a conserved network and missing links

9:00 AM	S7-1.3		*Liwang A, Chang Y-G, Tseng RD; University of California, Merced*	Rhythmic ring-ring stacking drives the circadian oscillator clockwise
9:30 AM	S7-1.4		*De La Iglesia HO, Smarr B*; University of Washington*	Finding a temporal niche
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S7-1.5	DNB	*Battelle B-A; University of Florida, Whitney Laboratory for Marine Bioscience*	What the clock tells the eye: lessons from an ancient arthropod
11:00 AM	S7-1.6		*Merritt DJ, Maynard AJ; The University of Queensland, Australia*	Synchronization of circadian bioluminescence as a group-foraging strategy in cave glowworms
11:30 AM	S7-1.7		*Oliveri P, Petrone L, Lerner A, Mattiello T; University College London*	Evolution of animal clock: an echinoderm prospective
NOON LUNCH BREAK				
1:00 PM	S7-2.1	DCPB	*Loudon FK, Spencer R-J*; University of Western Sydney, Australia*	Egging each other on: embryonic communication in a nest maintains circadian rhythms of heart rate in turtles?
1:30 PM	S7-2.2	DIZ	*Heath-Heckman EAC, Peyer SM, McFall-Ngai MJ; University of Wisconsin - Madison*	Symbiont luminescence entrains daily host-tissue rhythms through direct regulation of a host cryptochrome gene
2:00 PM	S7-2.3	DCPB	*Meuti ME, Denlinger DL; The Ohio State University*	The role of circadian clock genes in the overwintering diapause of the northern house mosquito, *Culex pipiens*
2:30 PM	S7-2.4		*Reppert SM; UMass Medical School, Worcester*	The monarch butterfly reveals the prototype ancestral TTFL clock of insects: a focus on cryptochromes

8:00 am - 3:00 pm
Continental Ballroom 2/3

Symposium S8: Assembling the Poriferan Tree of Life

Sponsored by: DIZ, AMS

Organized by: Jose Lopez, Sally Leys

8:00 AM	S8-1.1	DPCB	*Thacker RW; University of Alabama at Birmingham*	Assembling the poriferan tree of life: integrative taxonomy and systematics reveal new patterns of sponge evolution
8:30 AM	S8-1.2	DIZ	*Redmond NE, Morrow CC, Thacker RW, Diaz MC, Boury-Esnualt N, Cárdenas P, Hajdu E, Lôbo-Hajdu G, Picton BE, Collins AG; NMNH, Smithsonian Institution, Queen's University, Northern Ireland, University of Alabama at Birmingham, Museo Marino de Margarita, Venezuela, Université d'Aix-Marseille, France, Uppsala University, Sweden, Museu Nacional/Universidade Federal do Rio de Janeiro, Brazil, Universidade do Estado do Rio de Janeiro, Brazil, National Museums Northern Ireland, UK*	New 18S rDNA sequence data suggest exciting new hypotheses for internal relationships of demospongiae (Phylum Porifera)
9:00 AM	S8-1.3		*Boury-Esnault N, Lavrov D, Pérez T; IMBE-UMR7263, CNRS, Université d'Aix-Marseille, Station Marine d'Endoume, France, Iowa State University*	The integrative phylogeny approach applied to Porifera: a case-study the Homoscleromorpha
9:30 AM BREAK IN EXHIBIT HALL				
10:00 AM	S8-1.4		*Morrow CC, Redmond NE, Picton BE, Allcock AL, Sigwart JD, Maggs CA; Queen's University Belfast, NMNH, Smithsonian Institution, National Museums Northern Ireland, Ryan Institute, National University of Ireland Galway*	Molecular phylogenies support homoplasy of multiple morphological characters used in the taxonomy of Heteroscleromorpha (Porifera: Demospongiae)

10:30 AM	S8-1.5		*Klautau M, Azevedo F, Cóndor Luján B, Russo CAM, Collins A; Universidade Federal do Rio de Janeiro, Smithsonian National Museum of Natural History*	Calcarea evolution: morphology and molecules
11:00 AM	S8-1.6		*Hajdu E, Lôbo-Hajdu G, Cosme B, De Paula T, Redmond NE, Collins AG, Thacker RW; Universidade Federal do Rio de Janeiro, Universidade do Estado do Rio de Janeiro, Smithsonian Institution, University of Alabama, Birmingham*	Towards an evolutionary classification of mycalina and latrunculina (Poecilosclerida)
11:30 AM	S8-1.7		*Hooper JNA, Hall KA, Ekins M, Erpenbeck D, Wörheide G, Jolley-Rogers G; Queensland Museum, Australia, Ludwig-Maximilians-University, Germany, CSIRO Plant Industry, Australia*	Managing and sharing the escalating sponge "unknowns": the SpongeMaps project
NOON LUNCH BREAK				
1:00 PM	S8-2.1	DEE	*Diaz MC, Thacker RWT, Redmond N, Collins AG; Museo Marino, Venezuela, University of Alabama at Birmingham, NMNH, Smithsonian Institution*	Don't judge a book by its cover: discovering two new Verongida genera (Class Demospongiae, Porifera)
1:30 PM	S8-2.2	DIZ	*Lavrov D; Iowa State University*	The origin of freshwater sponges: when, where, and why?
2:00 PM	S8-2.3		*Woerheide G; Ludwig-Maximilians-Universitaet Muenchen*	Phylogenomics of non-bilaterian animals: pitfalls and challenges
2:30 pm				Discussion

SUNDAY PROGRAM
MORNING SESSIONS

8:00 - 10:00 am
Continental Ballroom 6

Session 76: Complementary to Symposium: Vertebrate Land Invasions: Past, Present, and Future, Part I

Chair: Daniel Goldman

8:00 AM	76.1	DVM	*Cullen JA, Maie T, Schoenfuss HL, Blob RW; Clemson University, St. Cloud State University*	Can exaptation facilitate terrestrial invasion? Oral kinematics of climbing and feeding in a waterfall-climbing gobiid fish
8:20 AM	76.2	DCB	*Mazouchova N, Wilshin S, Hsieh T; Temple University, Royal Veterinary College*	The aquatic-terrestrial transition of freshwater turtles from a dynamical systems perspective
8:40 AM	76.3	DCB	*Perlman BM, Kawano S, Blob RW, Ashley-Ross MA; Wake Forest University, Clemson University*	*Citius, altius, fortius*: jumping kinematics and kinetics in two distantly related teleosts
9:00 AM	76.4	DCB	*Aiello BA, King HM, Hale ME; University of Chicago*	An analysis of neuromuscular control in the pelvic fin of African lungfish (*Protopterus annectens*)
9:20 AM	76.5	DCB	*Mazouchova N, Umbanhowar PB, Goldman DI*; Temple University, Northwestern University, Georgia Tech*	Principles of flipper use during walking on flowing ground
9:40 AM	76.6		*Sandberg JS, Dabruzzi TF, Bennett WA*; University of West Florida*	Ontogenetic shifts in oxygen uptake of common mudskipper (*Periophthalmus kalolo*) and its role in microhabitat selection
10:00 AM BREAK IN EXHIBIT HALL				

10:20 - 11:40 am
Continental Ballroom 6

Session 77: Complementary to Symposium: Vertebrate Land Invasions: Past, Present, and Future, Part II

Chair: Daniel Goldman

10:20 AM	77.1	DEDB	*Kerney RR, Brittain AL, Hall BK, Buchholz DR; Gettysburg College, University of Cincinnati, Dalhousie University*	Cartilage on the move: cartilage lineage tracing during tadpole metamorphosis
10:40 AM	77.2	DAB	*Garcia MJ, Dobbins M, Vaughn S, Earley RL; University of Alabama*	Variation within and among populations in the behavioral types of mangrove rivulus (*Kryptolebias marmoratus*)
11:00 AM	77.3		*Dutel H, Herrel A, Clément G, Herbin M; Muséum National d'Histoire Naturelle*	Bite performance of the extant coelacanth Latimeria chalumnae
11:20 AM	77.4	DCB	*Heiss E, Van Wassenbergh S; University of Antwerp, Belgium*	Prey capture throughout the seasons: functional demands of a multiphasic lifestyle in the Alpine newt *Ichthyosaura alpestris* (Salamandridae)

NOON LUNCH BREAK

8:00 - 9:40 am
Plaza A

Session 78: Fish Feeding Kinematics & Physiology I

Chair: Cheryl Wilga

8:00 AM	78.1	DVM	*Sloan TJ, Turingan RG; Florida Institute of Technology*	Invariant feeding kinematics of two trophically distinct nonnative Florida fishes, *Belonesox belizanus* and *Cichlasoma urophthalmus* across environmental temperature regimes
8:20 AM	78.2	DAB	*Burnette MF, Ashley-Ross MA; Wake Forest University*	Will spit for food: role of target height in the spitting force of hunting archer fish
8:40 AM	78.3	DCB	*Carter CB, Rice AN, Westneat MW, Cooper WJ; Washington State University, Cornell University, The Field Museum of Natural History*	Feeding kinematics in damselfishes (Pomacentridae): ecological diversity and repeated trophic convergence
9:00 AM	78.4	DVM	*Buxman CL, Westneat MW; University of Chicago, Field Museum of Natural History*	How do triggerfish eat? The evolution of variable feeding behavior in balistid fishes
9:20 AM	78.5	DVM	*Camp AL, Brainerd EL; Brown University, Providence RI*	Hyoid kinematics and hypaxial muscle strain during suction feeding in largemouth bass (*Micropterus salmoides*)

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Plaza A

Session 79: Fish Feeding Kinematics & Physiology II

Chair: Luz Patricia Hernandez

10:00 AM	79.1	DVM	*Hernandez LP; George Washington University*	Widespread distribution of the palatal organ across Cypriniformes suggests multiple roles in feeding
10:20 AM	79.2	DVM	*Rade CM, Sanford CP, Hernandez LP; George Washington University, Hofstra University*	Using sonomicrometry to compare pharyngeal jaw kinematics in cypriniform fishes

10:40 AM	79.3	DVM	*Paig-Tran EWM, Summers AP; University Washington*	A filtration mechanism for large vertebrate suspension feeders: fluid flow and filter anatomy in the devil rays (*Mantas and Mobulas*)
11:00 AM	79.4	DCB	*Wilga C, Sakai S; University Rhode Island*	Strain in the hyomandibular cartilage of elasmobranchs
11:20 AM	79.5	DVM	*Ramsay JB, Wilga CD; University of Rhode Island*	Preorbitalis and quadratomandibularis function during feeding in little skates, *Leucoraja erinacea*
11:40 AM	79.6	DCB	*Gidmark N, Tarrant J, Konow N, Brainerd E; Brown University*	The role of muscle force versus work in trophic specialization of cyprinid fishes

NOON LUNCH BREAK

8:00 - 9:40 am
Imperial A

Session 80: Flows & Pumps I

Chair: Laura Miller

8:00 AM	80.1	DCB	*Denny MW, Martone PT; Stanford University, University of British Columbia*	Indefatigable: erect coralline alga is immune to fatigue
8:20 AM	80.2		*Jensen MM, Denny MW; Hopkins Marine Station, Stanford University*	Do wave impact forces limit the size of intertidal organisms?
8:40 AM	80.3	DIZ	*Dolinajec TH, Koehl MAR; University of California, Berkeley*	Hydrodynamic forces and moments on microscopic aquatic animals
9:00 AM	80.4	DCB	*Pepper RE, Variano EA, Koehl MAR; Univeristy of California, Berkeley*	Turbulence from a microorganism's perspective: does the open ocean feel different than a coral reef?
9:20 AM	80.5	DIZ	*Huynh TL, Evangelista D, Marshall CR; University of California, Berkeley*	Analysis of the fluid flow through the complex internal respiratory structures of an extinct Paleozoic echinoderm

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Imperial A

Session 81: Flows & Pumps II

Chair: Laura Miller

10:00 AM	81.1	DCB	*Koehl MAR; University of California, Berkeley*	Behavior and adhesion of settling marine larvae in turbulent pulses of water flow
10:20 AM	81.2	DCB	*Pravin S, Koehl MAR, Reidenbach MA; University of Virginia, Charlottesville, University of California, Berkeley*	Simultaneous sampling of flow and odorants in a turbulent plume can aid tracking behavior by aquatic organisms
10:40 AM	81.3	DCB	*Miller LA; University of North Carolina, Chapel Hill*	Fluid dynamics of forward swimming and turning in jellyfish
11:00 AM	81.4	DCB	*Bartol IK, Krueger PS, Thompson JT; Old Dominion University, Southern Methodist University, Franklin and Marshall College*	Hydrodynamic gait identification in squid using volumetric flow imaging
11:20 AM	81.5	DCB	*Hamlet CL, Miller LA, Rodriguez T; Tulane University, University of North Carolina at Chapel Hill, University of California Berkeley*	To pause or not to pause: effects of pauses and grouping on fluid flow around the bell of the upside-down jellyfish, *Cassiopea spp.*
11:40 AM	81.6	DCB	*Rygg AD, Cox JPL, Abel R, Webb AG, Smith NB, Craven BA; The Pennsylvania State University, University of Bath, Natural History Museum, London, Leiden University Medical Center*	The hydrodynamics of olfaction in the hammerhead shark (*Sphyrna tudes*)

NOON LUNCH BREAK

8:00 - 9:40 am
Imperial B

Session 82: Mechanisms Behind the Movement

Chair: Jonas Rubenson

8:00 AM	82.1		*Wong WL, Michels J, Gorb SN; Zoological Institute, Christian-Albrechts-Universität zu Kiel, Germany*	Attachment ability of a clamp-bearing fish gill parasite, *Diplozoon paradoxum* (Monogenea)
8:20 AM	82.2	DCB	*Eng CM, Pancheri FQ, Lieberman DE, Biewener AA, Dorfmann A; Harvard University, Tufts University*	Pulling in two directions: biaxial material properties of fascia lata
8:40 AM	82.3	DCB	*Rosario MV, Dumont ER, Patek SN; UMass, Amherst*	Shrimp springs: how shape affects strength in energy storage
9:00 AM	82.4	DCPB	*Mittelman B, Glazer L, Weil S, Gafni O, Khalaila I, Tom M, Davidov G, Zarivach R, Sagi A; Ben Gurion University of the Negev, Israel Oceanographic and Limnological Research*	Novel chitin binding proteins with suggested role in organization of a crustacean cuticular chitinous extracellular matrix
9:20 AM	82.5	DCB	*Rubenson J, Sanghvi H, Cromie MJ, Easton K, Marsh RL, Delp SL; University of W. Australia, Linkoping University, Stanford University, Northeastern University, Stanford University*	Influence of tendon compliance and activation level on fibre operating lengths of skeletal muscle

9:40 AM BREAK IN EXHIBIT HALL

10:00 - 11:40 am
Imperial B

Session 83: Biomaterials I

Chair: Paul Gignac

10:00 AM	83.1	DCB	*Shadwick RE, Goldbogen JA, Potvin J, Pyenson ND, Vogl AW; University of British Columbia, Cascadia Res. Collective, St. Louis University, Smithsonian Institute*	Novel muscle and connective tissue design controls engulfment volume in lunge-feeding whales
10:20 AM	83.3		*Eliason CM, Maia R, Shawkey MD; University of Akron*	Optics and evolution of iridescence in the wings of ducks
10:40 AM	83.4		*Cielocha JJ, Yoneva A, Jensen K; University of Kansas, Bulgarian Academy of Sciences*	Insights into spermatozoon ultrastructure of lecanicephalidean tapeworms (Platyhelminthes: Cestoda)
11:00 AM	83.5	DVM	*Gignac PM, Kley NJ; Stony Brook University*	Methodological refinements to using lugol's iodine as a contrast agent in x-ray micro-CT imaging
11:20 AM	83.6		*Croce HM, Turner RL; Florida Institute of Technology*	The gomphoid synarthrosis: a new joint in echinoderms

11:40 AM LUNCH BREAK

8:00 - 10:00 am
Plaza B

Session 84: Thermobiology I: Climate Change

Chair: Michael Angilletta

8:00 AM	84.1	DCPB	*Kurnath P, Dearing MD; University of Utah, Salt Lake City*	Turning up the heat: investigating the physiological effects of climate change on mammalian herbivores
8:20 AM	84.2	DEE	*Clark X, Simpson SJ, Clissold FJ; University of Sydney, NSW, Australia*	Does size matter? The interaction of body size, temperature and nutrition
8:40 AM	84.3	DEE	*Angilletta MJ, Levy O, Smith C, Zelic M, Adrian G, Kilby D, Hurliman A, Borchert J, Buckley LB; Arizona State University, University of North Carolina, Chapel Hill*	Heat tolerance of embryos limits the geographic range of *Sceloporus undulatus*

9:00 AM	84.4	DCPB	*Dickson MM, Zimmermann SA, Liwanag HEM, Espinoza RE; California State University, Northridge, Adelphi University*	Evolution on your porch: physiological adaptation by Mediterranean house geckos to their introduced niches
9:20 AM	84.5	DEE	*Krochmal AR, Bakken GS; Washington College, Indiana State University*	Temperatures of trekking turtles: estimates by water-filled models and hollow te thermometers
9:40 AM	84.6	DEE	*Potter KA, Pincebourde S, Woods HA; University of Montana, Université François Rabelais*	Microclimatic research priorities for predicting the effects of climate change

10:00 AM BREAK IN EXHIBIT HALL

10:20 - 11:40 am
Plaza B

Session 85: Thermobiology II

Chair: David Coughlin

10:20 AM	85.1	DCPB	*Coughlin DJ, Woytanowski JR; Widener University*	Thermal acclimation in rainbow smelt, *Osmerus mordax*, leads to faster myotomal muscle contractile properties and improved swimming performance
10:40 AM	85.2	DCPB	*Heinrich EC, Bradley TJ; University of California, Irvine*	Temperature dependent variation in respiratory patterns and spiracular control in *Rhodnius prolixus*
11:00 AM	85.3	DCPB	*Manahan DT, Hedgecock D; University Southern California*	Developmental physiology: predicting "winners and losers" to environmental change
11:20 AM	85.4	DCPB	*Young VKH, Gifford ME; Clemson University, University Arkansas, Little Rock*	Limited thermal acclimation capacity in a salamander, *Desmognathus brimleyorum*

NOON LUNCH BREAK

8:20 - 10:00 am
Yosemite B

Session 86: Communication: Lovers

Chair: Sarah Humfeld

8:20 AM	86.1	DAB	*Humfeld SC, Schwartz J, Marshall VT; University of Missouri, Pace University, University of Scranton*	Call timing preferences in gray treefrogs, *Hyla versicolor*
8:40 AM	86.2		*Merricks JA, Gerhardt HC; University of Missouri, Columbia*	Signal plasticity and mate recognition in the pine woods treefrog, *Hyla femoralis*
9:00 AM	86.3	DAB	*Henderson JJ, Gerhardt HC; University of Missouri, Columbia*	Rescuing of call attractiveness using novel acoustic appendages in gray treefrogs, *Hyla versicolor*
9:20 AM	86.4	DAB	*Taft BN; University of Wisconsin, Parkside*	Constraints on song complexity generalize across multiple songbirds
9:40 AM	86.5	DAB	*Lyons SM, Beaulieu M, Sockman KW; University of North Carolina, Chapel Hill*	Recent song experience alters the threshold for female mate choice

10:00 AM BREAK IN EXHIBIT HALL

10:20 am - Noon
Yosemite B

Session 95: Communication: Fighters

Chair: Diana Hews

10:20 AM	95.1	DAB	*Hews DK, Vital C, Zúñiga-Vega JJ, Martins EP; Indiana State University, Universidad Autonoma de Ciudad Juarez, México, Universidad Nacional Autónoma de México, Indiana University*	Staged territorial intrusions and aggressive visual signaling in males of three *Sceloporus* lizard species that differ in abdominal patches
10:40 AM	95.2	DAB	*Edwards JE, Lailvaux SP; University of New Orleans, Louisiana*	Staged interactions between female pairs and male pairs of *Anolis carolinensis* and *Anolis sagrei* lizards

11:00 AM	95.3		*Wofford SJ, Moore PA; Bowling Green State University*	Sex and fighting: male and female crayfish use different assessment strategies during agonistic behavior
11:20 AM	95.4		*Cook EG, Munoz MM, Conover AE, Shields IH, Boronow KE, Murphy TG, Johnson MA; Trinity University, San Antonio, Harvard University, Stuyvesant High School, Harvard Univeristy*	Is dewlap color an honest indicator of health in *Anolis lizards?* An analysis of population differences in body condition and parasite load
11:40 AM	95.5	DAB	*Henningsen JP, Husak JF, Irschick DJ; University of Massachusetts Amherst, University of St. Thomas*	Dewlap displays and predation risk in green anole lizards

NOON LUNCH BREAK

8:20 - 9:40 am
Yosemite A

Session 87:Larval Ecology-Environment

Chair: Justin S. McAlister

8:20 AM	87.1	DIZ	*Feller KD, Porter ML, Cronin TW; UMBC, University of South Dakota*	Molecular and morphological description of stomatopod larvae
8:40 AM	87.2	DIZ	*McAlister JS, Moran AL; College of the Holy Cross, Clemson University*	Egg size and exogenous food level interact to affect larval growth in tropical *Echinometra* spp. sea urchins
9:00 AM	87.4	DIZ	*Smoot SC, Plante CJ, Podolsky RD; College of Charleston*	Separating the effects of the deposition substrate and habitat on the anti-microbial properties of egg masses of *Haminoea vesicula*
9:20 AM	87.5	DIZ	*Strathmann RR, Branscomb ES, Vedder K; University of Washington, Friday Harbor*	Plasticity in hatching in response to predators and individual variation in duration, frequency, and seasons of brooding in the barnacle *Balanus glandula*

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Yosemite C

Session 88: Animal Locomotion I

Chair: Kristin Bishop

8:00 AM	88.1	DCB	*Bishop KL, O'Neill M, Schmitt D; Florida International University, Stony Brook University, Duke University*	Comparison of walking mechanics in an arboreal and a terrestrial primate
8:20 AM	88.2	DCB	*Warner SE, Henry V, Hutchinson JR; Royal Veterinary College*	Regional pressure changes in the digital cushion under vertical load in elephants and horses
8:40 AM	88.3		*Allen V, Nyakatura J; University of Jena*	Joint contributions to locomotor velocity and power in *Iguana iguana*
9:00 AM	88.4		*Goetzke HH, Federle W; University of Cambridge*	Jumping without slipping: spiders need sticky feet for take-off
9:20 AM	88.5	DCB	*Lammers AR, Dorsey EJ; Cleveland State University*	Kinetics of locomotion on arboreal and terrestrial substrates in Siberian chipmunks (*Tamias sibiricus*)

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Yosemite C

Session 89: Animal Locomotion II

Chair: Kyle Mara

10:00 AM	89.1	DVM	*Shine C, McGowan C, Robbins C, Nelson L; University of Idaho, Moscow, Washington State University, Pullman*	Unique movements of Ursidae: kinematics of the forelimb in walking grizzly bears

10:20 AM	89.2	DCB	*Wilson AM, Roskilly K, Lowe J, Hudson P, Golabek K, McNutt J; RVC, London, BPCT, Botswana*	Dynamics of high speed locomotion and hunting in free ranging cheetah
10:40 AM	89.3	DAB	*Shamble PS, Beatus T, Cohen I, Hoy R; Cornell University*	Terrestrial locomotor mimicry at the kinematic level: does the ant-mimicking jumping spider *Myrmarachne formicaria* walk like an ant?
11:00 AM	89.4	DCB	*Hutchinson JR; The Royal Veterinary College, Structure and Motion Laboratory*	Assessing the evidence for the evolution of asymmetrical gaits in Crocodylomorpha
11:20 AM	89.5	DCB	*Jayaram K, Springthorpe D, Haldane D, McKinley S, Dirocco A, Full RJ; University of California Berkeley*	Running in confined spaces by the American cockroach
11:40 AM	89.6	DCB	*Pfeiffenberger JA, Hsieh ST; Temple University*	Effects of limb autotomy on locomotor performance of ghost crabs

NOON LUNCH BREAK

8:20 - 9:30 am
Continental Ballroom 8

Session 90: Evolutionary Ecology

Chair: Wendy L. Reed

8:20 AM	90.1	DEE	*Welch AM; College of Charleston, SC*	Anthropogenic stressors and the evolutionary potential of amphibian populations
8:40 AM	90.2	DPCB	*Chang J, Eastman JM, Alfaro ME; University of California, Los Angeles, University of Idaho*	Family-level analysis of exploited and at-risk ray-finned fish species shows high potential loss of biodiversity
9:00 AM	90.3	DEE	*Carlson BE, Langkilde T; The Pennsylvania State University*	Behavioral variation among tadpole populations: ecological causes and consequences
9:20 AM	90.5	DEE	*Reed WL, Clark ME; North Dakota State University, Fargo*	Seasonal maternal effects on post-hatching growth and development in Franklin's gull
9:25 AM	90.6		*Rank NE, Mardulyn PM, Roberts KR, Heidl S, Smiley JT, Dahlhoff EP; Sonoma State University (SSU), University of Brussels, White Mountain Research Center, Santa Clara University*	Variation in nuclear and mitochondrial genes important for energy metabolism along a climatic gradient in montane populations of a leaf beetle

9:40 AM BREAK IN EXHIBIT HALL

8:40 - 10:00 am
Continental Ballroom 1

Session 91: Education and Policy I

Chair: Mary Lowery

8:40 AM	91.1	DEE	*Lowery MS, Kaufmann R, Gray S, Boudrias M, Talley D; University of San Diego*	Sailing for science: authentic oceanographic field experience as the core of multiple science courses
9:00 AM	91.2	DCB	*Lentink D, Fiaz AW; Stanford University, Wageningen University*	Flight artists: an outreach project that enables the general public to film natural flight using the worlds most advanced high-speed camera
9:20 AM	91.3	DIZ	*Hodin J, Miller P, Epel D; Hopkins Marine Station, Stanford University, Pacific Grove*	Virtual labs and activities: tools for students and an opportunity to broaden your *Broader Impacts*
9:40 AM	91.4	DPCB	*Aronowsky A, Angielczyk KD, Sanzenbacher BL; Field Museum of Natural History*	Gamifying comparative anatomy to promote science learning in underserved teens

10:00 AM BREAK IN EXHIBIT HALL

10:20 - 11:40 am
Continental Ballroom 1

Session 92: Education and Policy II

Chair: Marosh Furminsky

10:20 AM	92.1	DCPB	*Furimsky MM; Westminster College*	Taking time to teach scientific methodology and communication in a first year biology course
10:40 AM	92.2	DEE	*Vonwettberg EJB; Florida International University*	Successes and pitfalls in the inversion of a large enrollment major's Evolutionary Biology course
11:00 AM	92.3		*Marker N, Ayers A; University of Hawaii at Manoa*	Evaluation of the Undergraduate Research and Mentoring in the Biological Sciences (URM) program in Hawaii
11:20 AM	92.4	DCB	*Voltzow J; University of Scranton*	An exchange of countercurrents: models, demos, and raps

11:40 AM LUNCH BREAK

8:00 - 9:40 am
Continental Ballroom 7

Session 93: Reproductive Physiology

Chair: Ned J. Place

8:00 AM	93.1	DCE	*Rosen O, Manor R, Weil S, Sagi A; Ben Gurion University of the Negev*	A newly identified IGFBP in crayfish: another piece in the insulin-like androgenic hormone's puzzle?
8:20 AM	93.2	DCPB	*Linquist AG, Burnett JB, Hatle JD; University of North Florida*	The effects of inhibited reproduction by ovariectomy or vitellogenin-RNAi on the longevity of grasshoppers (*Romalea microptera*)
8:40 AM	93.3	DCPB	*Place NJ, Park S-U, Zysling DA; Cornell University*	Assessments of immuno- and inflamm-aging following a photoperiodic regime that delays female reproductive aging in Siberian hamsters
9:00 AM	93.4	DEE	*Dominoni DM, Partecke J; Max Planck Institute for Ornithology, Germany*	Long-term effects of chronic artificial night light exposure on life-history traits of songbirds
9:20 AM	93.5		*Squire ME, Veglia MK, Drucker KA, Hahn TP, Watts HE; The University of Scranton, The University of California, Davis, Loyola Marymount University*	Estrogen dose influences medullary bone quantity and density in female pine siskins

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Continental Ballroom 9

Session 94: Evolutionary Developmental Biology: Vertebrate Morphogenesis I - Fish, Frogs, Fingers and Lungs

Co-Chairs: Jacqueline Webb, Cristina Ledon-Rettig

8:00 AM	94.1	DEDB	*Webb JF, Gillis JA; University of Rhode Island, MBL, Woods Hole, Dalhousie University*	Lateral line morphogenesis in chondrichthyan vs. osteichthyan fishes: new perspectives on an old problem
8:20 AM	94.2	DEDB	*Ledon-Rettig CC, Infante C, Hanken J, Nascone-Yoder NM; North Carolina State University, Harvard University*	Altering retinoic acid and thyroid hormone signaling produces integrated modifications in gut morphology and physiology
8:40 AM	94.3	DEDB	*Lewis Z, Kerney R, Dorantes J, Hanken J; Harvard University, Gettysburg College*	Genetic and morphological vestiges of lost lungs in plethodontid salamanders
9:00 AM	94.4	DVM	*Kavanagh KD, Winslow B, Leary B; University of Massachusetts Dartmouth*	Evolutionary and developmental modularity in the digits of vertebrates
9:20 AM	94.5		*Hawkins MB, Jandzik D, Cruz A, Stock DW; Harvard University, University of Colorado, Boulder*	The evolution of fish barbels by the co-option of fin developmental mechanisms

9:40 AM BREAK IN EXHIBIT HALL

10:00 am - Noon
Yosemite A

Session 96: Larval Ecology - Mechanisms

Chair: Robert D. Podolsky

10:00 AM	96.1	DEE	*Hodin J, Ferner MC, Gaylord B; Hopkins Marine Station, Stanford University, Romberg Tiburon Center, San Francisco State University, Bodega Marine Laboratory, University of California at Davis*	Shake, settle and hold: turbulent shear stimulates settlement in sea urchin larvae
10:20 AM	96.2	DEE	*Kaplan MB, Mooney TA; Woods Hole Oceanographic Institution*	Adverse effects of elevated CO_2 concentrations on squid (*Doryteuthis pealeii*) development and early life
10:40 AM	96.3	DIZ	*Nedved BT, Willsey ED, Coury R, Hadfield MG; Kewalo Marine Laboratory, University of Hawaii, University of Toronto, Kewalo Marine Laboratory*	Regulation of metamorphosis in *Hydroides elegans*: not what we thought
11:00 AM	96.4	DIZ	*Podolsky RD; College of Charleston*	Plasticity of egg mass architecture: effects of spatial oxygen gradients on the density and distribution of embryos
11:20 AM	96.5	DIZ	*Whitehill EAG, Moran AL; Clemson University*	Using energetics of sea urchin development to examine the temperature-size rule
11:40 AM	96.6	DEDB	*Zakas C, Rockman MV; New York University*	Identifying genomic regions responsible for offspring dimorphism in *Streblospio benedicti*

NOON LUNCH BREAK

10:00 am - Noon
Continental Ballroom 8

Session 97: Burrowing & Boring

Chair: Kristina Vetter

10:00 AM	97.1	DCB	*Sharpe SS, Masse A, Taz H, Goldman DI; Georgia Tech, Wesleyan College*	Limb use during burial of the sandfish lizard
10:20 AM	97.2	DCB	*Springthorpe D, Gravish N, Mazouchova N, Goldman DI, Full RJ; University of California, Berkeley, Georgia Institute of Technology, Temple University*	Burrowing biomechanics of the ghost crab
10:40 AM	97.3	DCB	*Dorgan KM, Law CJ, Rouse GW; Scripps Institution of Oceanography*	Meandering through marine muds: kinematics of burrowing and swimming by the polychaete *Armandia brevis*
11:00 AM	97.4	DCB	*Vetter KM, Bump P; Denison University, University of Hawaii, Manoa*	Rapid burrowing by the mantis shrimp *Squilla empusa*
11:20 AM	97.5		*Kundanati L, Gundiah N*; Indian Institute of Science, Bangalore*	Biomechanics of substrate boring by fig wasps: role of zinc in insect cuticle
11:40 AM	97.6	DCB	*Gravish N, Goodisman MAD, Goldman DI; Georgia Institute of Technology*	Stabilizing falls in confined environments

NOON LUNCH BREAK

10:00 am - Noon
Continental Ballroom 7

Session 98: Digestion

Chair: Donovan P. German

10:00 AM	98.1	DCPB	*McWhorter TJ, Schondube JE, Nicolson SW, Pinshow B, Fleming PA, Martínez Del Rio C; University of Adelaide, Universidad Nacional Autónoma de México, University of Pretoria, Ben-Gurion University of the Negev, Murdoch University, University of Wyoming*	Convergence in digestive capacity in nectar-feeding birds

10:20 AM	98.2	DCPB	*Newton K, Wraith J, Dickson K; California State University Fullerton, Southwest Fisheries Science Center*	Visceral endothermy results in elevated digestive enzyme activities in the shortfin mako shark, *Isurus oxyrinchus*
10:40 AM	98.3	DCPB	*German DP; University of California, Irvine*	Digestive enzyme activities elucidate the digestive strategies of prickleback fishes (family Stichaeidae) with different diets
11:00 AM	98.4		*Foti DM, German DP; University of California, Irvine*	Herbivorous prickleback fishes (family Stichaedidae) express multiple amylase isoforms
11:20 AM	98.5	DCPB	*Kline LW, Karpinski E; University of Alberta, Edmonton*	A comparison of the effects of estrogen and progesterone on cholecystokinin and KCl-induced tension in female guinea pig gallbladder strips
11:40 AM	98.6	DCPB	*Price ER, Brun A, Fasulo V, Karasov WH, Caviedes-Vidal E; University of Wisconsin-Madison, Universidad Nacional de San Luis*	Paracellular absorption of nutrients in bats is high during intestinal luminal perfusions

NOON LUNCH BREAK

10:00 am - Noon
Continental Ballroom 9

Session 99: Evolutionary Developmental Biology: Character Development and Evolution

Chair: Julia H. Bowsher

10:00 AM	99.1	DEDB	*Bowsher JH, Ang Y, Ferderer T, Meier R; North Dakota State University, National University of Singapore*	Deciphering the evolutionary history and developmental mechanisms of a complex sexual ornament: the abdominal appendages of Sepsidae (Diptera)
10:20 AM	99.2	DEDB	*Nawrocki AM, Cartwright P; Pomona College, University of Kansas*	Expression of Wnt pathway genes in *Ectopleura larynx* (Hydrozoa: Aplanulata) and implications for their potential role in hydrozoan life cycle evolution
10:40 AM	99.3	DEE	*Chavez AA, Gorman C, Erken M, McDougald D, Steinberg PD, Nishiguchi MK; New Mexico State University, University of New South Wales*	Predation response of *Vibrio fischeri* biofilms to protozoan bacteriovores
11:00 AM	99.4	DEDB	*Oliver JC, Tong X, Gall L, Piel WH, Monteiro A*; Yale University*	A single origin for nymphalid butterfly eyespots followed by widespread loss of associated gene expression
11:20 AM	99.5	DEDB	*Musser JM, Wagner GP, Prum RO; Yale University, Yale Systems Biology Institute, Peabody Museum of Natural History*	The homology of feathers and scales: using new high-throughput methods to address a classic question
11:40 AM	99.6	DEDB	*Sikes JM, Newmark PA; University of San Francisco, Howard Hughes Medical Institute, University of Illinois*	Restoration of anterior regeneration in a planarian species with limited regenerative potential

NOON LUNCH BREAK

SUNDAY PROGRAM
AFTERNOON SESSIONS

1:00 - 2:00 pm
Continental Ballroom 6

Session 100: Structural & Functional Morphology

Co-Chairs: Nicole Danos, Katie Staab

1:00 PM	100.1	DVM	*Danos N, Azizi E; University of California, Irvine*	Muscle-collagen interactions at the fiber bundle level
1:05 PM	100.2	DPCB	*Levy MG*, Nirody JA*, Neu JC, Hendricks JR, Slatkin M, Oster GR; University of California, Berkeley, Duke University, San Jose State Univeristy*	A neural-field model for the evolution of *Conus* shell patterns

1:10 PM	100.3	DCB	*O'Donnell MJ, George M, Carrington E; University of Washington, Friday Harbor Laboratories*	Ocean acidification weakens attachment of Mytilid mussel byssal threads
1:15 PM	100.4		*Bump PAK, Vetter KMS; University of Hawaii at Mānoa, Denison University*	The synergistic nature of the behaviors and mechanisms that support effective burrowing in the mantis shrimp *Squilla empusa*
1:20 PM	100.5	DCB	*Mackey TL, Jayne BC; University of Cincinnati, Ohio*	Meal size affects the speed and modes of arboreal locomotion of the brown tree snake, *Boiga irregularis*
1:25 PM	100.6	DVM	*Herrel A, Perrenoud M, Abdala V, Manzano A, Pouydebat E; CNRS*	The effect of substrate diameter and incline on locomotion in arboreal frogs
1:30 PM	100.7	DCB	*Hale ME, Williams IV R; University of Chicago*	Fish fins function as dual sensory and motor neuromechanical systems
1:35 PM	100.8		*Phillips N, Knowles K, Bomphrey RJ; University of Oxford, Cranfield University*	The effect of aspect ratio on the stability of leading-edge vortices over insect-like wings
1:40 PM	100.9	DCB	*Von Busse JRS, Mostowy M, Bruce H, Swartz SM; Brown University*	Kinematics of swimming and flying big brown bats, *Eptesicus fuscus* – a comparative study
1:45 PM	100.10	DCB	*Hristov NI, Allen LC, Chadwell B; Winston-Salem State University, NE Ohio Med. University*	Flight modalities in the group behavior of free-tailed bats
1:50 PM	100.12	DVM	*Atukorallaya S, Waterfield V, Franzodendaal TA*; Mount Saint Vincent Univ*	Development of the maxillary dentition in teleost fish
1:55 PM	100.13		*Grubich JR, Huskey S, Crofts S, Orti G, Porto J; American University in Cairo, Western Kentucky University, George Washington University, INPA*	Reconstructing the bite of the giant miocene piranha, *Megapiranha paranensis*

1:00 - 3:00 pm
Plaza A

Session 101: Hawkmoth Flight

Chair: Jonathan P. Dyhr

1:00 PM	101.1	DCB	*Greeter JSM, Hedrick TL; University of North Carolina at Chapel Hill*	How the hawkmoth *Manduca sexta* moves left and right
1:20 PM	101.2	DCB	*Windsor SP, Taylor GK; University of Oxford*	The role of head stabilization in the flight control system of hawkmoths
1:40 PM	101.3	DCB	*Henningsson P, Bomphrey RJ; University of Oxford, UK*	Efficiency of lift production in six species of hawk moths
2:00 PM	101.4	DCB	*Dickerson BH, Howell DB, Daniel TL; University of Washington*	Moths respond to inertial yaw rotations with lateral abdominal movements
2:20 PM	101.5	DCB	*Dyhr JP, Cowan NJ, Morgansen KA, Daniel TL; University of Washington, Johns Hopkins University*	Agile airframes I: maneuverability from abdominal actuation
2:40 PM	101.6	DCB	*Colmenares DJ, Dyhr JP, Morgansen KA, Daniel TL; University of Washington*	Agile airframes II: closing the loop on abdominal actuation

1:00 - 3:00 pm
Imperial A

Session 102: Scaling Effects

Chair: Brandon Kilbourne

1:00 PM	102.1	DCPB	*Hunt Von Herbing I, Pan F, Mayorga M; University of North Texas, Denton, University of Southern California, Los Angeles, Autonomous University of the State of Mexico, Toluca*	When metabolic scaling relationships collapse: the thermodynamic nightmare of development
1:20 PM	102.2	DCB	*Kurth JA, Kier WM; University of North Carolina, Chapel Hill*	Scaling of the hydrostatic skeleton in the earthworm, *Lumbricus terrestris*

1:40 PM	102.3	DVM	*Kilbourne BM; University of Chicago*	Scale effects and rotational inertia in the limbs of quadrupedal mammals
2:00 PM	102.4	DIZ	*Perino LL, Padilla DK*; Stony Brook University*	Scaling of the ctenidium in juvenile suspension feeding bivalves
2:20 PM	102.5	DVM	*Larghi NP, Deban SM; University of South Florida, Tampa*	Effects of scaling on bite force and suction index in the Eastern Hellbender (*Cryptobranchus alleganiensis*)
2:40 PM	102.6	DIZ	*Padilla DK, Yee A; Stony Brook University*	Scaling of radular length and replacement rate in the Atlantic slippersnail, *Crepidula fornicata*

1:00 - 3:00 pm
Imperial B

Session 103: Adaptation

Chair: Terrie M. Williams

1:00 PM	103.1	DEE	*Whitenack LB, Herbert GH, Bert T; Allegheny College, University of South Florida, Florida Fish and Wildlife Conservation Commission*	Handedness and predation success in the stone crab *Menippe mercenaria-adina*
1:20 PM	103.2	DIZ	*Iyengar EV; Muhlenberg College*	The function of shell wiping in the marine snail *Calliostoma ligatum*
1:40 PM	103.3	DCPB	*Williams TM, Lindberg DR; University of California, Santa Cruz, University of California, Berkeley*	Gut instinct: digestive capacity and the evolution of extreme carnivory in marine mammals
2:00 PM	103.4	DEE	*Cooper BS, Hammad LA, Montooth KL; Indiana University*	The evolution of cellular generalization and specialization in natural populations of *Drosophila melanogaster*
2:20 PM	103.5		*Storz JF, Natarajan C, Projecto-Garcia J, Moriyama H, Weber RE, Fago A; University of Nebraska, Lincoln, Aarhus University, Denmark*	Mechanisms of hemoglobin adaptation in high-altitude vertebrates: insights from protein engineering
2:40 PM	103.6	DEDB	*Zelditch ML, Swiderski DL; University of Michigan, Ann Arbor*	Plasticity of a complex, integrated structure: The impact of diet on mandibular form

1:00 - 3:00 pm
Plaza B

Session 104: Thermobiology: Coping with the Cold

Chair: Charles Booth

1:00 PM	104.1	DCPB	*Richter MM, Lee TN, Toien O, Barnes BM, Buck CL; University of Alaska, Fairbanks, University of Alaska, Anchorage*	Hibernation at extremes: how low can you go?
1:20 PM	104.2	DCPB	*Barnes BM, Williams CT, Buck CL; University of Alaska Fairbanks, University of Alaska Anchorage*	Circadian rhythms in free-living arctic ground squirrels
1:40 PM	104.3		*Batavia M; University of California, Berkeley*	The effects of day length, hibernation, and hibernaculum temperature on tooth morphology in the Turkish hamster (*Mesocricetus brandti*)
2:00 PM	104.4	DCPB	*Marshall KE, Thomas RH, Roxin A, Chen EKY, Brown JCL, Gillies ER, Sinclair BJ; University of Western Ontario, University of Toronto*	The goldenrod gall fly's liquid little secret: 3-acetyl-1,2-diacyl-*sn*-glycerols are associated with natural survival of intracellular freezing in *Eurosta solidaginis*
2:20 PM	104.5	DCPB	*Petit M, Vezina F; Université du Québec à Rimouski, Groupe de recherche sur les environnements nordiques BOREAS, Centre for Northern Studies, Québec Centre for Biodiversity Science*	Phenotype manipulations confirm the role of pectoral muscles in avian thermogenic capacity
2:40 PM	104.6	DEE	*Borchert JD, Angilletta MJ; Arizona State University*	The younger games: flies compete for oviposition sites that benefit their young

1:00 - 3:00 pm
Yosemite B

Session 105: Behavioral Ecology: Sensory

Chair: Trevor Rivers

1:00 PM	105.1	DAB	*Rivers TJ, Livermore JC, Perreault TR; Bowdoin College*	Luminescence reduces mortality of the scale worm *Harmothoe imbricata* when attacked by crustacean predators
1:20 PM	105.2		*Croston R, Hauber ME; CUNY Graduate Center, CUNY Hunter College*	Spectral tuning and foreign egg rejection in American robins (*Turdus migratorius*)
1:40 PM	105.3	DAB	*Lessios N, Rutowski RL, Cohen JH; Arizona State University, University of Delaware*	Visual ecology of two ephemeral pool crustaceans: phototaxis and light-orientation behavior of *Triops* (Branchiopoda: Notostraca) and *Streptocephalus* (Branchiopoda: Anostraca)
2:00 PM	105.4	DIZ	*Seymoure BM, McMillan WO, Rutowski RL; Arizona State University, Smithsonian Tropical Research Institute*	Convergence and divergence of eye morphology in mimetic butterflies
2:20 PM	105.5	DAB	*Siciliano AM, Porter ME, Kajiura SM; Vassar College, Florida Atlantic University*	Are you positive? Discrimination between poles of electric fields by elasmobranch fishes
2:40 PM	105.6	DNB	*Rowe A, Xiao Y, Rowe M, Cummins T, Zakon H; The University of Texas at Austin, Indiana University School of Medicine, Sam Houston State University*	No pain, big gain: coevolution between bark scorpion pain-inducing toxins and grasshopper mouse nociceptors

1:00 - 3:00 pm
Yosemite C

Session 106: Complementary to Symposium: Integrating Genomics with Comparative Vision Research of the Invertebrates

Chair: Daniel K. Speiser

1:00 PM	106.1	DEDB	*Speiser DI, Oakley TH; University of California, Santa Barbara*	The molecular evolution of chiton 'shell' eyes
1:20 PM	106.2		*Schnitzler CE, Pang K, Powers ML, Reitzel AM, Ryan JF, Simmons D, Tada T, Yokoyama S, Haddock SHD, Martindale MQ, Baxevanis AD; NHGRI/NIH, Sars International Centre for Marine Molecular Biology, Monterey Bay Aquarium Research Institute, Woods Hole Oceanographic Institution, Kewalo Marine Laboratory/University of Hawaii, Emory University*	Ctenophore photocytes express a light-sensing opsin as well as bioluminescent photoproteins during development
1:40 PM	106.3	DEDB	*O'Brien CS, O'Quinn KE, Schlute JE, Carleton KL; University of Maryland*	The genomic basis of variation in cichlid spectral sensitivity
2:00 PM	106.4	DCPB	*Cai J, Heiney PA, Sweeney AM; University of Pennsylvania*	Building a lens from a single protein: small angle x-ray scattering on squid eyes
2:20 PM	106.5	DPCB	*Eernisse DJ, Brooker LR; Cal State Fullerton, University Sunshine Coast, Qld.*	Phylogeny and biogeography of the shell-eyed chitons
2:40 PM	106.6	DIZ	*Ramirez D, Oakley TH; University of California, Santa Barbara*	Dispersed sensory neurons express opsin in the skin of *Octopus bimaculoides*

1:00 - 3:00 pm
Continental Ballroom 8

Session 107: Eco-Evo-Morpho

Chair: Jonathan S. Mitchell

1:00 PM	107.1	DEE	*Lindberg DR, Erlandson JM, Graham M, Byrnes J; University of California, Berkeley, University of Oregon, Moss Landing Marine Laboratories, University of Massachusetts, Boston*	Assembly and anthropogenic alterations in kelp forest ecosystems: historical perspectives from deep time
1:20 PM	107.2		*Venzon M, Alfaro ME; University of California, Los Angeles*	A phylogenomic approach to the evolution of the coral reef fish fauna
1:40 PM	107.3	DPCB	*Streicher JW, Meik JM, Smith EN, Fujita MK; University of Texas, Arlington*	Limits and opportunities of diversification in barking frogs of the *Craugastor augusti* complex
2:00 PM	107.4	DEE	*Martin RA, Langerhans RB; NIMBioS, North Carolina State University*	Piscivorous fish in a fishless environment: dietary and phenotypic differentiation of bigmouth sleepers in Bahamas blue holes
2:20 PM	107.5		*Mitchell JS; The University of Chicago*	Ecomorphology in modern and fossil birds
2:40 PM	107.6	DEE	*Demes KW, Pruitt JN, Harley CDG, Carrington E; University of British Columbia, University of Pittsburgh, University of Washington, Friday Harbor Labs*	Survival of the weakest: decreased frond mechanical strength increases survival in a wave-swept kept via self-pruning

1:00 - 3:00 pm
Continental Ballroom 1

Session 108: Neurobiology: Structure and Evolution

Chair: Yakil Gagnon

1:00 PM	108.1	DNB	*Farrar N, Riesgo A, Leys S; University of Alberta, Centro de Estudios Avanzados de Blanes-CSIC, Harvard University*	Post-synaptic Density (PSD) and axon guidance genes in the transcriptomes of 8 sponges
1:20 PM	108.2		*Bielecki J, Garm A; University of Copenhagen*	Fixational eye movements in the earliest stage of metazoan evolution
1:40 PM	108.3	DEE	*Gagnon YL, Johnsen S; Duke University*	Visual acuity in deep-sea fish and mollusks
2:00 PM	108.4	DNB	*Bok MJ, Porter ML, Cronin TW; University of Maryland, Baltimore County*	The physiological basis of polychromatic ultraviolet vision in mantis shrimp
2:20 PM	108.5	DNB	*Eichinger JM, Satterlie RA; University of North Carolina Wilmington*	Neuromuscular facilitation in the motor networks of cubomedusae
2:40 PM	108.6	DAB	*Claghorn GC, Fonseca IAT, Fielder J, Barber C, Garland Jr T; University of California, Riverside*	Manipulating central fatigue in mice bred for high voluntary wheel running using a serotonin agonist and antagonist

1:00 - 2:40 pm
Continental Ballroom 7

Session 109: HPG Axis

Co-Chairs: Jodie M. Jawor, Ryan T. Paitz

1:00 PM	109.1	DCE	*Jawor JM, Hooker JD; University of Southern Mississippi*	Influence of temperature on non-breeding HPG-axis activity in northern cardinals
1:20 PM	109.2		*Vandermeer CL, Bezner Kerr W, Guglielmo CG, MacDougall-Shackleton SA; University of Western Ontario, London*	Effects of testosterone on spring nocturnal migratory restlessness and body composition in *Zonotrichia albicollis*
1:40 PM	109.3	DCE	*Devries MS, Winters CP, Holbrook AL, Jawor JM; University of Southern Mississippi*	It's complicated: testosterone production, aggression, and parental care in male northern cardinals
2:00 PM	109.4	DCE	*Scobell SK, Jaques JT, Jones AG; Texas A&M University, Texas A&M Veterinary Medical Diagnostic Laboratory*	Androgen profiles across the male pregnancy cycle in the sex-role reversed Gulf pipefish

2:20 PM	109.5	DCE	*Paitz RT, Bowden RM; Illinois St. University*	Characterizing the conversion of yolk estradiol to estrogen sulfates during embryonic development in the red-eared slider

1:00 - 3:00 pm
Continental Ballroom 9

Session 110: Evolutionary Developmental Biology

Co-Chairs: Michael D. Shapiro, John Abramyan

1:00 PM	110.1	DEDB	*Domyan ET, Kronenberg Z, Vickrey AI, Yandell M, Shapiro MD*; University of Utah*	Genomic and developmental basis of diversity in the domestic pigeon
1:20 PM	110.2	DVM	*Hu Y, Parsons KJ, Albertson RC; University of Massachusetts, University of Glasgow*	Evolvability of the cichlid jaw: new insight into the genetic basis of phenotypic integration
1:40 PM	110.3		*Parsons KJ, Powder KE, Alberston RC*; University of Glasgow, University of Massachusetts, Amherst*	Wnt-signaling and the evolvability of cichlid craniofacial diversity
2:00 PM	110.4	DVM	*Bhullar B-AS, Marugan-lobon J, Racimo F, Bever GS, Rowe TB, Norell MA, Abzhanov A; Harvard, University Auton. de Madrid, Max Planck Inst. Evol. Anthro., NYCOM, University Tex, Aus., Amer. Mus. Nat. Hist.*	The evolution and development of the archosaurian head and the origin of the bird skull
2:20 PM	110.5	DEDB	*Swiderski DL, Zelditch ML; University of Michigan, Ann Arbor*	Mouse jaw ontogeny *in Tres Partes Divisa Est*
2:40 PM	110.6		*Abramyan J, Leung KJ, Merchant-Larios H, Richman JM; The University of British Columbia, Universidad Nacional Autónoma de México*	Craniofacial ontogeny in turtles: the role of bone morphogenetic protein in the loss of palatal shelves

1:00 - 2:40 pm
Yosemite A

Session 111: Larval Ecology - Development

Co-Chairs: Karen Chan, Florence Thomas

1:00 PM	111.1	DEE	*Fung JK, Fukunaga A, Thomas FIM; University of Hawaii, Manoa*	Naturally occurring ranges in water quality affect early development in the sea urchin *Tripneustes gratilla*: implications for distribution of invasive algae
1:20 PM	111.2	DIZ	*Blackburn HN, Allen JD; College of William and Mary*	Maternal effects on cloning frequency, larval development and juvenile size in the sea star *Asterias forbesi*
1:40 PM	111.3	DIZ	*Cahill AE; Stony Brook University*	Metamorphosis of *Crepidula* larvae in response to varying conspecific densities and settlement cue concentrations
2:00 PM	111.4	DIZ	*Chan KYK, Grunbaum D; University of Washington*	Assessing effects of starvation-induced morphological variations on swimming of larval sand dollars with a novel biomechanical model and video motion analysis
2:20 PM	111.5		*Strader ME, Matz MV; University of Texas at Austin*	Color vision in coral larvae? Insights into settlement behavior and possible function of fluorescent proteins

SUNDAY POSTER SESSION P3

Grand Ballroom, 3:00-5:00 PM

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

Even # - Authors present from 3:00 - 4:00 pm; Odd # - Authors present from 4:00 - 5:00 pm

Behavior: Parasites and Hosts

P3.1	DEE	*Sears BF, Rohr JR; University of South Florida*	Host life history influences parasite encystment location and tolerance in tadpoles
P3.2	DCE	*Egdorf TC, Kirschman L, Crespi E, Brunner J, Warne R; Southern Illinois University Carbondale*	The effects of size hierarchies on infection and transmission of ranavirus in amphibians
P3.3	DAB	*Zylberberg M, Klasing KC, Hahn TP; University of California, Davis, California Academy of Sciences*	House finches (*Carpodacus mexicanus*) balance investment in behavioral and immunological defenses against pathogens
P3.4		*Vanatta KJ, Potter KA, Woods HA; University of Montana*	The effects of abiotic factors on host finding by trichogramma wasps
P3.5		*Quock CD; San Francisco State University*	Use of RFID tracking to detect effects of parasitism by Apocephalus borealis on the European honey bee, *Apis mellifera*

Behavior: Consumption

P3.6	DIZ	*Riley ME, Griffen BD; University of South Carolina*	You are what you eat: effect of diet on physiological and reproductive condition in the mangrove tree crab *Aratus pisonii*
P3.7		*Tate T, Jaroszewski J, Rowe A, Rowe M; Sam Houston State, Appalachian State, University Texas, Austin*	Do grasshopper mice actually eat noxious bark scorpions in the field?
P3.8	DAB	*Warraich TN, Wyneken J; Florida Atlantic Univerisity*	Feeding behavior of loggerhead (*caretta caretta*) and leatherback (*dermochelys coriacea*) sea turtles: a model to understand bycatch
P3.8A	DAB	*Clark X, Clissold FJ, Charleston MA, Simpson SJ; University of Sydney, NSW, Australia*	Foraging in a nutritionally complex world: tests using agent-based models and locusts
P3.9	DAB	*Hansen BK, Krist AC, Martinez Del Rio C; University of Wyoming*	Is more really merrier? A case for increased success under high conspecific densities in the New Zealand mudsnail, *Potamopyrgus antipodarum*
P3.10	DAB	*Bergman DA, Sligh S, Goote P; Grand Valley State University*	Crayfish feeding on zebra mussels: an assessment of feeding efficiency related to cluster size
P3.11	DEE	*Crall JD, Combes SA; Concord Field Station, Harvard University*	Blown in the wind: bumblebee temporal foraging patterns in naturally varying wind conditions
P3.12	DAB	*Bobek JE, Hranitz JM, Barthell JF, Clement M, Apted T, Bates L, Hall N, Cakmak I, Wells H; Bloomsburg University, University of Central Oklahoma, American Samoa Community College, Loyola Marymount University, Uludag University, Tulsa University*	Senescence marker expression is linked to foraging decisions in honey bees

Behavior: Social

P3.13		*Balli S, Drew RE; University of Massachusetts Dartmouth*	Effect of aggression and social status on gene expression in rainbow trout
P3.14		*Nekolny S, Gibson Q, Ermak J, Richmond J; University of North Florida*	Don't bite your mother: seasonality and sex differences in dolphin tooth rake marks
P3.15		*Clements R, Rycroft N, Atema J; Boston University*	Establishing antennule flick rate as an assay for odor detection in lobsters
P3.16	DAB	*Wolf MG, Martin III AL; Saginaw Valley State University*	Urine as a signal of dominance

P3.17	DAB	*Martin III AL, Bourcier T; Saginaw Valley State University*	Effects of flow on social structure
P3.18	DNB	*White M, Andrews K*, Tierney AJ; Colgate University*	Dear enemies and nasty neighbors in the Crayfish *Procambarus clarkii*
P3.19	DAB	*Bespalova I, Helms K; Arizona State University, University of Vermont*	Meathead queens: lethal fighting linked to larger heads in *Messor pergandei*
P3.20	DAB	*Wehrle BA, Espinoza RE; California State University, Northridge*	Lounging lizards and gut bugs: testing the role of the social aggregations for transferring digestive microbes
P3.21	DAB	*Price BC, Shelton DS, Martins EP; North Carolina State University, Indiana University-Bloomington*	Group size dependent cohesion of zebrafish (Danio rerio) in the presence of disturbances
P3.22	DAB	*Chicoli A, Baeder M, Paley DA; University of Maryland, Harvey Mudd College*	Collective anti-predator behavior due to individual-based rules and social information transmission
P3.23	DAB	*Shelton DS, Alberts JR; Indiana University-Bloomington*	Ontogenesis of group regulatory behavior in mouse litters

Bioindicators, Pollution and Conservation

P3.24	DNB	*Browne DE, Lewis KR, Baker DM; University of Mary Washington*	Effects of the herbicide atrazine on gene expression in the zebrafish, *Danio rerio*: a microarray analysis
P3.25	DCPB	*Bartlow C, Lamoreaux N, Stanton R, Parikh N, Pero A, Rauschmeier K, Hoffman T, Marx J, Patel S, Sceia K, Biggers WJ, Stratford J; Wilkes University*	GST levels in terrestrial birds show no evidence of contamination from natural gas drilling
P3.26	DEE	*Cary TL, Pask JD, Rollins-Smith LA, Karasov WH; University of Wisconsin, Madison, Vanderbilt University Medical Center*	PCB-126 exposure lowered antimicrobial peptide secretion in juvenile northern leopard frogs
P3.27	DIZ	*Challener R, McClintock JB, Makowsky R; University of Alabama at Birmingham*	Effects of reduced carbonate saturation state on early development in the edible sea urchin *Lytechinus variegatus*
P3.28		*Neumeyer CH, Gildersleeve SM, Covi JA; University of Wisconsin-Stevens Point, University of North Carolina at Wilmington*	Identifying abnormal morphologies associated with chemical challenges in the brine shrimp, *Artemia franciscana*
P3.29	DEE	*Daniels KD, Schroer ML, Propper CR; Northern Arizona University, Flagstaff*	Morphological and behavioral differences between a fish population from a wastewater effluent pond compared to a reference lake
P3.30	DEE	*Healy F, Park D, Bergamini R, Daniels K, Propper CR; Northern Arizona University, Flagstaff*	Evaluating naturalized populations of western mosquitofish, *Gambusia affinis*, in the Verde River watershed for biomarkers of endocrine disruption
P3.31		*Kohlenberg KL Stanishevsky AV, Watts SA; University of Alabama at Birmingham, UAB*	Vertical transfer and growth effects of zebrafish consuming Rotifera exposed to copper-loaded carbonaceous particulates
P3.32	DCE	*Roark AM, Thorn HA; Furman University, Hood College*	Reproductive effects of 17 beta-estradiol, bisphenol A, and tributyltin in *Aiptasia pallida*
P3.33		*Takagi KK, James CR, Wright WG; Chapman University*	A model system for predicting the effects of global warming: acute and chronic effects of warm temperature on feeding behavior of *Pagurus samuelis*
P3.34		*Chiang S, Belanger CL, Berke SK, Jablonski D; University of Chicago, South Dakota School of Mines and Technology, Siena College*	Does oceanography constrain marine bivalve invasions?
P3.35		*Cornell AE; Simon Fraser University*	Vegetation density as an indicator of wood thrush abundance
P3.36	DEE	*Harold AS, Zurlo D, Toline CA, Doty S, McDonough V; College of Charleston, National Park Service, South Carolina, Biscayne National Park*	Diet of red lionfish (Scorpaenidae) from Biscayne Bay, Florida, based on gut content analysis

P3.37		*Neeman N, Robinson NJ, O'Connor MP, Spotila JR, Paladino FV; Drexel University, Purdue University*	Do leatherback turtles shift their nesting seasons as a response to changes in sea surface temperature?
P3.38		*Polich RP, Searcy CA, Shaffer HB; Iowa State University, University of California, Davis, University of California, Los Angeles*	The effects of tail clipping on larval *Ambystoma californiense*
P3.39		*Wilder AE, Welch AM; College of Charleston, SC*	Effects of pesticide and salinity on sperm activity in the green tree frog (*Hyla cinerea*)
P3.40	DEE	*Staudinger MD, McAlarney RJ*, McLellan WA, Pabst DA; University of Missouri Columbia, University North Carolina Wilmington*	The feeding ecology of the pygmy (*K. breviceps*) and dwarf (*K. sima*) sperm whale inferred from diet and stable isotope analyses
P3.41	DCE	*Hotard K, Zou E*; Nicholls State University, Thibodaux, LA*	Crustacean ethoxyresorufin O-deethylase activity varies during the molting cycle
P3.42	DEE	*Closek CJ, Sunagawa S, Desalvo MK, Piceno YM, Desantis TZ, Brodie EL, Voolstra CR, Andersen GL, Medina M; University of California, Merced, European Molecular Biology Laboratory, Germany, University of California, San Francisco, Lawrence Berkeley National Laboratory, King Abdullah University of Science and Technology*	How bacteria and genes reflect the health states of corals
P3.43		*Tommerdahl AP, Burnett LE, Burnett KG; College of Charleston*	Characterizing the response of penaeid shrimp hemocyanin to chronic moderate hypoxia exposure

Cardiovascular Physiology

P3.44	DCPB	*Mika TL, Reiber CL; University of Nevada, Las Vegas*	Cardiac response to temperature in hyperoxia and normoxia in the grass shrimp, *Palaemonetes pugio*
P3.45	DCPB	*Zippay ML, Burnett NP, Helmuth B; University of South Carolina, University of California, Berkeley, Northeastern University Marine Science Center*	Do heating rates matter for measurement of cardiac output in intertidal mussels?
P3.46	DCPB	*Hoque R, Jeanlouis A, Carroll MA, Catapane EJ; Medgar Evers College*	Octopamine has a dual effect on heart rate of *Crassostrea virginica*
P3.47	DIZ	*Martin GG, Kelly TJ, Safran R; Occidental College, Los Angeles*	Response of the giant keyhole limpet to major blood loss
P3.48		*Anderson GE, Secor SM; University of Alabama, Tuscaloosa*	Developmental shifts in heart position for the diamondback water snake
P3.49	DCPB	*Tate KB, Crossley II DA; University North Texas*	Dehydration stress during embryonic development alters autonomic regulation of the cardiovascular system in the American alligator (*Alligator mississippiensis*)
P3.50	DCPB	*Cook EY, Owerkowicz T; California State University, San Bernardino*	New experimental model to investigate effects of augmented intracardiac shunt
P3.51		*Rossitto JJ, Burggren WW; University of North Texas*	Cardiac and renal developmental windows for atenolol exposure in embryos of the chicken *Gallus domesticus*
P3.52	DCPB	*Jorgensen D, Bryant M, Hinlicky A; Roanoke College*	Hydrostatic pressure is unequally distributed in the branchial chambers of lobsters, *Homarus americanus*, and Atlantic blue crabs, *Callinectes sapidus*
P3.53	DEE	*Marion ZH, Pauly GB, Fordyce JA; University of Tennessee, Knoxville, Nat. Hist. Mus. of Los Angeles*	Quantifying the variation in antipredator chemotypes among populations of western toads (*Bufo boreas*)

Chemical and Community Ecology

P3.54	DEE	*McClary, Jr. M, Garah M, Elia S; Fairleigh Dickinson University, Paramus High School, Passaic County Technical Institute*	Measurements of various water parameters to explain shell characteristics of barnacles

P3.55		*Momin N, Higgins A, Musolf BE; Clayton State University*	The use of chemoreception for host selection in ovipositing *Callosobruchus maculatus*
P3.56	DEE	*Scriber KE, Amsler CD, McClintock JB; University of Alabama at Birmingham*	Feeding rates of the freshwater amphipod hyalella azteca for aquatic vascular plants and macroalgae
P3.57		*Chulakote SSY, Smith CM; University of Hawaii, Manoa*	Quantifying herbivory pressure and preference: are native or invasive macroalgae preferred?
P3.58	DIZ	*Lenz EA, Edmunds PJ; California State University, Northridge*	Evidence that octocorals are increasing in population density in the Caribbean
P3.59	DEE	*Davis-Berg EC; Columbia College Chicago*	Changes in Molluscan fauna due to succession – 1940s to present
P3.60	DIZ	*Hooks AP; Stony Brook University*	Prey plasticity and life history responses to a native and nonnative predator
P3.62	DIZ	*McClintock, JB, White BA, Amsler CD, Mah CL, Amsler MO, White S, Quetin LB, Ross RM; University of Alabama at Birmingham, National Museum of Natural History, University of California, Santa Barbara*	Abundance and distribution of echninoderms in nearshore hard-bottom habitats near Anvers Island, Antarctic Peninsula
P3.63		*Rastorgueff P-A, Harmelin-Vivien M, Richard P, Chevaldonné P; Aix-Marseille Université - Université de La Rochelle*	Feeding strategies and resource partitioning among mysids in oligotrophic marine caves
P3.64		*Roberts SN, Galloway AWE, Dethier MN, Duggins DO; University of Colorado, Boulder, University of Washington, Friday Harbor Labs*	A comparison of laboratory algal feeding rates with in situ capture of drift algae by the red urchin (*Strongylocentrotus franciscanus*)
P3.65		*Burgess SA, Eisenlord ME, Galloway AWE, Dethier MN; University of Michigan, University of Washington, Friday Harbor Laboratories*	Food choices and values for a benthic herbivore, *Idotea wosnesenskii*

Complementary to Symposium: Circadian Clock

P3.66	DCPB	*Azofeifa JG, Chappell P, Weis VM, Schwarz JA*; Vassar College, Oregon State University*	Evolution of the LGR hormone receptor gene family in metazoans
P3.67		*Trinh R, Del Gizzi A, Hatfield I; University of California Berkeley*	Moon phase and nutrient effects upon diel vertical migration patterns of zooplankton and myctophids in the North East Pacific

Endocrine Disruption

P3.68	DCE	*Davies RE, Brander SM, He G, Connon RE, Denison MS; University of California, Davis, University of North Carolina, Wilmington*	Comparison of two endocrine disruptor *in vitro* screening assays and the potential for conflicting measurements
P3.69	DCE	*Sutton TR, Wolff SW, Haven TS, Veldhoen N, Helbing CC, Propper CR; Northern Arizona University, University of Victoria, Canada*	Thyroid hormone induces up-regulation of two genes sensitive to endocrine disruption during amphibian metamorphosis
P3.70		*Ngirakesau IK, Sato BLM, Collier AC; John A. Burns School of Medicine, University of Hawaii at Manoa*	Chlorpyrifos is an endocrine disruptor in the human placenta via effects on steroidogenic and elimination enzymes
P3.71		*Lee E, Reyes J, Forsgren K, Waggoner CM, Kelley KM; California State University, Long Beach, Pacific Coast Environmental Conservancy, California State University, Fullerton, Institute for Integrative Research on Materials, Environment and Society*	Thyroid endocrine disruption in coastal California fish
P3.72	DCE	*Waggoner CM, Reyes JA, Armstrong JL, Allen BJ, Kelley KM; California State University, Long Beach, Orange County Sanitation District*	Hepatic protein expression, endocrine disruption, and relationships to contaminant exposures in wild English sole in coastal Southern California

P3.73		*Larsen C, Reyes JA, Iwanski E, Patel R, Kelley KM; CSU Long Beach, Pacific Coast Environmental Conservancy*	Elevated estradiol in male fish– environmental differences and underlying molecular mechanisms

Evolutionary Developmental Biology V

P3.74	DCPB	*Froehlich JM, Fowler ZG, Remily EA, Romero Arocha SR, Galt NJ, Biga PR; University of Alabama at Birmingham, North Dakota State University*	The indeterminate growth conundrum: how do fishes continue to grow throughout their lives?
P3.75		*Bostwick CJ, Winters GC, Dabe EC, Bobkova Y, Citarella MR, Kohn AB, Swalla BJ, Moroz LL; University of Florida, University of Washington*	Piwi genes and their expression in the ctenophore *Pleurobrachia bachei*: quest for ancestral master regulators of non-coding RNAs in animals
P3.76		*Bruders RL, Moroz LL, Swalla BJ, Kohn AB; University of Washington, Friday Harbor Labs, University of Florida, The Whitney Laboratory for Marine Bioscience*	The Wnt pathway in the ctenophore *Pleurobrachia bachei*
P3.77	DEDB	*Winters GC, Kohn AB, Citarella MR, Bostwick CJ, Dabe EC, Bobkova Y, Kocot KM, Swalla BJ, Moroz LL; University of Florida Whitney Lab, Auburn University, University of Washington, Seattle*	Conserved expression patterns of Nanos in the ctenophore *Pleurobrachia bachei*: implications for germ line specification in basal metazoans
P3.78	DEDB	*Kaczmarczyk AN, Patel N; University of California, Berkeley*	The molecular mechanisms of germline regeneration in *Parhyale hawaiensis*
P3.79	DEDB	*Cavaco N, De Jong D, Seaver E; Kewalo Marine Laboratory*	Understanding regeneration through an annelid worm

Evolutionary Morphology and Morphological Evolution

P3.80		*Fishelson L, Baldwin C, Hastings P*; Tel Aviv University, Smithsonian Institution, Scripps Institution of Oceanography*	Gonad morphology and reproductive modes in fishes of the Tribe Starksiini (Teleostei, Blenniiformes)
P3.81	DEE	*Noonan A, Santana SE, Lynch Alfaro J, Alfaro ME; University of California, Los Angeles, University of Washington*	Drivers of facial diversity in strepsirrhine primates
P3.82		*Robinson CD, Sanger TJ, Battles AC, Johnson MA; Trinity University, Harvard University*	Sexual dimorphisms in behavior in two long-snouted *Anolis* lizard species
P3.83	DVM	*Zelditch ML, Swiderski DL; University of Michigan, Ann Arbor*	Contrasting responses to 100 years of climate change: jaw morphology of two montane chipmunks
P3.84		*Macedo DC, Johnson JB, Rosenthal GG; Texas A&M University*	The impact of hybridization on morphological variation in *Xiphophorus* fish
P3.85	DEE	*Steves ID, Wright ML, Caldwell RL; University of California, Berkeley*	Evolution of rostrum shape variation in mantis shrimp
P3.86		*Leatherman LST, Nowell C, Schiller AM, Fritsch PW; Oberlin College, San Francisco State University, California Academy of Sciences, Evergreen State College*	Taxonomic and adaptive significance of morphological variation in North American *Cercis*
P3.87		*Augustiro W, Ocampo G; University of Hawaii, Manoa, California Academy of Sciences, San Francisco*	Morphological evolution within Miconieae (Melastomataceae): insights from the Secundiflorae clade using morphometric data
P3.88		*Galloway KA, Mehta RS, Ward AB; University of California, Santa Cruz, Adelphi University*	Documenting the mechanisms of elongation across the ophidiiformes
P3.91	DVM	*Leary B, Kavanagh KD*; University of Massachusetts Dartmouth*	Pedal digit IV proportions reveal body-size associated constraint on dinosaur foot morphology

P3.92		*Holliday CM, Sellers KC*; University of Missouri*	Enamel thickness as an indicator of feeding behavior in crocodyliforms
P3.93	DVM	*Davis JS, Sidote J, Montuelle SJ, Wood R, Williams SH; Ohio University*	3D Kinematics and muscle activity pattern during mastication in ferrets (*Mustela putorius furo*)
P3.94	DVM	*Schachner ER, Lyson TR, Farmer CG; University of Utah, Smithsonian Institution*	Pulmonary anatomy and the evolution of turtles
P3.95		*Mchorse BK, Hopkins SSB, Davis EB; University of Oregon*	Functional morphology in modern horses: natural vs. artificial selection
P3.96	DVM	*Zellmer N, Berta A; San Diego State University*	Open wide! An analysis of interspecific variation in baleen ultrastructure
P3.97		*Marcroft TA, Modlin J, Slater G, Van Wassenbergh S, Santini F, Alfaro ME; University of California, Los Angeles, Smithsonian Institution, University of Antwerp, University of Torino*	Functional consequences of carapace shape diversity in boxfishes
P3.98		*Johnson KE, Andrus CJ, Middleton KM; California State University San Bernardino, Western University of Health Sciences, University of Missouri*	Comparative anatomy of flight and contour feathers in aquatic birds
P3.99	DVM	*Grieco TM, Cam SB, Hlusko LJ; University of California, Berkeley*	Variation and integration in amphibian dentitions: insights about sex and size from Silurana (*Xenopus*) tropicalis
P3.100	DIZ	*Atherton S, Hochberg R; University of Massachusetts Lowell*	Evolution of the reproductive system of urodasys (*Gastrotricha, Macrodasyida*)
P3.101		*Tatarian AFF, Roopnarine PD; Wesleyan University, California Academy of Sciences*	Bringing order to taxonomic chaos: using geometric morphometrics and elliptical fourier analysis to distinguish morphologically equivocal *Lirophora* species
P3.102	DVM	*Soda KJ, Slice DE, Naylor GJP; Florida State University, College of Charleston*	The use of geometric morphometrics and artificial neural networks to identify teeth to species in requiem sharks (*Carcharhinus* sp.)
P3.103	DVM	*Hopkins SSB, Orcutt JD, Davis EB; University of Oregon*	Body size reconstruction in a saber-toothed cat from the Late Miocene of North America
P3.104		*Chew AE; Western University of Health Sciences*	Measuring fossil diversity and its relationship to climate change in deep time: a case study from the early Eocene

Growth, Scaling and Morphology

P3.105	DVM	*Kilbourne BM; Friedrich-Schiller-Universität Jena*	Proportions and distribution of mass in the hindlimbs of neognath birds
P3.106	DVM	*Becker EA, Scott R, Webb JF; University of Rhode Island, URI*	Diversity of adult lateral line morphologies is not explained by differences in neuromast patterning in two Lake Malawi cichlids
P3.107	DVM	*Jones KE, German RZ; Johns Hopkins University*	Differential vertebral growth produces variations in adult thoracolumbar proportions in half-bounding mammals
P3.108A	DCB	*Al Dayeh A, Herring SW*; University of Washington, Seattle*	Mechanical behavior of the cartilaginous nasal septum
P3.108	DIZ	*Bird AM, Von Dassow G, Maslakova SA*; Oregon Institute of Marine Biology, University of Oregon*	How the pilidium larva grows
P3.109	DVM	*Mallette SD, Pabst DA, McLellan WA, Barco SG; University of North Carolina Wilmington, Virginia Aquarium and Marine Science Center*	Investigation of growth in a coastal apex predator, the bottlenose dolphin (*Tursiops truncatus*)
P3.110		*Lee HR, Spaulding JD, Cohen CS; Swarthmore College, Romberg Tiburon Center, San Francisco State University*	Effects of flow on growth of juvenile colonial ascidians, *Botrylloides violceus* and *Botryllus schlosseri*

P3.111		*Turner MA, Chapman A, Baltzley MJ; Western Oregon University*	Effects of foot size on crawling speed in mucociliary locomotion
P3.112	DEDB	*Bustiillo SN, Helm BR, Davidowitz G; University of Arizona, Tucson*	Growth, chemical and caloric composition of the fat body during metamorphic commitment in 5th instar *Manduca sexta*
P3.113	DVM	*Carrillo A, Bansuan H, Miranda A, Dickson K; California State University, Fullerton*	Effects of extended incubation on post-hatching growth of larval California grunion
P3.114	DCB	*Olaivar AF, Brown MD, Berg O, Muller UK; California State University, Fresno*	The scaling of suction feeding mechanics as predicted by inviscid flow models
P3.115	DVM	*Baliga VB; University of California, Santa Cruz*	The morphology and ontogeny of cleaning behavior in labrid fishes
P3.116		*Szymaszek JF, Angelini DR; University of Colorado, Boulder, Colby College*	Functional analysis of bantam microRNA in Tribolium castaneum
P3.117	DVM	*Chang C, Franz-odendaal TA; Saint Mary's University, Mount Saint Vincent University*	Condensations to mineralizations: the development of the zebrafish (*Danio rerio*) infraorbital bones
P3.118	DVM	*Mehta RS; University of California, Santa Cruz*	Density estimates, growth patterns, and diet of the California moray, *Gymnothorax mordax*, around Catalina Island

Immunology

P3.119	DCPB	*Zimmerman LM, Vogel LA, Bowden RM; Illinois State University*	Effect of age and temperature on antibody production in a long-lived ectotherm
P3.120		*Ross AE, Rock RP, Foltz SL, Moore IT; Virginia Tech*	Body condition and heterophil to lymphocyte ratios in urban and rural song sparrow (*Melospiza melodia*) populations
P3.121		*Roman MR, Burnett KG, Burnett LE; College of Charleston*	The effect of the pathogenic bacterium vibrio campbellii on fatigue in the atlantic blue crab, *Callinectes sapidus*, during sustained exercise
P3.122	DCPB	*Pales Espinosa E, Jing X, Perrigault M, Allam B*; Stony Brook University, Stony Brook, NY*	Mucosal C-type lectins in the eastern oyster *Crassostrea virginica*: potential involvement in particle capture and mucosal immunity
P3.123	DCPB	*Caviedes-Vidal E, Lopez-Cativa L, Molina-Marino L; University Nac de San Luis - Consejo Nac de Inv Científicas y Técnicas*	Characterization of complement-system activity of common pigeon plasma (*Columba livia*)
P3.124	DCPB	*Molina-Marino L, Lopez-Cativa L, Caviedes-Vidal E; Univ Nac de San Luis - Consejo Nac de Inv Científicas y Técnicas*	IG Y index variation throughout a fast-refeeding period in common pigeon (*Columba livia*)
P3.125		*Mohaimany-Aponte A, Kristan DM; California State University San Marcos*	Environmental enrichment does not increase susceptibility of female mice to intestinal parasites
P3.126	DCPB	*Menzel LP, Bigger CH; Florida International University*	Can enzyme histochemistry identify the immune cells of the octocoral *Swiftia exserta*?
P3.127		*McMichael JW, Field KA; Bucknell University*	Cytokine gene expression and lymphocyte expansion during graft rejection in mice
P3.128	DCPB	*Lopez-Cativa L, Molina-Marino L, Gonterofourcade M, Caviedes-Vidal E; Univ Nac de San Luis, Consejo Nac de Inv Científicas y Técnicas*	Short term fasting and immune system function in the broad snouted caiman, *Caiman latirostris*
P3.129	DEE	*Kilvitis HJ, Boruta M, Richards CL, Martin LB; University of South Florida*	Does early-life exposure to bacteria have enduring effects on the immune system of zebra finches?
P3.130	DCPB	*Hiatt M, Killpack T, Crouch W, Fassbinderorth C; Creighton University, University of Wisconsin-Madison*	Alphavirus infection impairs growth and development of altricial nestling birds
P3.131	DEE	*Brace AJ, Coon CAC, McCue MD, McWilliams SR, Martin LB; University of South Florida, St. Mary's University, University of Rhode Island*	Critical amino acid allocation as a mediator of range expansion in an introduced species

P3.132	DCPB	*Booth KK, Greenlee KJ; North Dakota State University*	Hormonal control of developmental effects on immunity in the caterpillar, *Manduca sexta*
P3.133		*Ah Ran K, Hyun-Woo K*; Pukyong National University, Rebublic of Korea*	Molecular characterization and expression of crustin-like protein in the Morotoge shrimp, *Pandalopsis japonica*

Lungs, Noses and Digestion

P3.134	DIZ	*Martin GG, Valk J; Occidental College, Los Angeles*	The peritrophic membrane of the giant keyhole limpet
P3.135	DVM	*Tousignant KAS, Sherman RL; Nova Southeastern University*	Preliminary anatomical comparison of choroid rete structure between diurnal and nocturnal reef fishes
P3.136	DCB	*Aviles J, Pendar H, Socha JJ; Virginia Tech*	Respiratory flow control in darkling beetles: testing the compartmentalization hypothesis
P3.137	DCPB	*Kovacevic A, Biddulph T, Waters JS, Harrison JF; Arizona State University*	Effects of the larval oxygen environment on the three-dimensional branching structure of insect flight muscle tracheae
P3.138	DVM	*Moritz S; Brown University*	Rib kinematics during ventilation in *Alligator mississippiensis*
P3.139		*Biddulph TA, Kovacevic S, Waters JS, Harrsion JF; Arizona State University*	Trachea and flight muscle volumes of adult drosophila melanogaster reared in hypoxia, normoxia, and hyperoxia using synchrotron x-ray phase contrast microtomography
P3.140	DCPB	*Clissold FJ, Brown Z, Simpson SJ; The University of Sydney, Australia*	Diet-induced enlargement of the gastrointestinal tract increases nutrient absorption rates in locusts by allowing larger meals rather than better absorptive efficiency
P3.141	DVM	*Pang B, Green P, Bird D, Halpern Z, Curtis A, Van Valkenburgh B; University of California, Los Angeles, University of Massachusetts Amherst*	Comparison of nasal turbinal surface area in caniform and feliform carnivorans
P3.142	DCB	*Quist A, Darakananda K, Hitchcock A, Jeong J, Connolly E, Robbins A, Ellerby D; Wellesley College*	Don't swim after a large meal, crawl instead
P3.143	DCPB	*Harrison JF, Waters JS, Cease AJ, Vandenbrooks JM, Callier V, Klok CJ, Shaffer K, Socha JJ; Arizona State University, Virginia Tech*	How hoppers breathe
P3.144		*Lewallen MA, Burggren WW; University of North Texas*	Chronic hypoxia and hyperoxia modifies morphology and VEGF expression of the lungs of the developing chicken
P3.146		*Randazzo AB, Gamble GB, Secor SM; University of Alabama, Tuscaloosa*	Rapid upregulation of the python's small intestine

Neurobiology: Neuroethology

P3.147	DNB	*Hadjisolomou SP; Graduate Center of The City University of New York*	Behavioral responses to pulses of light in the longfin inshore squid, *Doryteuthis Pealeii*
P3.148	DNB	*Aidala Z, Hauber ME; The Graduate Center, CUNY, Hunter College*	Ultraviolet visual sensitivity in avian brood parasites and their hosts
P3.149		*Lutz EK, Riffell J; University of Washington*	Visual and olfactory learning in *Anopheles stephensi* and *Aedes aegypti* mosquitoes
P3.149A	DNB	*Ashley NT, Zhang N, Weil ZM, Magalang UJ, Nelson RJ; Western Kentucky University, The Ohio State University*	Sleeping dwarfs: photoperiodic modulation of infection-induced sleep in Siberian hamsters (*Phodopus sungorus*)
P3.150		*Brumlow C, Rose V, Rowe A, Rowe M; Sam Houston State, Huntsville High School, University Texas, Austin*	Topographical variability of pain sensitivity in grasshopper mice: a preliminary analysis
P3.151	DNB	*Dallmann CJ, Mongeau J-M, Jayaram K, Mahavadi A, Full RJ; University of Bielefeld, University of California, Berkeley*	Dynamic response of antenna flagellum in the American cockroach

P3.152	DNB	*Daskalantonakis D, Cassidy R, Brumlow C, Rowe M, Rowe A; The University of Texas, Austin, Sam Houston State University*	RNA-Seq analysis of sensory neurons from grasshopper mice: exploring the genetic basis for differential sensitivity to bark scorpion pain-inducing toxins in a scorpion predator
P3.153		*Zimmerman KL, Satterlie RA; University of North Carolina at Wilmington*	Muscular organization of a scyphozoan jellyfish: *Aurelia aurita*
P3.154	DNB	*Williams P, Akande P, Catapane EJ, Carroll MA; Medgar Evers College*	Further studies on the sensory motor integration of gill lateral cilia in the bivalve mollusc *Crassostrea virginica*
P3.155	DNB	*Gallagher CA, Murray JA, Cain SD, Choate BA; California State University East Bay, Eastern Oregon University*	Distribution of ciliated cells and identification of putative olfactory receptors in a novel chemosensory organ in the nudibranch *Tritonia diomedea*
P3.156	DCB	*Howell DB, Dickerson BH, Dyhr JP, Sponberg SN, Daniel TL; University of Washington*	Extracellular recordings of wing campaniform sensilla of *Manduca sexta* demonstrate encoding properties similar to intracellular recordings of haltere neurons
P3.157	DNB	*Steinworth BM, Williams IV R, Hale ME; University of Chicago*	Sensitive spikes and spines: the pectoral spines of catfish function as touch sensors
P3.158	DNB	*Gill KP, Rice JL*, Murray JA, Cain SD; University of Mebourne, Eastern Oregon University, California State University, East Bay*	An investigation of the statocyst sensory system in *Armina californica*
P3.159	DCPB	*Gefen E, Berman TS; University of Haifa-Oranim, Israel*	Neural control of gas exchange pattern is phase-dependent in the desert locust
P3.160		*Marranzino AN, Frank MM, Lindemann SD, Guiffrida BA, Sipper K, Webb JF, Mensinger AF; Regis University, St. Olaf College, University of Minnesota, Duluth, Wareham Middle School, Northern Michigan University, University of Rhode Island, Kingston, University of Minnesota, Duluth*	Functional morphology of cephalic protuberances in the oyster toadfish, *Opsanus tau*

Neuromechanics,Sensormotor Systems

P3.161	DVM	*Koeppl HB, Osborne JPB, Druzinsky RE; University of Illinois, Chicago*	Comparative anatomy of the digastric muscle: a preliminary study
P3.162	DCB	*Lehmkuhl AM, Williamson BJ, Jayne BC; University of Cincinnati*	Branch structure affects perch preference and the performance and behaviors of gap-bridging by the snake, *Boiga irregularis*
P3.163	DCB	*Gudenus V, Libby T, Haldane DW, Full RJ; UAS Technikum-Wien, University of California, Berkeley*	Designing bio-inspired tailed robots to turn using bendable backs
P3.164	DCB	*Bliamptis JP, Hale ME; University of Chicago*	Finding balance in an unstable world: the neural control and kinematics of larval zebrafish pectoral fins in response to roll
P3.165	DCB	*Katz H, Levin E, Macesic Ekstrom LJ, Gillis GB; University of Chicago, Tufts University, Wheaton College, Mount Holyoke College*	Making a splash: the effect of environment on landing preparation in *Lithobates catesbeiana*
P3.166		*Steves ID, Mehrabani H*, Rose C, Mok A, McClelland Z, Chirico J, Dudley R; University of California, Berkeley*	Landing performance of Anna's hummingbird (*Calypte anna*) in variable wind conditions
P3.167	DVM	*Rana PV, Larson NP, Abbott EM, Azizi E; University of California, Irvine*	How toads minimize torques to stick their landings
P3.168	DCB	*Hunt NH, Stergiou N; University of California, Berkely, University of Nebraska, Omaha*	Manipulation of the structure of gait variability with rhythmic auditory stimulus
P3.169	DVM	*Montuelle SJ, Sidote J, Rettig M, Davis JS, Williams SH*; Ohio University*	Sensorimotor integration during feeding: effects of transection of the lingual nerves on jaw movements during chewing in pigs

P3.170	DVM	*Berlin JC, Kirk EC, Rodgers MC, Rowe TB, Hullar TE; University of Texas, Austin, Washington University in St. Louis School of Medicine*	Global sensitivity of the mammalian head to rotation: importance of semicircular canal orientation for locomotor agility in therian mammals
P3.171	DVM	*Wyneken J, Salmon M, Guthrie K; Florida Atlantic University*	Facial pits in a gelatinivore sea turtle
P3.172		*Huber SJ, Wilcoxen TE, Horn DJ; Millikin University*	Stress physiology of songbirds in response to bird feeding activities

Stress

P3.173		*Harris CM, Madliger CL, Love OP; University of Windsor, Ontario*	Feather corticosterone: an accurate integrated measure of stress?
P3.174	DCE	*Ferguson SM, Lynn SE; University of Memphis, College of Wooster*	Exogenous corticosterone reduces circulating testosterone but not courtship behavior in male zebra finches (*Taeniopygia guttata*)
P3.175	DCPB	*Johnston NR, Lopes PC, Goldsmith GR, Bentley GE, Dawson TE; University of California, Berkeley, GABBA, University of Porto, Helen Wills Neuroscience Institute, Center for Stable Isotope Biogeochemistry*	Do prolonged elevations of corticosterone influence the stable isotope ratios of blood in zebra finches?
P3.176	DCE	*Goessling JM, Mendonça MT, Wilson AE; Auburn University*	A meta-analytic approach to comparing indices of stress in vertebrates: does heterophil:lymphocyte ratio reveal similar degrees of stress as circulating corticosterone concentration?
P3.177	DCE	*Lutterschmidt DI; Portland State University, Oregon*	Corticosterone regulates the transition from courtship to feeding behavior in male red-sided garter snakes (*Thamnophis sirtalis*)
P3.178	DCE	*Fasanello VJ, Fischer CP, Fletcher KL, Makris ME, Seecof OM, Vassallo BG, Haussmann MF; Bucknell University*	Stress management: how do repeated stressors affect antioxidant capacity and oxidative damage?
P3.179	DCE	*Kaiser K, Jones CG, Marentes AA, Weickum RM, Saltzman W; University of California, Riverside*	Diel rhythm of plasma corticosterone in White's treefrog, *Litoria caerulea*
P3.180	DCPB	*Goloff BM, Gonzalez-Gomez P, Wingfield JC, Hiebert SM; Swarthmore College, University California, Davis, IFICC*	Stress response of wild-caught rufous hummingbirds
P3.181	DCE	*Dickens MJ, Balthazart J, Cornil CA; University of California, Berkeley, University of Liege*	Correlation between local brain estradiol concentrations and aromatase activity after acute stress or sexual interaction
P3.182		*Bachman GC, Gibson RM*, Vleck CM; University of Nebraska-Lincoln, Iowa State University*	Elevated baseline but lowered stress-induced corticosterone titers during courtship display in a lekking bird
P3.183	DCE	*Brashears JA, Fokidis HB, Denardo DF; Colgate University, University of British Colombia, Arizona State University*	Defense behavior and the stress response in three species of python
P3.185	DCE	*Merrill L, Naylor MF, Waselik MW, Grindstaff JL; Oklahoma State University*	Effects of pre- and post-natal exposure to two antigens on adult stress responsiveness in the zebra finch (*Taeniopygia guttata*)
P3.186	DCE	*Madden AA, Lattin CR, Romero LM, Fierer N, Starks PT; Tufts University, University of Colorado, Boulder*	The effect of chronic stress on the avian gut microbial community
P3.187	DAB	*Nelson L, Cox L, Hymes S, Woodworth E, Bowlin MS*; University of Michigan-Dearborn*	The effects of chronic stress on sleep in house sparrows (*Passer domesticus*)

P3.188	DAB	*Chaby LE, Cavigelli SA, Wang K, White A, Braithwaite VA; Pennsylvania State University, University of Pittsburgh*	The effects of adolescent stress on adult behavior
P3.189	DCB	*Schmidt M; Friedrich Schiller University, Jena, Germany*	Whole-body mechanics of arboreal locomotion in primates: integrating gait parameters, limb compliance and weight distribution

Terrestrial Locomotion

P3.190	DVM	*Kennedy NK, Bhatt R, Van Valkenburgh B; University of California, Los Angeles*	A geometric and kinematic backbone model of the cheetah, *Acinonyx jubatus*
P3.191	DCB	*Astley HC, Roberts TJ; Brown University*	The diversity and evolution of locomotor muscle properties in anurans
P3.192	DCB	*Karagiannis EE, Maynard EM, Vickowski FB, Macesic LJ, Gillis GB; Mount Holyoke College, Wheaton College*	What goes up must come down: forelimb kinematics in cane toads during jumping and landing
P3.193	DCB	*Nauwelaerts S, Aerts P, Clayton HM; University of Antwerp, Belgium*	Ground reaction forces during transition from trot to canter
P3.194	DCB	*Corcoran MA, Pace CM, Fuqua RD, Nishikawa KC; Northern Arizona University*	The effect of eccentric exercise on whole animal performance and muscle properties
P3.195	DVM	*Wunderlich RE, Miller CE, Wilhelm BA, Gardiner J, Tongen A, Schmitt D; James Madison University, Duke University*	Characterizing the mechanics of free-ranging leaping behavior in sifakas *Propithecus verrauxi* using accelerometers
P3.196	DCB	*Richards CT, Rivera ARV, Choudhury U; Harvard University*	Modeling the benefits and detriments of tendon elastic recoil
P3.197	DVM	*Whitney M, Curry Rogers K, Bagley B; Macalester College, University of MInnesota*	Bone histology and primary growth rates in hatchling titanosaurs from Madagascar: new insights from micro-computed tomography
P3.198	DVM	*Joneson JR, Owerkowicz T, Elsey RM; California State University, San Bernardino, Rockefeller Wildlife Refuge, Louisiana Dept. of Wildlife and Fisheries, Grand Chenier*	Tenotomy of the caudofemoralis longus has no effect on alligator locomotion
P3.199	DCB	*Blum Y, Birn-Jeffery AV, Vejdani HR, Hurst JW, Daley MA; Royal Veterinary College, UK, Oregon State University*	Swing leg control: disturbance rejection versus injury avoidance
P3.200	DCB	*Hasaneini SJ, Bertram JEA*; University of Calgary, Calgary*	Evaluating models of locomotion dynamics: what complexity is adequate?
P3.201	DVM	*Tsai HT, Holliday CM; University of Missouri, Columbia*	Anatomy of archosaur hip joint soft tissues and its significance for interpreting hindlimb function
P3.202	DCPB	*Griffis NL, Williams JB; Southern Illinois University*	Cryoprotectant production has little effect on bound water content in the goldenrod gall fly, *Eurosta solidaginis*

Thermobiology

P3.203		*Turner CR, Stillman JH, Dorfman RE, Page TM; California State University, Monterey Bay, Romberg-Tiburon Center: San Francisco State University*	Thermal sensitivity of heat shock protein gene expression in newly settled porcelain crabs
P3.204		*Kinsey MJ, Place SP; University of South Carolina, Marine Science, Biological Sciences and Environment and Sustainability Program*	Localizing the cellular stress response in a simple body plan
P3.205	DCPB	*Kobey RL, Gassert R, Montooth KL; Indiana University*	Genetic mechanisms of cold tolerance through increased desiccation resistance in *Drosophila melanogaster*
P3.206	DCPB	*Kenkel CD, Matz MV; University of Texas at Austin*	Gene expression biomarkers of acute and chronic heat stress in a reef-building coral

P3.207	DCPB	*Diaz-Almeyda E, Medina M, Iglesias-Prieto R; University of California Merced, Unidad Academica Puerto Morelos, UNAM*	Exploring physiological effects of temperature sensor activation in *Symbiodinium*
P3.208		*Jost JA, Abou-Hanna JJ; Bradley University*	AMPK activity as an indicator of seasonal temperature acclimation in the zebra mussel, *Dreissena polymorpha*
P3.209	DCPB	*Giri S, Dillon ME; University of Wyoming, Laramie*	Seasonal and altitudinal variation in fatty acid composition of native bees
P3.210	DCPB	*Emerson SE, Morris TA, Berner NJ; Sewanee: University of the South*	Effect of diet lipids on measures of seasonal acclimation in the Eastern red spotted newt (*Notophthalmus viridescens viridescens*)
P3.211	DCPB	*Waldrup CL, Berner NJ*; Sewanee: University of the South*	Environmental cues of seasonal acclimation in the Eastern red spotted newt (*Notophthalmus viridescens viridescens*)
P3.212	DCPB	*Allen TR, Nguyen JV, Fay SA, Power ME, Stillman JH; University of California, Berkeley*	The effect of temperature on respiration rates of four key aquatic insect taxa in California riverine food webs
P3.213	DCPB	*De Los Santos R, McCue MD*; St. Mary's University*	Atmospheric oxygen availability affects insect thermotolerance at upper lethal temperatures, but oxygen delivery is not limiting under normoxia
P3.214	DCPB	*Camp N, Martinez E, Phillips C, Porcerra A, Torres J, Colombo R, Menze MA; Eastern Illinois University, University of South Florida*	Life in hot waters: live fast and die young
P3.215	DCPB	*Langland KM, Powers DR, Wethington SM; George Fox University, The Hummingbird Monitoring Network*	Use of infrared thermography to measure body-surface heat dissipation in free-living hummingbirds
P3.216		*Thompson CL, Williams SH, Glander KW, Teaford M, Vinyard CJ; NEOMED, Ohio University, Duke University, High Point University*	Too hot, too cold, or just right: thermal challenges facing mantled howling monkeys (*Alouatta palliata*) in a dry tropical forest
P3.217	DEE	*Stoehr A, Fowler A, Sepulveda C, Bernal D; University of Massachusetts, Dartmouth, Pfleger Institute of Environmental Research*	Heat transfer in free-swimming swordfish, *Xiphias gladius*
P3.218		*Blackmon TN, Johnson MA; Trinity University, San Antonio*	Temperature-dependent behaviors in the Texas spiny lizard (*Sceloporus olivaceus*)
P3.219	DCPB	*Powers SD, Powers DR, Langland KM, Friesen CR, Mason RT; George Fox University, Oregon State University, Corvallis*	The importance of female temperature in the attraction of courting males in red-sided garter snakes (*Thamnophis sirtalis parietalis*)
P3.220		*Rusch TW, Sears MW, Angilletta MJ; Arizona State University, Clemson University*	Competition for thermal resources between males in complex landscapes
P3.221	DCPB	*Vezina F, Guglielmo CG, Dekinga A, Piersma T; Universite du Quebec a Rimouski, University of Western Ontario, Netherlands Institute for Sea Research, University of Groningen*	Flexible adjustments of internal organs in cold acclimated shorebirds
P3.222	DEE	*Capper RL, Meyer E, Matz MV; University of Texas at Austin, Oregon State University*	Discovering the genes contributing to thermal stress survival in the coral *Acropora millepora*
P3.223		*Klaiman JM, Pyle WG, Gillis TE; University of Guelph*	Functional and morphological changes in the trout heart during thermal acclimation
P3.224		*Niermann C, Tate T, Rowe A, Rowe M; Sam Houston State, University Texas, Austin*	Why do grasshopper mice prefer stripe-tailed scorpions over bark scorpions? Testing the "ouch" vs. "super-size me" hypotheses

Monday Schedule of Events

All events take place in the Hilton San Francisco Union Square

EVENT	TIME	LOCATION
Registration	7:30 AM-1:00 PM	Yosemite Foyer
SYMPOSIA ORAL PRESENTATIONS		
S9: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors...	8:00 AM-3:00 PM	Continental 4
S10: Integrating Genomics with Comparative Vision Research of the Invertebrates	8:00 AM-3:00 PM	Continental 5
S11: Phenotypic Plasticity and the Evolution of Gender	8:00 AM-3:00 PM	Continental 6
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 112: Morphology & Performance	8:00-9:40 AM	Imperial A
Session 113: Chemical Safety	8:00-9:40 AM	Plaza A
Session 114: Legged Locomotion	8:20-9:40 AM	Imperial B
Session 115: Human Performance	8:00-9:40 AM	Plaza B
Session 116: Complementary to Symposium: Assembling the Poriferan Tree of Life	8:00-11:20 AM	Yosemite B
Session 117: Stress	8:00-9:40 AM	Yosemite A
Session 118: Genomics, Morphogenesis, and Development of Function	8:00-9:45 AM	Yosemite C
Session 119: Behavioral Ecology: Trophic Interactions	8:20-10:00 AM	Continental 2/3
Session 120: Invertebrate Phylogenetics I	8:20-9:20 AM	Continental 8
Session 121: Invertebrate Phylogenetics II	9:40-11:20 AM	Continental 8
Session 122: Evo Devo Biology: Neurogensis, Skeletogenesis, Germline Specification	8:00-9:40 AM	Continental 1
Session 123: Color and Thermal Biology I: Thermal Biology	8:00-10:00 AM	Continental 7
Session 124: Color and Thermal Biology II: Color	10:20-11:40 AM	Continental 7
Session 125: Immunology I	8:00-10:00 AM	Continental 9
Session 126: Immunology II: Immune Responses to Pathogens	10:20 AM-Noon	Continental 9
Session 127: Crayfish Biology	8:20-11:20 AM	Golden Gate 6/7
Session 128: Conservation Biology	10:00 AM-Noon	Plaza A
Session 129: Morphology & Kinematics	10:00 AM-Noon	Imperial A
Session 130: Axial Bending During Swimming	10:00-11:40 AM	Imperial B
Session 131: Sensorimotor	10:00-11:40 AM	Plaza B
Session 132: Nutrition - Energetics I	10:00 AM-Noon	Yosemite A
Session 133: Body Size and Allometry	10:20-11:40 AM	Yosemite C
Session 134: Communication: Signal Function	10:20 AM-Noon	Continental 2/3
Session 135: Evolutionary Developmental Biology: Vertebrate Morphogenesis II	10:00 AM-Noon	Continental 1
Session 136: Biodiversity	1:00-3:00 PM	Plaza A
Session 137: Vertebrate Development and Ontogeny	1:00-2:40 PM	Imperial A
Session 138: Lizard Locomotion	1:00-3:00 PM	Imperial B
Session 139: Ionic Regulation	1:00-3:00 PM	Yosemite B
Session 140: Nutrition- Energetics II	1:00-3:00 PM	Yosemite A
Session 141: Evolutionary Physiology	1:00-3:00 PM	Yosemite C
Session 142: Skulls & Teeth III	1:00-3:00 PM	Continental 2/3
Session 143: Cardiovascular Physiology	1:00-2:40 PM	Continental 8
Session 144: Evo Devo Biology: Vertebrate Morphogenesis III - From Head to Toes	1:00-3:00 PM	Continental 1
Session 145: Neurobiology: Sensory	1:00-2:20 PM	Continental 7
Session 146: Neuro Endocrinology	1:00-3:00 PM	Continental 9
Session 147: Locomotion on Granular Media	1:00-3:00 PM	Golden Gate 6/7
Session 148: Form & Function, Part II	1:00-3:00 PM	Plaza B
SPECIAL LECTURE		
Moore Lecture	3:00-4:00 PM	Continental 4-6
COMMITTEE & BOARD MEETINGS		
Executive Committee	7:00-9:00 AM	Grand A
SPDAC Meeting	Noon-1:00 PM	Golden Gate 2
WORKSHOPS AND PROGRAMS		
Grand Challenges Update	Noon-1:00 PM	Continental 1
TALX: Teaching and learning roundtable: vision and change in intro biology	Noon-1:30 PM	Golden Gate 4/5
SOCIAL EVENTS		
Society-wide Social in Honor of Students and Post Docs	4:00-6:00 PM	Grand Ballroom

MONDAY PROGRAM
SYMPOSIA

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

8:00 am - 3:00 pm
Continental Ballroom 4

Symposium S9: Physiological Responses to Simultaneous Shifts in Multiple Environmental Stressors: Relevance in a Changing World

Sponsored by: DCPB, DEE, DIZ

Organized by: Anne Todgham, Jonathon Stillman

8:00 AM	S9-1.1	DCPB	*Sinclair BJ, MacMillan HA, Ferguson LV, Salehipour G; University of Western Ontario*	Cross-tolerance and cross-talk in the cold: relationships between low temperature and other stressors in insects
8:30 AM	S9-1.2		*Klok CJ, Harrison JF; Arizona State University*	Interactions between temperature and oxygen and the evolution of body size in invertebrates
9:00 AM	S9-1.3		*Buckley LB; University of North Carolina, Chapel Hill*	Body temperatures along altitudinal and latitudinal gradients: interactions between phenotypes and multiple environmental stressors
9:30 AM	S9-1.4	DEDB	*Byrne M; University of Sydney, Australia*	Impacts of warming and ocean acidification on growth of larval and juvenile sea urchins - from the poles to the tropics
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S9-1.5		*Sanford E, Gaylord B; Bodega Marine Laboratory, University of California Davis*	Interactive effects of ocean acidification and predation on coastal molluscs
11:00 AM	S9-1.6	DCPB	*Sokolova I; University of North Carolina at Charlotte*	Energy homeostasis as a tool to integrate the effects of multiple stressors in animals
11:30 AM	S9-1.7	DCPB	*Hofmann GE; University of California Santa Barbara*	Physiological response and local adaptation of marine invertebrates to natural variation in the ocean acidification seascape
NOON LUNCH BREAK				
1:00 PM	S9-2.1	DCPB	*Verberk WCEP, Bilton DT, Calosi P, Spicer JI; Radboud University Nijmegen, The Netherlands, Plymouth University, UK*	How oxygen and temperature changes across latitude and elevation determine ecological distribution patterns
1:30 PM	S9-2.2	DCPB	*Fangue NA, Hasenbein M, Komoroske L, Connon RE*; University of California Davis*	Physiological and behavioral responses to multiple environmental stressors in San Francisco Bay-Delta fishes: linking mechanism to management
2:00 PM	S9-2.3		*Whitehead A, Pilcher W, Mayer G, Dubansky B, Galvez F; University of California Davis, Louisiana State University, Texas Tech University*	Integrative biological footprint of the Deepwater Horizon oil spill in the laboratory and field
2:30 PM	S9-2.4	DCPB	*Schulte PM; University of British Columbia*	Evolution of tolerance to multiple interacting stressors in fish

8:00 am - 3:00 pm
Continental Ballroom 5

Symposium S10: Integrating Genomics with Comparative Vision Research of the Invertebrates

Sponsored by: DIZ, DNB, AMS

Organized by: Todd H. Oakley, Jeanne M. Serb

8:00 AM	S10-1.1	DPCB	*Oakley TH; UCSB*	Evolutionary origins of an animal light interaction tool-kit
8:30 AM	S10-1.3		*Jékely G; Max Planck Institute for Developmental Biology, Germany*	Mechanism of phototaxis in marine zooplankton and origin of simple visual circuits
9:00 AM	S10-1.3	DEDB	*Passamaneck YJ, Martindale MQ; University of Hawaii*	Opsins in brachiopod embryos and larvae

9:30 AM BREAK IN EXHIBIT HALL				
10:00 AM	S10-1.4	DIZ	*Plachetzki DC; UC Davis*	The control of cnidocyte discharge by light
10:30 AM	S10-1.5		*Ullrich-Luter E, Arnone MI*; University of Bonn and Natural History Museum, Berlin, Stazione Zoologica Anton Dohrn, Napoli*	Watch your steps! Opsins and photoreceptors in sea urchin tube feet
11:00 AM	S10-1.6	DEE	*Porter ML, Caldwell RL, Oakley TH, Cronin TW; University of South Dakota, University of California, Berkeley, University of California, Santa Barbara, University of Maryland Baltimore County*	Transcriptomics and the evolution of stomatopod visual systems
11:30 AM	S10-1.7		*Briscoe A, Yuan F; University of California, Irvine*	Physiological genomics of color vision in butterflies
NOON LUNCH BREAK				
1:00 PM	S10-2.1	DEDB	*Protas ME, Trontelj P, Patel NH; University of California, San Francisco, University of Ljubljana, University of California, Berkeley*	Multiple mechanisms of eye reduction within a single population of the cave crustacean, *Asellus aquaticus*
1:30 PM	S10-2.2		*Friedrich M; Wayne State University*	Deep transcriptome insights into cave beetle eyes
2:00 PM	S10-2.3	DNB	*Serb JM, Krause AJ; Iowa State University*	Uncovering gene family expansion and molecular convergence of the photoreceptive protein opsin in scallop (Bivalvia: Pectinidae)
2:30 PM	S10-2.4	DEDB	*Rivera AS, Sajuthi A, Carillo-Zazueta B, Lampeh R, Speiser D, Hu B; University of the Pacific, University of Kansas Natural History Museum, University of California, Santa Barbara*	Gene expression differences underlying sexual dimorphism in ostracod eyes: Insights from transcriptomics

8:00 am - 3:00 pm
Continental Ballroom 6

Symposium S11: Phenotypic Plasticity and the Evolution of Gender

Sponsored by: SICB Society-Wide Symposium
Organized by: Janet Leonard

8:00 AM	S11-1.1	DAB	*Leonard JL; University, of California-Santa Cruz*	Williams's Paradox and the role of phenotypic plasticity in sexual systems
8:30 AM	S11-1.2	DEDB	*Diggle PK; Univeristy of Colorado, Boulder*	Metamers, modules, phenotypic plasticity, and the evolution of diverse sexual systems in plants
9:00 AM	S11-1.3		*Lorenzi MC, Sella G; University of Turin, Italy*	Gonochorists or hermaphrodites? Gonochoric worms with flexible sex allocation
9:30 AM	S11-1.4		*Yusa Y, Sawada K, Yamaguchi S; Nara Women's University, The Graduate University for Advanced Studies, Kyushu University*	Diverse and plastic sexual systems in barnacles
10:00 AM BREAK IN EXHIBIT HALL				
10:30 AM	S11-1.5		*Walsh MR; University of Texas Arlington*	Environmental influences on plasticity in sexual investment in Daphnia
11:00 AM	S11-1.6	DPCB	*Collin R; STRI, Panama*	Genetic, environmental and social control of sex change in molluscs
11:30 AM	S11-1.7		*Erisman B; Scripps Institution of Oceanography, UC San Diego*	Evolution of hermaphroditism in fishes
NOON LUNCH BREAK				
1:00 PM	S11-2.1		*Godwin J, Luckenbach JA, Holler BL, Daniels HV, Borski RJ; North Carolina State University, National Oceanic and Atmospheric Administration*	Environmental influences on sex determination in flatfishes

1:30 PM	S11-2.2	DCE	*Rhen T, Schroeder A, Fagerlie R, Legge H, Wessman L, Heimler J, Bonapace-potvin M, Zhang K; University of North Dakota*	Genetics, genomics, and the evolution of temperature-dependent sex determination in reptiles
2:00 PM	S11-2.3		*Case AL; Kent State University*	The advantages of gynodioecy vs. dioecy in plants
2:30 PM	S11-2.4	DEE	*Ah-King M, Gowaty PA; Uppsala University, University of California, Los Angeles*	A reaction norm perspective on sex and mate choice

MONDAY PROGRAM
MORNING SESSIONS

8:00 - 9:40 am
Imperial A

Session 112: Morphology & Performance

Chair: Philip J. Bergmann

8:00 AM	112.1	DEE	*Wilson RS, Carter AJ; The University of Queensland, University of Cambridge*	Optimal performance theory: developing a framework for understanding whole-animal performance in the wild
8:20 AM	112.2	DCB	*Berman GJ, Choi D, Bialek W, Shaevitz JW; Princeton University*	Quantifying inter-specific variations through the automated discovery of stereotyped behaviors
8:40 AM	112.3	DEE	*Bergmann PJ, McElroy EJ; Clark University, College of Charleston*	Many-to-many mapping of phenotype on function, and the F-array
9:00 AM	112.4	DEE	*Cameron SF, Wilson RS; Uni of QLD, Australia*	Sexual dimorphism of *Hemidactylus frenatus* along a latitudinal cline: testing Rench's rule in an ectotherm with intense male-male competition in lower latitudes
9:20 AM	112.5		*Mlot NJ, Morrison J, Leamy M, Tovey CA, Hu DL; Georgia Tech, Atlanta*	Assembly and disassembly of fire ant bivouacs

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Plaza A

Session 113: Chemical Safety

Chair: Thea M. Edwards

8:00 AM	113.1	DCE	*Edwards TM; Louisiana Tech University*	Estrogens and plants
8:20 AM	113.2	DEE	*Rack JM; University of Connecticut*	*Ambystoma maculatum* larvae evolve to recognize local predator cues
8:40 AM	113.3	DEE	*Samuni-Blank M, Izhaki I, Dearing MD, Karasov WH, Gerchman Y, Kohl K, Lymberakis P, Kurnath P, Arad Z; Technion, Haifa, University of Haifa, University of Utah, Salt Lake City, University of Wisconsin, Madison, Haifa University in Oranim, Natural History Museum of Crete*	Divergent behavioral strategies in three congeneric rodents for dealing with fruit toxins
9:00 AM	113.4	DEE	*Kohl KD, Weiss RB, Dale C, Dearing MD; University of Utah*	Gut microbes facilitate consumption of toxic diets by herbivores
9:20 AM	113.5	DEE	*Wilson JK, Woods HA; University of Montana*	Abiotic noise in volatile signaling by plants

9:40 AM BREAK IN EXHIBIT HALL

8:20 - 9:40 am
Imperial B

Session 114: Legged Locomotion

Chair: Simon Wilshin

8:20 AM	114.1	DCB	*Birn-Jeffery AV, Hubicki C, Blum Y, Hurst J, Daley MA; Royal Veterinary College, UK, OSU, Oregon*	Don't break a leg: injury prevention, robustness and stability of legged locomotion

8:40 AM	114.2	DCB	*Wilshin SD, Daley MA; Royal Veterinary College*	Continuous metrics for classification of bipedal gaits and predictions of gait transition fine structure in turkeys
9:00 AM	114.3	DVM	*Heers AM, Dial KP; University of Montana*	Wings versus legs: mechanistic underpinnings of variation in locomotor strategies among birds
9:20 AM	114.5	DCB	*Burden SA, Revzen S, Moore TY, Sastry SS, Full RJ; University of California, Berkeley, University of Michigan, Harvard University*	Using reduced-order models to study dynamic legged locomotion: parameter identification and model validation

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:40 am
Plaza B

Session 115: Human Performance

Chair: David Lee

8:00 AM	115.1	DCB	*Hubel TY, Usherwood JR; Royal Veterinary College*	Torques in running and feet in walking - how deviations from point mass models give insight into bipedal locomotion
8:20 AM	115.2	DEE	*Hunter A, Wilson RS; The University of Queensland*	Can we improve a footballer's kicking performance using optimisation theory?
8:40 AM	115.3	DCB	*Jindrich DL, Qiao M; California State University, San Marcos, Arizona State University*	Compensations for increased rotational inertia during human cutting turns
9:00 AM	115.4	DVM	*Lailvaux SP, Wilson R, Kasumovic MM; University of New Orleans, University of Queensland, University of New South Wales*	Sex-specific aging of performance in male and female professional basketball players
9:20 AM	115.5	DCB	*Lee DV, Comanescu TN, Bertram JEA; University of Nevada Las Vegas, University of Calgary*	Collision-based analysis of human walking versus running with and without additional vertical loading

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 11:20 am
Yosemite B

Session 116: Complementary to to Symposium: Assembling the Poriferan Tree of Life

Co-Chairs: Jose Lopez, Sally Leys

8:00 AM	116.1	DPCB	*Collins AG, Dohrmann M; National Systematics Lab, Smithsonian*	Can greater relative complexity in skeletal structure explain why hexactinellid molecular-based phylogenies correspond better to traditional systematics, as compared to other sponge groups?
8:20 AM	116.2	DIZ	*Lopez JV, Cuvelier M, Gilbert JA, Larsen P, Willoughby D, Wu Y, Blackwelder P, McCarthy PJ, Smith E, Vega Thurber R; Ocean Center - Nova Southeastern University, Florida International University, University of Chicago, Argonne National Laboratory, Ocean Ridge Biosciences, Harbor Branch Oceanographic Institute at Florida Atlantic University, Oregon State University*	Synergistic effects of crude oil and corexit dispersant on a sponge holobiont system
8:40 AM	116.3		*Pomponi SA, Jevitt A, Patel J; Florida Atlantic University, Fort Pierce, Florida State University, Tallahassee*	Sponge hybridomas: applications and Implications
9:00 AM	116.5		*Pett W, Lavrov D; Iowa State University*	A mitochondrial sponge gene unique among animals: the evolution of the Tat pathway in *Oscarella*

9:20 AM	116.6	DIZ	*Wulff JL; Florida State University*	Sponge recovery after extreme mortality events: taxonomic and morphological patterns in regeneration vs. recruitment

9:40 AM BREAK IN EXHIBIT HALL

10:00 AM	116.7	DPCB	*Sperling EA, Feuda R, Rota-Stabelli O, Robinson J, Peterson KJ, Pisani D; Harvard University, NUI-Maynooth, Fondazione Edmund Mach, Dartmouth College*	New insights into the position of the metazoan root from multi-criterion outgroup selection and microRNAs
10:20 AM	116.8	DEDB	*Hill A, Rivera A, Winters I, Rued A, Ding S, Posfai D, Gentile L, Webb E, Trok W; University of Richmond, University of the Pacific, Stanford University School of Medicine, University of Pittsburgh Medical Center, University of Oxford, England*	The freshwater sponge, *Ephydatia muelleri* as a model to study the evolution of developmental regulatory programs
10:40 AM	116.9	DIZ	*Bond C; Greensboro College, North Carolina*	Comparative time-lapse studies of coughing calcareous sponges
11:00 AM	116.10	DIZ	*Ludeman DA, Reidenbach MA, Leys SP; University of Alberta, University of Virginia*	Testing passive flow and oxygen consumption in three temperate demosponges

11:20 AM LUNCH BREAK

8:00 - 9:40 am
Yosemite A

Session 117: Stress

Co-Chairs: Haruka Wada, S.J. Schoech

8:00 AM	117.1	DCE	*Wada H, Allen NR, Kriengwatana B, Schmidt KL, Soma KK, MacDougall-Shackleton SA; Auburn University, University of Western Ontario, University of British Columbia*	Corticosterone and fitness: effects of incubation temperature
8:20 AM	117.2	DCE	*Jones BC, Bebus SE, Small TW, Bateman PW, Schoech SJ; University of Memphis, Archbold Biological Station*	Corticosterone responsiveness and behavioral phenotype reveal learned antipredator behavior is sex specific in Florida scrub-jays (*Aphelocoma coerulescens*)
8:40 AM	117.3	DAB	*Grace JK, Anderson DJ; Wake Forest University*	Personality, stress, and fitness in a long-lived seabird
9:00 AM	117.4		*McCormick GL, Langkilde T; Pennsylvania State University*	Immune costs of the physiological stress response are affected by cross-generational exposure to stress
9:20 AM	117.5	DCE	*Telemeco RS, Addis EA; Iowa State University, Gonzaga University*	Are extreme temperatures physiologically stressful? An experimental examination of thermal variation on corticosterone levels in two species of alligator lizard

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 9:45 am
Yosemite C

Session 118: Genomics, Morphogenesis, and Development of Function

Co-Chairs: Chris B. Cameron, Andy Baxevanis

8:00 AM	118.1	DEDB	*Walker JF, Zanis MJ; Purdue University*	The evolution of mononucleotide repeats and gene stability in eukaryotes
8:20 AM	118.2	DCPB	*Koman J, Wootton TJ, Tomanek L; Cal Poly San Luis Obispo*	Proteomic analysis of naturally occurring heat stress in field-acclimatized *Mytilus californianus*
8:40 AM	118.3	DPCB	*Correa S, Zobel-Thropp P, Binford G, Suter R, Garb JE; University of Massachusetts Lowell, Lewis and Clark College, Vassar College*	Exploring the silk and the silk-like venom from the spitting spider *Scytodes thoracica*

9:00 AM	118.4	DIZ	*Cameron CB, Bishop C; University de Montreal, St. Francis-Xavier University*	Biomineral ultrastructure, elemental constitution and genomic analysis of biomineralization-related proteins in hemichordates
9:20 AM	118.5	DCPB	*Gillooly JF; University of Florida*	Physiological constraints on the genome size of species
9:40 AM	118.6	DEE	*Bezault E, Renn S; Reed College, Portland (OR)*	Analysis of copy number variation across African cichlid genomes

10:00 AM BREAK IN EXHIBIT HALL

8:20 - 10:00 am
Continental Ballroom 2/3

Session 119: Behavioral Ecology: Trophic Interactions

Chair: Travis Robbins

8:20 AM	119.1		*Robbins TR, Freidenfelds NA, Langkilde T; Penn State*	Native predator eats invasive toxic prey: evidence for increased incidence of consumption rather than aversion-learning
8:40 AM	119.2	DAB	*Thompson DM, Ligon DB; Missouri State University*	Rocky raccoon must die: nest predation patterns in a population of reintroduced alligator snapping turtles
9:00 AM	119.3	DAB	*Steffenson MM, Formanowicz DR; University of Texas at Arlington*	Autotomy and its effects on wolf spider foraging success
9:20 AM	119.4	DCPB	*Ben-Hamo M, Burns DJ, Bauchinger U, Mukherjee S, Embar K, Pinshow B; Ben-Gurion University of the Negev, University of KwaZulu-Natal*	Behavioral and physiological responses during feather replacement in house sparrows
9:40 AM	119.5	DEE	*Riddell EA, Sears MW; Clemson University*	Extending thermal games of predator-prey interactions in a spatially-explicit context

10:00 AM BREAK IN EXHIBIT HALL

8:20 - 9:20 am
Continental Ballroom 8

Session 120: Invertebrate Phylogenetics I

Co-Chairs: Alan Kohn, Katelyn MacNeil

8:20 AM	120.1	DIZ	*Kohn AJ; University of Washington*	Morphology, molecules, molluscs, and modern monographs: a revisionary systematics case study
8:40 AM	120.2	DPCB	*Knutson VL, Gosliner T; San Francisco State University, California, California Academy of Sciences, San Francisco*	New species, same damn color: benefits of using molecular data to identify diversity in a poorly studied group of sea slugs
9:00 AM	120.3		*Reft AJ, Daly M; Ohio State University*	Small and mighty: the phylogenetic significance of mastigophore nematocysts in sea anemones

9:20 AM BREAK IN EXHIBIT HALL

9:40 - 11:20 am
Continental Ballroom 8

Session 121: Invertebrate Phylogenetics II

Co-Chairs: Christopher Mah, Ashlee H. Rowe

9:40 AM	121.1	DEE	*Holley JC, Wild AL, Suarez AV; University of Illinois, Urbana-Champaign*	The pattern of colony structure evolution in the ant genus *Linepithema*
10:00 AM	121.2		*Larson PG, Daly M; The Ohio State University*	Evolution of parental care in Endomyarian sea anemones
10:20 AM	121.3	DIZ	*Gonzales CM, Gosliner TM; Duke University, California Academy of Sciences*	Resolving the genus *Philine*: description and phylogenetic placement of six previously undocumented species (Gastropoda: Opisthobranchia)
10:40 AM	121.4		*Mah C, Foltz D; NMNH, Washington DC, Louisiana State University*	Biogeographic insights from molecular phylogenetics of Pacific Northwest sea stars

11:00 AM	121.6	DEE	*Grajales A, Rodriguez E; American Museum of Natural History*	Population genetics of the symbiotic sea anemone Aiptasia sp.

11:20 AM LUNCH BREAK

8:00 - 9:40 am
Continental Ballroom 1

Session 122: Evolutionary Developmental Biology: Neurogensis, Skeletogenesis, Germline Specification

Chair: Neva Meyer

8:00 AM	122.1	DEDB	*Tolchin S, Meyer NP*; Clark University*	Notch signaling during neural development in the annelid *Capitella teleta*
8:20 AM	122.2	DEDB	*Nguyen J, Heyland A*; University of Guelph*	Histamine functions and distribution in gastrulation and skeletogenesis of the sea urchin S. purpuratus
8:40 AM	122.3	DEDB	*Schwager EE, Meng Y, Extavour CG; Harvard University*	Spider *vasa* is required for early embryogenesis but not for germline specification
9:00 AM	122.4	DEDB	*Laslo M, Angelini DR; American University, Colby College*	Gene interactions in the sex differentiation pathway of *Oncopeltus fasciatus* (Heteroptera)
9:20 AM	122.5	DEDB	*MacNeil KEA, Patel D, Taylor V, Bishop CD, Burke RD; St. Francis-Xavier University, Antigonish, Nova Scotia, University of Victoria, B.C.*	The canonical echinoid apical organ evolved from within the euechinoids: evidence from the cidaroid *Eucidaris tribuloides*

9:40 AM BREAK IN EXHIBIT HALL

8:00 - 10:00 am
Continental Ballroom 7

Session 123: Color and Thermal Biology I: Thermal Biology

Sponsored by: Pacific Consultants Co., LTD, Japan, The Crustacean Society, Japan Crayfish Club

Chair: Alison R. Egge

8:00 AM	123.1	DEE	*Condon C, Cooper B, Yeaman S, Angilletta M; Arizona State University, Indiana University, University of British Columbia*	Evolution of thermal plasticity in changing environments
8:20 AM	123.2	DCPB	*Williams CM, Watanabe M, Morgan T, Edison AS, Boroujerdi A, Hahn DA; University of Florida, Gainesville, Claflin University, Orangeburg, Kansas State University, Manhattan*	Selection for cold tolerance alters the maintenance of metabolic homeostasis during cold exposure in *Drosophila melanogaster*
8:40 AM	123.3		*Egge AR, Noh S, Eller OC, Hahn DA, Morgan TJ; Kansas State University, University of Florida*	Physiological and genomic variation in rapid cold hardening and developmental acclimation in *Drosophila melanogaster*
9:00 AM	123.4	DCPB	*Maclean HJ, Higgins JK, Kingsolver JG, Buckley LB; University of North Carolina Chapel Hill*	Responses to climate change: morphology and behavior, in Rocky Mountain *Colias species*
9:20 AM	123.5		*Noh S, Hahn DA, Morgan TJ; Kansas State University*	The genetics of cold tolerance in fruit flies dissected using bulk segregant analysis of artificial selection lines
9:40 AM	123.6		*Snyder S, Kohin S, Childers J, Franks PJS; Scripps Institution of Oceanography, UCSD, Southwest Fisheries Science Center*	Thermal physiology of albacore tuna, as revealed through archival tagging data

10:00 AM BREAK IN EXHIBIT HALL

10:20 - 11:40 am
Continental Ballroom 7

Session 124: Color and Thermal Biology II: Color

Chair: Alison R. Egge

10:20 AM	124.1	DEE	*Brown AC, McGraw KJ, Clotfelter ED; University of Massachusetts Amherst, Amherst College, Arizona State University*	Dietary carotenoids increase non-carotenoid coloration of female convict cichlids (*Amantitlania nigrofasciata*)
10:40 AM	124.2	DEE	*Miles DB; Ohio University*	Covariation of dorsal pattern, locomotor performance and escape behavior
11:00 AM	124.3	DEE	*Krauszer M, Leiken A, Elliott JK*; University of Puget Sound, Tacoma*	Ontogenetic color variation in the sea star *Pisaster ochraceus* as an adaptation to avoid predation by gulls
11:20 AM	124.4	DEE	*Hill GE, Johnson JD; Auburn University*	The biochemical basis for honest signaling via carotenoid pigments

11:40 AM LUNCH BREAK

8:00 - 10:00 am
Continental Ballroom 9

Session 125: Immunology I

Chair: Travis E. Wilcoxen

8:00 AM	125.1	DCPB	*Wilcoxen TE, Horn DJ, Flamm JC, Guerra DF, Hogan BM, Hubble CN, Huber SJ, Knott MH, Salik F, Wassenhove SJ; Millikin University*	Physiological and ecological impacts of bird feeding activities
8:20 AM	125.2	DCPB	*Flies AS, Holekamp KE, Grant CK, Mansfield LS; Michigan State University, Custom Monoclonals International*	Immune defenses of captive and wild spotted hyenas (Crocuta crocuta): a comparative analysis
8:40 AM	125.3	DCPB	*Killpack TL, Carrel E, Karasov WH; University of Wisconsin, Madison, MMSD High School Science Internship Program*	Impact of food restriction on immune function in altricial house sparrow nestlings
9:00 AM	125.4	DCPB	*Iseri VJ, Klasing KC*; University California, Davis*	The cost of an immune response to Escherichia coli in Gallus gallas
9:20 AM	125.5	DCE	*Carlton ED, Cooper CL, Demas GE; Indiana University, Bloomington, Claflin University, Orangeburg*	Metabolic signals differentially regulate trade-offs between the reproductive and immune systems in female Siberian hamsters
9:40 AM	125.6	DCPB	*Adelman JS, Wilson AF, Hopkins WA, Hawley DM; Virginia Tech*	Temperature-induced feeding increases do not augment pathogen deposition on bird feeders: potential consequences for climate-disease relationships

10:00 AM BREAK IN EXHIBIT HALL

10:20 am - Noon
Continental Ballroom 9

Session 126: Immunology II: Immune Responses to Pathogens

Chair: James S. Adelman

10:20 AM	126.1	DCPB	*Gammill WM, Rollins-Smith LA*; Vanderbilt University School of Medicine*	Antimicrobial peptide defenses of southern leopard frogs (*Rana sphenocephala*) against the pathogenic chytrid fungus, *Batrachochytrium dendrobatidis*
10:40 AM	126.2	DCPB	*Fites JS, Parker Collier SM, Oswald-Richter KA, Ramsey JR, Gammill WM, Rollins-Smith LA; Vanderbilt University, James Madison University*	*Batrachochytrium dendrobatidis*, an emergent pathogen linked to amphibian declines, produces factors that inhibit adaptive immunity in amphibians and mammals
11:00 AM	126.3	DCPB	*Menzel LP, Bigger CH; Florida International University*	Antibacterial peptides from the caribbean octocoral *Swiftia exserta*

11:20 AM	126.4		*Barak V, Brown C, Fassbinder-orth C; Creighton University, University of Tulsa*	Avian adaptive immune responses to Buggy Creek Virus (Togaviridae: *Alphavirus*) and its arthropod vector, the swallow bug (*Oeciacus vicarius*)
11:40 AM	126.5		*Rainwater E, Fassbinder-orth C; Creighton University*	Experimental inoculation of nestling houses sparrows (*Passer domesticus*) with Buggy Creek virus

NOON LUNCH BREAK

8:20 - 11:20 am
Golden Gate 6/7

Session 127: Crayfish Biology

Chair: Tadashi Kawai

8:20 AM	127.1		*Scholtz G, Martin P*; Humboldt-Universitaet zu Berlin*	Happy birthday marmokrebs! Ten years of research on an enigmatic crayfish
8:40 AM	127.2		*Martin P; Humboldt University, Berlin*	The relevance of parthenogenesis to the role of Marmorkrebs as a model organism and potential invader
9:00 AM	127.3		*Chucholl C; University of Ulm, Germany*	Marmorkrebs gaining ground in Europe: the role of the pet trade as invasion pathway
9:20 AM	127.4		*Garza De Yta A; Aquaculture Global LLC*	Developing markets for a new product: aquacultured red claw in Mexico
9:40 AM	127.5		*Gherardi F; University of Florence*	Integrating animal behavior and conservation biology: a case study of invasive crayfish

10:00 AM BREAK IN EXHIBIT HALL

10:20 AM	127.6		*Feria TP; The University of Texas-Pan American*	Predicting the range expansion of a partenogenic crayfish invader
10:40 AM	127.7	DIZ	*Faulkes Z; The University of Texas-Pan American*	Fifty states of grey market: Assessing the pet trade for parthenogenetic marbled crayfish, Marmorkrebs, in North America
11:00 AM	127.8	DIZ	*Crandall KA; George Washington University*	Assembling the Tree of Life with a special focus on the freshwater crayfish

11:20 AM LUNCH BREAK

10:00 am - Noon
Plaza A

Session 128: Conservation Biology

Chair: Michelle L. Beck

10:00 AM	128.1	DEE	*Howey CAF, Roosenburg WM; Ohio University*	The effects of prescribed burning on the landscape and reptile abundance
10:20 AM	128.2		*Macias NA, Colon-Gaud C; Georgia Southern University*	Population differentation of an invasive crayfish *Cherax quadricarinatus* on the island of Puerto Rico
10:40 AM	128.3	DEE	*Sette CM, Vredenburg VT, Zink AG; San Francisco State University*	Temporal and spatial variation of cytridiomycosis across Batrachoseps attenuatus populations
11:00 AM	128.4		*Beck ML, Hopkins WA, Hawley DM; Virginia Tech*	The effects of trace element exposure on tree swallow reproductive success and stress response following remediation of a coal-fly ash spill
11:20 AM	128.5	DEE	*Coon CAC, Brace AJ, Martin LB; University of South Florida, Tampa*	Resistance and tolerance in invasive and native songbirds in Kenya: evidence of parasite spillback
11:40 AM	128.6	DEE	*Voyles J, Poorten T, Toothman M, Knapp R, Briggs C, Vredenberg V, Rosenblum EB; University of California, Berkeley, University of California, Santa Barbara, San Francisco State Univ*	Focusing on survivors: understanding how some amphibian populations persist beyond chytridiomycosis outbreaks

NOON LUNCH BREAK

10:00 am - Noon
Imperial A

Session 129: Morphology & Kinematics

Chair: Margaret Rubega

10:00 AM	129.1	DCB	*Anderson CV, Tolley KA; University of South Florida, Tampa, South African National Biodiversity Institute, Cape Town*	Contrasting thermal effects on movements powered by elastic recoil and muscle contraction in chameleons living along a temperature gradient
10:20 AM	129.2	DVM	*Rico-Guevara A, Rubega MA; University of Connecticut*	Tongue loading and intraoral transport of nectar in hummingbirds
10:40 AM	129.3	DVM	*Burle MH, Rico-Guevara A, Rubega MA, Lank D; Simon Fraser University, University of Connecticut*	A hummingbird tongue in a shorebird head: Tuamoto sandpipers are nectar-feeders
11:00 AM	129.4		*Kornev KG, Lehnert M, Monaenkova D, Andrukh T, Beard E, Adler P; Clemson University, Kent State University, Geogia Institute of Technology*	Wetting and fluid acquisition by butterfly proboscis
11:20 AM	129.5	DCB	*Berg O, Holzman R, Brown MD, Olaivar AF, Muller UK; California State University, Fresno, Tel Aviv University*	Fluid mechanics of the bladderwort feeding strike: 0 to 60 mph in 1 millisecond
11:40 AM	129.6	DCB	*Larabee FJ, Spagna JC, Suarez AV; University of Illinois, Urbana-Champaign, William Paterson University*	Intraspecific variation in morphology and strike kinematics in trap-jaw ants

NOON LUNCH BREAK

10:00 - 11:40 am
Imperial B

Session 130: Axial Bending During Swimming

Chair: Andrea Ward

10:00 AM	130.1	DCB	*Porter ME, Diaz C, Long JH; Vassar College, University of Akron*	Extracellular matrix dominates the mechanical properties of shark vertebral columns in bending
10:20 AM	130.2	DCB	*Wen L, Lauder GV, Weaver JC, Kovac M, Wood RJ; Harvard University*	Hydrodynamics of self-propelling flexible synthetic shark skin membranes
10:40 AM	130.3	DCB	*Huber DR, Noaker DE, Stinson CM, Tate EE, Anderson PA, Berzins IK; The University of Tampa, University of South Florida, Mystic Aquarium, One World, One Water, One Health*	Etiology of spinal deformities in captive sandtiger sharks *Carcharias taurus*
11:00 AM	130.4	DVM	*Ackerly KL, Ward AB; Adelphi University*	Determining the relationship between vertebral morphology and burst swimming performance
11:20 AM	130.5	DCB	*Varshney S, Zolotovsky E, Li YN, Boyce MC, Oxman N, Ortiz C; Massachusetts Institute of Technology*	Morphometric origins of biomechanical flexibility in fish armor

11:40 AM LUNCH BREAK

10:00 - 11:40 am
Plaza B

Session 131: Sensorimotor

Chair: Simon Sponberg

10:00 AM	131.1	DCB	*Sponberg S, Dyhr JP, Hall R, Salcedo M, Daniel TL; University of Washington*	Background luminance alters tracking performance of freely flying hawkmoths revealing variable delays in optomotor processing
10:20 AM	131.2		*Muller T, Windsor SP, Taylor GK; University of Oxford, UK*	Optomotor flight control of hawkmoths in the context of their flight dynamics
10:40 AM	131.3	DVM	*Nelson FE, Dasari V, Hsieh T; Temple University, University of Pennsylvania*	Differential limb function during locomotion on the level and over obstacles in the tarantula

11:00 AM	131.4	DCB	*Ding Y, Sharpe SS, Goldman DI; Georgia Tech*	Emergence of a neuromechanical phase lag in a resistive force dominated medium
11:20 AM	131.6	DVM	*Holman SD, German RZ*; Johns Hopkins University*	Sensorimotor interactions in mammalian feeding

NOON LUNCH BREAK

10:00 am - Noon
Yosemite A

Session 132: Nutrition - Energetics I

Co-Chairs: Thomas Ward Small, Sarah E. DuRant

10:00 AM	132.1	DCE	*Small TW, Bridge ES, Schoech SJ; University of Memphis, University of Oklahoma*	Food supplementation of Florida Scrub-Jay (*Aphelocoma coerulescens*) nestlings: long-term effects on hypothalamic-pituitary-adrenal axis responsiveness
10:20 AM	132.2	DCE	*Braschayko EB, Riley LG; Fresno State University*	The effects of chronic cortisol on appetite in tilapia *Oreochromis mossambicus*
10:40 AM	132.3	DCE	*Duncan CA, Riley LG; Fresno State University*	Direct effects of cortisol on appetite regulation in the brain of tilapia, *Oreochromis mossambicus*
11:00 AM	132.4	DCE	*Durant SE, Hopkins WA, Hepp GR, Romero LM; Tufts University, Virginia Tech, Auburn University*	Energetic constraints and parental care: is corticosterone an important mediator of incubation behavior in a precocial bird?
11:20 AM	132.5	DCE	*Elderbrock EK, Small TW, Schoech SJ; University of Memphis*	Effects of supplemental food and corticosterone treatment on begging and feeding behavior in Florida Scrub-Jays (Aphelocoma coerulescens)
11:40 AM	132.6	DCE	*Dayger CA, Cease AJ, Lutterschmidt DI; Portland State University, University of Sydney, Australia*	Body condition modulates responses to capture stress and exogenous corticosterone in female red-sided garter snakes

NOON LUNCH BREAK

10:20 am - Noon
Yosemite C

Session 133: Body Size and Allometry

Chair: Lars Schmitz

10:20 AM	133.1	DEE	*Durst PAP, Roth VL; Duke University*	Examining factors influencing body size change for insular rodents
10:40 AM	133.2	DEE	*Cox RM, Daugherty C, Price J, McGlothlin JW, Calsbeek R; University of Virginia, Virginia Tech, Dartmouth College*	Proximate and ultimate mechanisms for intraspecific variation in male body size and sexual size dimorphism in the brown anole (*Anolis sagrei*)
11:00 AM	133.3	DEE	*Artacho P, Le Galliard JF; University Austral de Chile, Valdivia, University Pierre et Marie Curie, Paris*	Correlational selection on resting metabolic rate and body mass in the common lizard
11:20 AM	133.4	DCB	*Schmitz L, Motani R, Oufiero CE, Martin CH, McGee MD, Gamarra AR, Lee JJ, Wainwright PC; Claremont McKenna, Pitzer, and Scripps Colleges, University of California, Davis*	Allometry indicates giant eyes of Giant Squid are not exceptional
11:40 AM	133.5	DEE	*Dial KP, Martin TE; University of Montana, Missoula*	Predation correlates of locomotor ontogeny among altricial bird species in Arizona and Borneo: relative development at fledging

NOON LUNCH BREAK

10:20 am - Noon
Continental Ballroom 2/3

Session 134: Communication: Signal Function

Chair: Christopher Cunningham

10:20 AM	134.1	DAB	*Cunningham CB, Nelson AC, Ruff JS, Potts WK; University of Utah*	MUP expression is linked with sociality not competitive ability in male house mice
10:40 AM	134.2	DAB	*Reichard DG, Rice RJ, Schultz EM, Ketterson ED; Indiana University, Bloomington, University of California, Davis*	Whispers of love and war? Inferring the function of low-amplitude song in a songbird
11:00 AM	134.3	DAB	*Brandley NC, Johnson MG, Johnsen S; Duke University*	Reduction of an aposematic signal: the role of microhabitat in North American black widows (*Latrodectus*)
11:20 AM	134.4		*Kubli SP, MacDougall-Shackleton EA*; Western University*	Delusions of immunocompetence: song complexity, song consistency and immune trade-offs in song sparrows
11:40 AM	134.5	DAB	*Lahman SE, Moore PA; Bowling Green State University*	Spatial information in chemical signals: the interaction between odor source and hydrodynamics

NOON LUNCH BREAK

10:00 am - Noon
Continental Ballroom 1

Session 135: Evolutionary Developmental Biology: Vertebrate Morphogenesis II

Chair: Jacqueline Moustakas Verho

10:00 AM	135.1	DEDB	*Moustakas-Verho JE*, Zimm R, Cebrathomas J, Seppälä NK, Kallonen A, Mitchell KL, Hämäläinen K, Salazar-ciudad I, Jernvall J, Gilbert SF; University of Helsinki, Millersville University, Swarthmore College, Departament de Genètica i Microbiologia, Universitat Autònoma de Barcelona*	The origin and loss of periodic patterning in the turtle shell
10:20 AM	135.2		*Piekarski N, Hanken J; Harvard University*	Neural crest derivation of the bony skull of the Mexican axolotl and its implications for vertebrate skull evolution
10:40 AM	135.3	DEDB	*Le Pabic P, Ng CL, Schilling TF; University of California, Irvine*	Planar polarity controls cartilage morphogenesis during vertebrate jaw development
11:00 AM	135.4	DEDB	*Sefton EM, Piekarski N, Hanken J; Harvard University*	A dual embryonic origin of the vertebrate pharyngeal skeleton
11:20 AM	135.5	DEDB	*Grieco TM; University of California, Berkeley*	*Silurana (Xenopus) tropicalis* as a model system for the evolution of odontogenesis
11:40 AM	135.6	DEDB	*Cass AN, McCune AR; Cornell University*	Are swimbladders inverted lungs? Evidence from developmental genetics

NOON LUNCH BREAK

MONDAY PROGRAM
AFTERNOON SESSIONS

1:00 - 3:00 pm
Plaza A

Session 136: Biodiversity

Co-Chairs: Svetlana Maslakova, Gregory Rouse

1:00 PM	136.1		*Lewis AC, Yanagihara AA, Keil D, Lawley JW, Van Blerk J, Gillan B, Bentlage B, Bely A, Collins AG; University of Maryland, College Park/Smithsonian NMNH, Pacific Biosciences Research Center, HI, Universidade Federal de Santa Catarina, Brazil, The Netherlands, Boynton Beach Community High School, NMFS, NSL*	Establishing the neotype of the enigmatic oceanic box jellyfish *Alatina alata* (Reynaud 1830) (Cnidaria: Cubozoa)
1:20 PM	136.2		*Hiebert TC, Von Dassow G, Hiebert LS, Maslakova SA; Oregon Institute of Marine Biology, University of Oregon*	Long-standing larval mystery solved — *Pilidium recurvatum* is the larva of *Riserius* sp., a basal heteronemertean (Heteronemertea; Pilidiophora; Nemertea)
1:40 PM	136.3		*Kuwahara A, Meyer C, Collins A; Humboldt State University, Smithsonian Institution, NOAA/NMFS Smithsonian Institution*	Assessing Autonomous Reef Monitoring Structures (ARMS) as biodiversity monitors
2:00 PM	136.4	DIZ	*Maslakova SA, Von Dassow G, Hiebert LS, Hiebert TH; Oregon Institute of Marine Biology, University of Oregon*	Biodiversity of nemertean larval forms in NE Pacific
2:20 PM	136.5	DIZ	*Rouse GW, Wilson NG, Vrijenhoek RC; Scripps Institution of Oceanography, Australian Museum, Monterey Bay Aquarium and Research Institute*	First *Xenoturbella* spp. (Xenoturbellida) from the Pacific
2:40 PM	136.6	DIZ	*Trowbridge CD, Little C, Stirling P, Pilling GM, Dlouhy-Massengale BL; Oregon Institute of Marine Biology, Beggars Knoll, UK, Secretariat of the Pacific Community, New Caledonia*	Lusitanian nemertean species in Lough Hyne Marine Reserve, SW Ireland

1:00 - 2:40 pm
Imperial A

Session 137: Vertebrate Development and Ontogeny

Chair: M. C. D'Aguilla

1:00 PM	137.1		*Bouilliart M, Tomkiewicz J, Lauesen P, Adriaens D; Ghent University, Belgium, Denmark Technical University Aqua, Charlottenlund, Billund Aquakultur, Denmark*	The feeding apparatus of first feeding European eel (*Anguilla anguilla*) larvae: a functional morphological approach
1:20 PM	137.2	DVM	*China V, Holzman R; Tel Aviv University, The Interuniversity Institute for Marine Sciences in Eilat*	The crucial effect of hydrodynamics on feeding efficiency during the "critical period" of fish larvae
1:40 PM	137.3	DEE	*D'Aguillo MC, Harold AS; College of Charleston*	Detection and characterization of an ontogenetic diet shift in the Naked Goby, *Gobiosoma bosc*
2:00 PM	137.4	DVM	*Membreno NA, Elsey RM, Owerkowicz T; California State University, San Bernardino, Rockefeller Wildlife Refuge, Louisiana Dept of Wildlife and Fisheries, Grand Chenier*	Importance of the calcareous eggshell to normal skeletal development in the American alligator

2:20 PM	137.5	DCPB	*Richman SE, McWilliams SR, Leafloor JO, Karasov WH; University of Rhode Island, Environment Canada, Winnipeg, University of Wisconsin-Madison*	Growing fast and dying young: influence of forage quality on growth and survival of arctic avian herbivores

1:00 - 3:00 pm
Imperial B

Session 138: Lizard Locomotion

Chair: Jerry Husak

1:00 PM	138.1	DVM	*Husak JF, Keith AR, Wittry BN; University of St. Thomas*	Making Olympic lizards: The effects of sprint and endurance training in lizards
1:20 PM	138.2	DCB	*Mara KR, Hsieh ST; Temple University*	Differentiating slip perturbation recoveries from falls in bipedally-running lizards
1:40 PM	138.3		*Nyakatura JA, Curth S, Fischer MS; Friedrich-Schiller-University, Germany*	Locomotion with constant ventral contact in skinks: a three-dimensional kinematic and dynamic analysis
2:00 PM	138.4	DCB	*Foster KL, Higham TE; University of California, Riverside*	Neuromuscular control of arboreal locomotion: how green anoles (*Anolis carolinensis*) deal with changes in incline and perch diameter
2:20 PM	138.5	DVM	*Mantilla DC, Hoyos JM; Florida International University, Miami, Pontificia Universidad Javeriana, Bogota, Colombia*	Myolgy of the Foot-Leg Mechanical Unit of *Anolis antonii* (Boulenger, 1908) (Squamata, Polychrotidae)
2:40 PM	138.6	DCB	*Libby T, Gudenus V, Harrington P, Full RJ; University of California, Berkeley*	Coordination between inertial and impulsive mechanisms during rapid turns in lizards

1:00 - 3:00 pm
Yosemite B

Session 139: Ionic Regulation

Chair: Justin C. Havird

1:00 PM	139.1	DCPB	*Dudley R, Kaspari M, Yanoviak SP; University of California, Berkeley, University of Oklahoma, University of Louisville*	Lust for salt in the Western Amazon
1:20 PM	139.2	DCPB	*Velotta JP, McCormick SD, O'Neill RJ, Schultz ET; University of Connecticut, United States Geological Survey*	Freshwater transitions and the evolution of osmoregulatory function in alewives (*Alosa pseudoharengus*)
1:40 PM	139.3	DIZ	*Pennoyer KE, Frederich M; Univeristy of New England, Texas A&M University*	Differential physiological tolerance to low salinity exposure in two color morphs of the green crab, *Carcinus maenas*
2:00 PM	139.4	DCPB	*Havird JC, Henry RP, Santos SR; Auburn University*	Using RNA-Seq and gene-specific methods to examine salinity-induced gene expression changes in an anchialine shrimp
2:20 PM	139.5	DCPB	*Harden LA, Williard AS; University of North Carolina, Wilmington*	Seasonal variation in osmotic and metabolic status of diamondback terrapins
2:40 PM	139.6	DCPB	*Yancey PH, Gerringer ME, Cameron J, Hardy K, Chastain R, Bartlett DH; Whitman College, DEEPSEA CHALLENGE, Scripps Institution of Oceanography*	High contents of methylamines and scyllo-inositol as potential piezolytes (pressure counteractants) in muscles of amphipods from the Mariana Trench

1:00 - 3:00 pm
Yosemite A

Session 140: Nutrition- Energetics II

Co-Chairs: Pierre Deviche, Elizabeth MacDougall-Shackleton

1:00 PM	140.1	DCE	*Fowler MA, Debier C, Champagne CD, Crocker DE, Costa DP; University of California Santa Cruz, Université catholique de Louvain, Sonoma State University*	Insulin as a differential regulator of lipid mobilization in fasting northern elephant seals

1:20 PM	140.2		*Dailey RE, Richmond JP; University of North Florida, Jacksonville*	Impact of nutritional status on ghrelin and growth hormone in phocid seal pups
1:40 PM	140.3	DCE	*Davies S, Deviche P; Arizona State University*	The effect of food availability on the seasonal reproductive development of birds
2:00 PM	140.4	DEE	*Hennin HL, Descamps S, Forbes MR, Gilchrist HG, Bêty J, Soos C, Love OP; University of Windsor, Norwegian Polar Institute, Carleton University, Environment Canada, Université du Québec à Rimouski, Environment Canada*	The survival cost of reproductive investment: higher fattening rates lead to increased risk of mortality to a novel disease
2:20 PM	140.5		*Schmidt KL, MacDougall-Shackleton EA, MacDougall-Shackleton SA; Western University, Canada*	The long-term effects of early-life stress on metabolic rates, body composition, and body size in song sparrows
2:40 PM	140.6	DCE	*Rowell TR, Seale LA, Seale AP, Banuelos GS, Grau EG, Riley LG; Fresno State University, University of Hawaii, USDA-ARS*	Effects of Selenium-enriched meal on growth performance, endocrine control of growth and selenoprotein expression in tilapia (*Oreochromis mossambicus*)

1:00 - 3:00 pm
Yosemite C

Session 141: Evolutionary Physiology

Co-Chairs: John M. VandenBrooks, Ana G. Jimenez

1:00 PM	141.1	DEE	*Schwartz TS, Bronikowski AM; Iowa State University*	Plasticity and evolution of stress response networks in divergent life-history phenotypes
1:20 PM	141.2	DPCB	*Shirkey NJ, Garland Jr. T; University of California, Riverside*	Kidney mass of passerine birds in relation to diet, habitat, and phylogeny
1:40 PM	141.3	DCPB	*Vandenbrooks JM, Munoz EE, Weed MD, Harrison JF; Arizona State University, Penn State University, University of Arizona*	Fluctuations in historical oxygen levels impacted insect body size and physiology
2:00 PM	141.4	DCPB	*Jimenez AG, Van Brocklyn J, Williams JB; The Ohio State University*	Cellular metabolic rate is influenced by life-history traits in tropical and temperate birds
2:20 PM	141.5	DCPB	*Downs CJ, Brickner-Braun I, Vatnick I, Pinshow B; Ben-Gurion University of the Negev, Israel, Widener University*	Jirds living in a hypercapnic environment incur energetic costs, but don't appear to care
2:40 PM	141.6	DCPB	*Lopez-Martinez G, Hight SD, Carpenter JE, Hahn DA; University of Florida, USDA-ARS, FL, USDA-ARS, GA*	Physiological conditioning hormesis improves post-irradiation organismal and sexual performance

1:00 - 3:00 pm
Continental Ballroom 2/3

Session 142: Skulls & Teeth III

Chair: Sharlane Santana

1:00 PM	142.1	DEE	*Santana SE, Lynch Alfaro J, Noonan A, Alfaro ME; University of Washington, University of California Los Angeles*	Social life and ecology help sculpt Old World primate faces
1:20 PM	142.2	DVM	*Staab KL, Betancur-r. R, Hernandez LP; George Washington University*	Correlated evolution of jaw muscles and trophic niche in cypriniform fishes
1:40 PM	142.3	DCB	*Tkint T, De Meyer J, Helsen P, Boone M, Verheyen E, Adriaens D; Ghent University, Belgium, Antwerp University, Belgium, UG-CT, Belgium, Royal Belgian Institute of Natural Sciences, Belgium*	Phenotypic plasticity of jaw morphology as a response to diet in two cichlid species and their hybrid
2:00 PM	142.4	DVM	*Kienle SS; San Diego State University*	Hungry, hungry pinnipeds: the comparative feeding morphology of phocid seals

2:20 PM	142.5	DVM	*Erickson GM, Krick BA, Norell MA, Sawyer WG; Florida State University, Tallahassee, University of Florida, Gainesville, American Museum of Natural History, New York*	Complex dental structure and wear biomechanics in hadrosaurid dinosaurs
2:40 PM	142.6	DVM	*Holliday CM, Gant CA, Nesbitt SJ; University of Missouri, University of Washington*	Form, function, and evolution of archosaur mandibular symphyses

1:00 - 2:40 pm
Continental Ballroom 8

Session 143: Cardiovascular Physiology

Chair: Michael Hedrick

1:00 PM	143.1	DCPB	*Slay CE, Enok S, Hicks JW, Wang T; University of California, Irvine, University of Aarhus, Denmark*	Anemia amplifies postprandial cardiac hypertrophy in Burmese pythons
1:20 PM	143.3	DCPB	*Parrilla L, Owerkowicz T, Omori M, Hicks J, Rourke B; California State University, Long Beach, California State University, San Bernardino, University of California, Irvine*	Myocardial stress and Myoglobin expression in cardiac tissue of Hypoxic and Hyperoxic reared *Alligator mississippiensis (A.m.)*
1:40 PM	143.4	DCPB	*Eme J; University of North Texas*	Ontogeny of cardiovascular physiology in embryonic reptiles: capacity for and susceptible periods of environmentally-induced phenotypic plasticity
2:00 PM	143.5	DCPB	*Hedrick MS, Crossley II DA; University of North Texas*	Development of the cardiac and peripheral limbs of the baroreflex in embryonic chickens
2:20 PM	143.6		*Felbinger K, Owerkowicz T, Eme J, Schriner SE, Hicks JW; California State University, San Bernardino, University of North Texas, Denton, University of California, Irvine*	Pulmonary bypass shunt reduces oxidative damage in the American alligator

1:00 - 3:00 pm
Continental Ballroom 1

Session 144: Evolutionary Developmental Biology: Vertebrate Morphogenesis III - From Head to Toes

Chair: Michael Depew

1:00 PM	144.1	DEDB	*Depew MJ, Compagnucci C, Fish J, Debiais M, Coolon M, Bertocchini F, Casane D, Mazan S; UCSF, KCL, CNRS, Universidad de Cantabria, Universite Paris Diderot, Station biologique de Roscoff*	Pattern and polarity in the development and evolution of the gnathostome jaw: both conservation and heterotopy in the branchial arches of the shark, Scyliorhinus canicula
1:20 PM	144.2		*Powder KE, Albertson RC; University Massachusetts*	A novel transcriptional regulator, *lbh*, regulates cranial neural crest development and craniofacial evolution in East African cichlids
1:40 PM	144.3		*Fish JL, Depew MJ, Marcucio RS; University of California, San Francisco*	Developmental influences on variation and asymmetry of the jaw
2:00 PM	144.4	DEDB	*Concannon MR, Albertson RC; UMass Amherst*	Developmental and genetic basis of a morphological novelty in East African cichlids
2:20 PM	144.5	DEE	*Black CR, Berendzen PB; University of Northern Iowa*	The effect of phylogeny on morphological characteristics of the skeleton in pleuronectiformes
2:40 PM	144.6	DVM	*Head JJ, Polly PD; University of Nebraska-Lincoln, Indiana University*	Conservation of primaxial regionalization in the evolution of the snake body form

1:00 - 2:20 pm
Continental Ballroom 7

Session 145: Neurobiology: Sensory

Chair: T. Aran Mooney

1:00 PM	145.1	DNB	*Byers KJ, Riffell JA*, Bradshaw HD; University of Washington, Seattle*	Differential pollinator attraction and processing of flower scent by bumblebees
1:20 PM	145.2	DNB	*Mooney TA, Li S, Ketten DR, Wang K, Wang D; Woods Hole Oceanographic Institution, Hawaii Institute of Marine Biology, University of Hawaii, Institute of Hydrobiology, The Chinese Academy of Sciences*	Hearing of the Yangtze finless porpoise: form and function in an 'unrepresentative' species
1:40 PM	145.3	DCPB	*Bedore CN, McComb DM, Frank TF, Hueter RE, Kajiura SM; Florida Atlantic University, Ocean Classrooms, Nova Southeastern University, Mote Marine Laboratory*	Effects of temperature and anesthesia on visual temporal resolution in elasmobranch fishes
2:00 PM	145.4	DNB	*Krause AJ, Serb JM; Iowa State University*	Functional divergence? Comparing opsin expression in extra-ocular tissues and eyes of the scallop (Pectinidae)

1:00 - 3:00 pm
Continental Ballroom 9

Session 146: Neuro Endocrinology

Co-Chairs: George E. Bentley, Peggy R. Biga

1:00 PM	146.1	DCE	*Bentley GE, Perfito N, Calisi RM; UC Berkeley*	Season- and context-dependent sex differences in melatonin receptor activity in a forebrain song control nucleus: comparison of data from the laboratory and a semi-natural environment
1:20 PM	146.2	DCE	*Henson JR, Freeman DA; University of Memphis*	Different neural target tissues mediate melatonin-dependent regulation of the RFamides, kisspeptin and gonadotrophin-inhibitory hormone, in Siberian hamsters
1:40 PM	146.3	DCE	*Alward BA, Rownd KR, Ball GF; Johns Hopkins University*	Time-course of expression of ZENK in auditory brain regions and gonadotropin-releasing hormone–1 cells in starlings in response to song playback
2:00 PM	146.4	DCE	*Calisi RM, Krause JS, Perfito N, Bentley GE, Wingfield JC; University of California, Davis, University of California, Berkeley*	Transitions in avian parental care: a role for hypothalamic gonadotropin inhibitory hormone (GnIH)
2:20 PM	146.5	DCE	*Pradhan DS, Solomon-Lane TK, Willis MC, Grober MS; Georgia State University*	Rapid neurosteroidal regulation of paternal care
2:40 PM	146.6	DCE	*Biga PR, Froehlich JM; University of Alabama at Birmingham*	Epigenetic regulation of myogenesis in a growth paradigm-specific manner

1:00 - 3:00 pm
Golden Gate 6/7

Session 147: Locomotion on Granular Media

Chair: Chen Li

1:00 PM	147.1	DCB	*Mayorga O, Yip V, Mazouchova N, Goldman DI, Spagna JC; William Paterson University, Georgia Institute of Technology*	Running performance and gait kinematics of a sand-adapted arachnid, *Galeodes granti*

1:20 PM	147.2	DCB	*Hatton RL, Ding Y, Choset H, Goldman DI; Oregon State University, Georgia Institute of Technology, Carnegie Mellon University*	Influence of deformation geometry on sand-swimming performance
1:40 PM	147.3	DCB	*Marvi H, Chrystal R, Shieh J, Mendelson J, Hatton R, Choset H, Goldman D, Hu D; Georgia Institute of Technology, Zoo Atlanta, Oregon State University, Carnegie Mellon University*	Sidewinding snakes on sand
2:00 PM	147.4	DCB	*Kingsbury MA, Gatesy S, Goldman DI; Georgia Institute of Technology, Brown University*	Sensitivity of foot intrusion kinematics during walking on granular media
2:20 PM	147.5	DCB	*Zhang T, Li C, Goldman DI; Georgia Institute of Technology, University of California, Berkeley*	Using terradynamics to understand the role of limb morphology in legged locomotion on granular media
2:40 PM	147.6	DCB	*Li C, Hsieh ST, Umbanhowar PB, Goldman DI; UC Berkeley, Temple University, Northwestern University, Georgia Tech*	Rapid locomotion of a small lizard on sand requires fluid-like ground reaction forces

1:00 - 3:00 pm
Plaza B

Session 148: Form & Function, Part II

Chair: Tobias Riede

1:00 PM	148.1	DVM	*Riede T, Goller F; University of Utah, Salt Lake City*	Complexity of the labial lamina propria increases with increasing range of fundamental frequency in songbird song
1:20 PM	148.2	DVM	*Eiting TP, Perot JB, Dumont ER; UMass Amherst*	Nasal airway morphology and olfactory airflow in phyllostomid bats
1:40 PM	148.3	DVM	*Lin YF, Lu TW, Dumont ER, Lee LL; University of Massachusetts, Amherst, National Taiwan University*	Sticking necks out: a novel sesamoid bone in crocidurine shrews
2:00 PM	148.4	DVM	*Richter JP, Rumple CR, Quigley AP, Ranslow AN, Neuberger T, Ryan TM, Stecko TD, Pang B, Van Valkenburgh B, Craven BA; Penn State University, University of California, Los Angeles*	Comparative anatomy and functional morphology of the mammalian nasal cavity
2:20 PM	148.5	DVM	*Butler MR, Dearolf JL, Richmond JP; Hendrix College, University of North Florida*	The effect of prenatal steroids on citrate synthase activity in the fetal guinea pig scalenus muscle
2:40 PM	148.6		*Armstrong TE, Lillie MA, Shadwick RE; University of British Columbia*	Stiffness of mouse aortic elastin and its possible relation to aortic media structure

3:00-4:00 pm
Continental Ballroom 4/5/6

Moore Lecture

			Singer SR; Carleton College	Promising practices in undergraduate science and engineering education: why don't we implement them?

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