Society for Integrative and Comparative Biology

with the

American Microscopical Society
Animal Behavior Society
The Crustacean Society

SICB 2010
Annual Meeting

Meeting Dates:
January 3-7, 2010

Seattle, Washington
Seattle Sheraton Hotel
and
Washington State Convention and
Trade Center

Table of Contents

Officers/Co-Sponsoring Societies 3
Meeting Highlights/Social Events 5
Special Lectures/List of Symposia 6
Workshops and Programs 8
General Information 10
- Speaker Ready Room 10
- Business Center 10
- Coffee Breaks 10
- Committee and Business Meetings 10
- Employment Opportunities 10
- Future Meeting Date 10
- Registration Location/Hours 10

Exhibitor Listing 12
Scientific Program 19
Keyword Index 117
Author Index 128
Sheraton Seattle Floor Plan 148
Convention Center Floor Plan . . . . . .Inside Back Cover

CHANGE TO POSTER SET-UP TIMES FOR TUESDAY AND WEDNESDAY

Posters for Poster Session 2 will be set up on Tuesday from 7:00-8:00 AM
Posters for Poster Session 3 will be set up on Wednesday from 7:00-8:00 AM

Poster removal is at 5:30 PM immediately following your poster session.

Message from the President - Welcome to Seattle

Greetings and a welcome (in advance) to the Seattle meeting. As usual, our program officers have put together a wonderful combination of symposia, contributed papers, and posters, and a slate of outstanding special events. Mostly, through, I'd like to give a thank-you to all of our members who have given their time through society service and their money through donations to our various endowment funds. Soon it will be time to celebrate our scientific accomplishments, but we should also take the time to thank our divisional officers, the members of our various society committees, and our society officers for their willingness to give their gifts of time and effort. Look for the special ribbons on their badges, and give them a nod, a smile, or a pat on the back. We are our society, and at this time we are facing all of the current financial difficulties with a healthy and thriving meeting program. We had the second-most abstracts submitted for this meeting, just behind the record-setting Boston meeting of last year. So, give yourselves a pat on the back as well. See you in Seattle.

Rich Satterlie
President, The Society for Integrative and Comparative Biology

Message from the Program Officer - Welcome to Seattle

Saludos a todos!! I wish to thank the 2010 Society of Integrative and Comparative Biology (SICB) Program Committee and Burk and Associates, specifically Sue, Lori, and Ruedi for their hard work and productive interactions during the planning of this year,s meeting in Seattle! The 2010 SICB annual meeting promises to offer you the opportunity to immerse yourself in talks and posters rich with exciting ideas and to explore possibilities for peer support, pre- and post-doctoral opportunities, collaborations, mentorships, and career development assistance. It has been a pleasure serving you the last two years. Indulge your passion for science and your appetite for new ideas and experiences at the 2010 SICB meeting!

Have a great meeting,
Eduardo Rosa-Molinar
SICB Program Officer

Society for Integrative and Comparative Biology

2010 Officers

Richard A. Satterlie, President
Kenneth P. Sebens, President-Elect
John S. Pearse, Past President
Ronald V. Dimock, Treasurer
Robert D. Roer, Treasurer-Elect
Eduardo Rosa-Molinar, Program Officer
Brian K. Tsukimura, Program Officer-Elect
Louis E. Burnett, Secretary
Harold F. Heatwole, Editor-in-Chief, Integrative and Comparative Biology
Brett J. Burk, Executive Director

Co-Sponsoring Societies

American Microscopical Society (AMS)
Animal Behavior Society (ABS)
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.

Seattle Sheraton Hotel

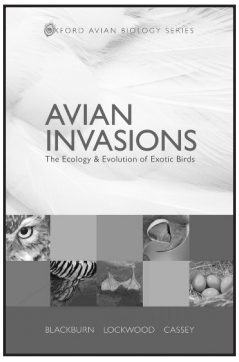
1400 6th Avenue, Seattle, Washington 98101
Telephone: 206-621-9000
Fax: 206-621-8441

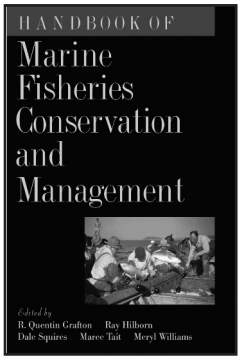
SICB Business Office

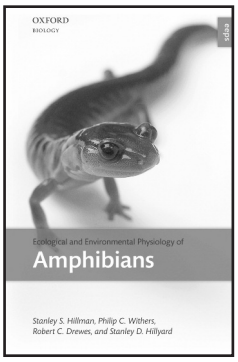
1313 Dolley Madison Blvd
Suite 402
McLean, Virginia 22101
Phone: 800-955-1236/703-790-1745
Fax: 703-790-2672
sicb@BurkInc.com; www.sicb.org

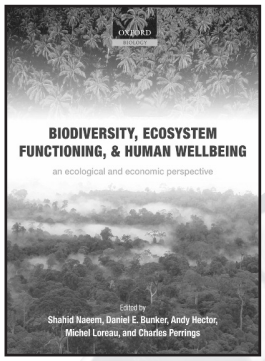
New from OXFORD

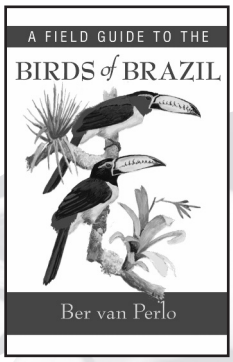
Visit Booth 101 to save 20% on these titles and more!











The Biology of Coastal Sand Dunes

ANWAR MAUN

(Biology of Habitats)
2009 288 pp. 85 line & 35 halftone illus.
978-0-19-857036-3 Paperback ~~$75.00~~/**$60.00**
978-0-19-857035-6 Hardback ~~$150.00~~/**$120.00**

Avian Invasions

The Ecology and Evolution of Exotic Birds
TIM M. BLACKBURN, JULIE L. LOCKWOOD, and PHILLIP CASSEY

(Oxford Avian Biology)
2009 320 pp. 65 illus.
978-0-19-923255-0 Paperback ~~$55.00~~/**$44.00**
978-0-19-923254-3 Hardback ~~$120.00~~/**$96.00**

Amphibian Ecology and Conservation

A Handbook of Techniques
Edited by C. KENNETH DODD, JR.

(Techniques in Ecology & Conservation)
2009 464 pp. 30 line & 30 halftone illus.
978-0-19-954119-5 Paperback ~~$59.95~~/**$47.95**
978-0-19-954118-8 Hardback ~~$120.00~~/**$96.00**

Handbook of Marine Fisheries Conservation and Management

Edited by R. QUENTIN GRAFTON, RAY HILBORN, DALE SQUIRES, MAREE TAIT, and MERYL WILLIAMS
2009 784 pp. 20 b/w halftone & 162 b/w line illus.
978-0-19-537028-7 Hardback ~~$199.00~~/**$160.00**

Ecological and Environmental Physiology of Amphibians

STAN HILLMAN, PHILIP WITHERS, ROBERT DREWES, and STAN HILLYARD

(Ecological and Environmental Physiology Series)
2008 464 pp. 105 line & 55 halftone illus.
978-0-19-857032-5 Paperback ~~$65.00~~/**$52.00**
978-0-19-857031-8 Hardback ~~$130.00~~/**$104.00**

Biodiversity, Ecosystem Functioning, and Human Wellbeing

An Ecological and Economic Perspective
Edited by SHAHID NAEEM, DANIEL E. BUNKER, ANDY HECTOR, MICHEL LOREAU, and CHARLES PERRINGS

2009 384 pp. 65 b/w illus. & a 4 page color plate section
978-0-19-954796-8 Paperback ~~$75.00~~/**$60.00**
978-0-19-954795-1 Hardback ~~$150.00~~/**$120.00**

The Biology of Coral Reefs

CHARLES R.C. SHEPPARD, SIMON K. DAVY, and GRAHAM M. PILLING

(Biology of Habitats)
2009 352 pp. 130 b/w illus. & an 8 page color plate section
978-0-19-856636-6 Paperback ~~$49.95~~/**$40.00**
978-0-19-856635-9 Hardback ~~$120.00~~/**$96.00**

Animal Evolution

Genomes, Fossils, and Trees
Edited by MAXIMILIAN J. TELFORD and D.T.J. LITTLEWOOD

2009 264 pp. 50 illus., plus a color plate section
978-0-19-954942-9 Hardback ~~$150.00~~/**$120.00**

New in Paperback

Witness to Extinction

How We Failed to Save the Yangtze River Dolphin
SAMUEL TURVEY

2009 256 pp. 4 page b/w plate section
978-0-19-954948-1 Paperback ~~$16.95~~/**$13.55**

A Field Guide to the Birds of Brazil

BER VAN PERLO

2009 480 pp. 187 color plates, 1,791 distribution maps, & 5 line illus.
978-0-19-530155-7 Paperback ~~$39.95~~/**$31.95**
978-0-19-530154-0 Hardback ~~$149.00~~/**$119.00**

OXFORD UNIVERSITY PRESS | Visit our website at www.oup.com/us or call 1-800-451-7556 In Canada, call 1-800-387-8020.

MEETING HIGHLIGHTS/SOCIAL EVENTS

Sunday, January 3

Plenary Session - *Room 6E, Convention Center, 7:00-8:00 pm*

The Plenary Address, "Reflections of a twentieth-century biologist," will be given by Dr. John Pearse, Past President of SICB.

Welcome to Seattle Reception - *Grand Ballroom, Sheraton Seattle, 8:00-9:30 pm*

The Society for Integrative and Comparative Biology welcomes you to Seattle with a reception on Sunday, January 3, at the Sheraton Seattle. The Welcome Reception will follow the Plenary lecture. Light snacks will be provided.

Wednesday, January 6

Society-wide Dessert Social in Honor of Students and Postdocs - *Grand Ballroom, Seattle Sheraton, 8:00-9:30pm*

Join your fellow SICB members for a Society-Wide Social on Wednesday, January 6, from 8:00-9:30 pm. Coffee, desserts and fruit will be served and a cash bar will be available.

AMS Business Meeting - *Room 617, Convention Center, 10:45-11:45 AM*

The AMS Business Meeting will be followed by the AMS Luncheon (ticket purchase required) from Noon-1:00 PM, Room 601.

SICB Business Meeting - *Room 607, Convention Center, 5:15-6:15 PM*

Future Meeting Date

Salt Lake City, Utah, January 3-7, 2011
Salt Lake City Marriott Downtown and
Salt Lake City Convention Center (Salt Palace)

SPECIAL LECTURES

Note: All Special Lectures take place in the Convention Center

George A. Bartholomew Award/Lecture - Monday, January 4, *606/607/608/609 - 6:30-7:30 pm*
The George A. Bartholomew Award lecture "From comparative physiology to evolutionary biology through animal bioenergetics: practicing the Krogh principle in South America" will be given by Dr. Roberto Nespolo, Associate Professor of Science, Universidad Austral de Chile.

Howard Bern Lecture - Tuesday, January 5, *Room 6E - 6:30-7:30 pm*
The Bern Lecturer is Carl B. Schreck, Leader of the Oregon Cooperative Fish and Wildlife Research Unit. The title of his presentation is "Haruspication: why is the endocrine system so similar and why is it so dissimilar amongst fishes?"

AMS Keynote Lecture - Tuesday, January 5, *Room 602/603- 7:00-8:00 pm*
The Keynote Lecturer is Judith Winston presenting, "Life in the colonies --- the alien ways of colonial organisms."

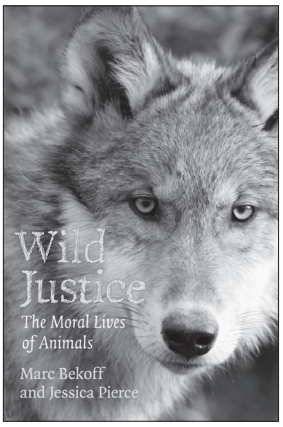
John A. Moore Lecture - Wednesday, January 6, *Room 606/607/608/609 - 6:30-7:30 pm*
The Moore Lecture this year will be given by Bruce Alberts, University of California, San Francisco. The title of his presentation will be "Science education for all: what scientists must do to fulfill John Moore's legacy."

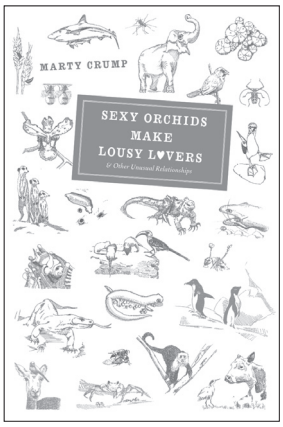
SYMPOSIA

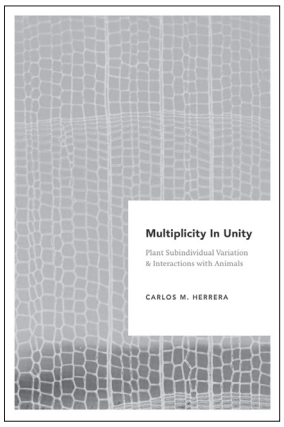
- ●S1: Insights of Early Chordate Genomics: Endocrinology and Development in Amphioxus, Tunicates and Lampreys (Monday 1/4)
- ●S2: Metabolism, Life History and Aging (Monday 1/4)
- ●S3: Evolutionary Paths among Developmental Possibilities: a Symposium Marking the Contributions and Influence of Richard Strathmann (Monday 1/4)
- ●S4: Mechanics without Muscle: Evolutionary Design of Macrophytes (Monday 1/4)
- ●S5: Animal Regeneration: Integrating Development, Ecology & Evolution (Tuesday 1/5)
- ●S6: Integrative Migration Biology (Tuesday 1/5)
- ●S7: Advances in Antarctic Marine Biology (Tuesday 1/5)
- ●S8: Assembling the Cnidarian Tree of Life (Wednesday 1/6)
- ●S9: Spiralian Development: Conservation and Innovation (Wednesday 1/6)
- ●S10: Marine Ecosystem Engineers in a Changing World: Establishing Links across Systems (Wednesday 1/6)
- ●S11: Contemporary Approaches to the Study of the Evolution of Fish Body Plan and Fin Shape (Wednesday 1/6)

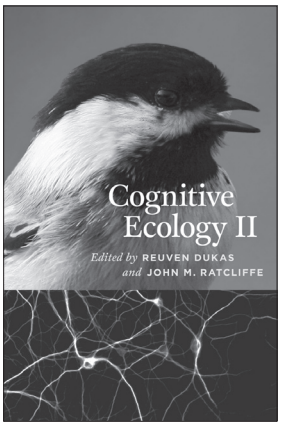
The **Exhibits** will open on
Monday, January 4, at 9:30 am.
The Exhibit Hall 6 A/B/C in the Convention Center,
will be the location of **coffee breaks** on
Monday, Tuesday and Wednesday mornings from 9:30-10:30 am and
poster sessions from 3:00-5:00 pm each afternoon.
A cash bar will be available during the poster sessions.

New Science FROM CHICAGO









Wild Justice
The Moral Lives of Animals
MARC BEKOFF and JESSICA PIERCE
Cloth $26.00

Sexy Orchids Make Lousy Lovers
& Other Unusual Relationships
MARTY CRUMP
Illustrations by Alan Crump
Cloth $25.00

Nature's Ghosts
Confronting Extinction from the Age of Jefferson to the Age of Ecology
MARK V. BARROW, JR.
Cloth $35.00

Island Bats
Ecology, Evolution, and Conservation
EDITED BY THEODORE H. FLEMING and PAUL A. RACEY
Cloth $65.00

Hybrid
The History and Science of Plant Breeding
NOEL KINGSBURY
Cloth $35.00

Breeding Bio Insecurity
How U.S. Biodefense Is Exporting Fear, Globalizing Risk, and Making Us All Less Secure
LYNN C. KLOTZ and EDWARD J. SYLVESTER
Cloth $27.50

Maternal Effects in Mammals
Edited by DARIO MAESTRIPIERI and JILL M. MATEO
Paper $35.00

Seasick
Ocean Change and the Extinction of Life on Earth
ALANNA MITCHELL
Cloth $25.00

Multiplicity in Unity
Plant Subindividual Variation and Interactions with Animals
CARLOS M. HERRERA
Paper $40.00

Unsimple Truths
Science, Complexity, and Policy
SANDRA MITCHELL
Cloth $27.50

Paradise Found
Nature in America at the Time of Discovery
STEVE NICHOLLS
Cloth $30.00

An Orchard Invisible
A Natural History of Seeds
JONATHAN SILVERTOWN
Cloth $25.00

Essay on the Geography of Plants
ALEXANDER VON HUMBOLDT and AIMÉ BONPLAND
Edited and with an Introduction by Stephen T. Jackson
Translated by Sylvie Romanowski
Cloth $45.00

The AMS Weather Book
The Ultimate Guide to America's Weather
JACK WILLIAMS
With Forewords by Rick Anthes and Stephanie Abrams
Cloth $35.00

Marine Macroecology
Edited by JON D. WITMAN and KAUSTUV ROY
Paper $40.00

Journal available at this meeting:

PHYSIOLOGICAL AND BIOCHEMICAL ZOOLOGY

Cognitive Ecology II
Edited by REUVEN DUKAS and JOHN M. RATCLIFFE
Paper $40.00

Gems and Gemstones
Timeless Natural Beauty of the Mineral World
LANCE GRANDE and ALLISON AUGUSTYN
Cloth $45.00

The Ecology and Behavior of Amphibians
KENTWOOD D. WELLS
Cloth $75.00

99% Ape
How Evolution Adds Up
Edited by JONATHAN SILVERTOWN
Paper $26.00

Mr. Jefferson and the Giant Moose
Natural History in Early America
LEE ALAN DUGATKIN
Cloth $26.00

Cougar
Ecology and Conservation
Edited by MAURICE HORNOCKER and SHARON NEGRI
With a Foreword by Alan Rabinowitz
Cloth $49.00

Forthcoming

The Mind of the Chimpanzee
Ecological and Experimental Perspectives
Edited by ELIZABETH V. LONSDORF, STEPHEN R. ROSS, and TETSURO MATSUZAWA
With a Foreword by Jane Goodall
Paper $49.00

Visit booth #205 for a 20% discount on these and related books

The University of Chicago Press **www.press.uchicago.edu**

Sunday, January 3

Grad Student/Post Docs Welcome and Meeting Orientation, "How to get the most out of your SICB meeting." ***Room 602/603, Convention Center - 5:30-6:30 pm***

- How to find relevant talks/posters during the meetings
- How to find everyone at the meetings
- How to approach a "big guy or gal"
- How to enter or leave a room/move between rooms
- How to plan your meeting
- How to get involved in SICB or attend business meetings and the importance of attending the meetings (exposure, recognition).

This will be followed by a lightning round of first timers' questions.

Tuesday, January 5

COPUS Workshop, "Science Education and Research." ***Room 601, Convention Center - Noon-1:00 pm***

Join participants in the Coalition on the Public Understanding of Science to learn more about science education and outreach locally and nationally. This power packed session will bring together outstanding presenters to talk about: a non-traditional science fair model that is very successful in engaging students in science; a web resource that is changing the way we talk about science and the continuation of the grassroots celebration of science from Year of Science 2009 to the USA Science and Engineering Festival!

12:00-12:15 Student Bio Expo.
Jeanne Chowning, Northwest Association for Biomedical Research

12:15-12:30 USA Science Festival: Coming in the Fall of 2010
Jen Collins, PaleoBio.org

12:30-12:45 Understanding Evolution, Science and COPUS.
Mark Terry, Northwest School and COPUS (Coalition on the Public Understanding of Science)

Phylogenetics for Dummies, "How to get the most out of your SICB meeting, Part 1." ***Room 619 - 7:30-9:00 pm***

The Division of Evolution and Systematic Biology will host another two day workshop on Phylogenetic Comparative Methods in R as part of the Phylogenetics for Dummies series. R is a powerful, free(!), high-level statistical computing language with a number of well-developed packages that focus on tree manipulation and comparative analysis. In R it is easy to

- perform independent contrasts analysis,
- test for correlation of traits on a tree or across a distribution of tree under many different evolutionary models
- reconstruct ancestral states
- examine correlated patterns of trait evolution and lineage diversification,
- simulate character evolution.
- create publication-quality plots of trees and graphs

The first day of the workshop will be aimed towards users that are completely new to the language and will cover topics like: R language essentials, getting your data into R, manipulating trees and tip data, printing trees and figures, and calculating independent contrasts. The second session will cover a range of comparative analyses including: Brownian and OU models of character evolution, diversification analysis, ancestral reconstruction, and simulation methods.

Participants are encouraged to bring their own data sets (in nexus and/or csv format) as well as a laptop computer. If you are interested in attending please email michaelalfaro@wsu.edu so that we can better gauge the interests and experience levels of the attendees.

Instructors: Michael Alfaro (UCLA, michaelalfaro at ucla.edu) is an evolutionary biologist studying morphological evolution and species diversification in fishes. Luke Harmon (University of Idaho, ljharmon at uidaho.edu) studies ecological and evolutionary aspects of adaptive radiations and is the author of the GEIGER package for detecting evolutionary radiations in R.

Wednesday, January 6

Implementation of the Grand Challenges, *Room 602/603, Convention Center - Noon-3:00 PM*
This workshop is the beginning of discussions about how to implement the Grand Challenges. The speakers will include Executive Board members from six other societies, plus the representative authors from the Grand Challenges papers from Integrative and Comparative Biology.

Graduate Student Workshop: "Careers outside of Traditional Academia," *Room 613/614, Convention Center - 6:15-8:00 pm*
For the Seattle 2010 meeting, the Student/Postdoctoral Affairs Committee (SPDAC) has responded to recurring suggestions from its constituency over the last several years to convene a workshop on the topic of job opportunities outside of traditional academia. Many excellent jobs today have a combined government-and-academic emphasis, while others may represent a fusion of academic and private interests. Still others, such as careers within museums or aquaria, typically have extremely strong ties to academia. This year's workshop will explore these avenues for the student and postdoctoral SICB members and will include a panel of professionals who represent these kinds of careers. In addition to a brief presentation by each of the panel members, there will be an opportunity for discussion and to ask questions of the panelist.

Phylogenetics for Dummies, "How to get the most out of your SICB meeting, Part 2." *Room 619 - 7:30-9:00 pm*
See description under Tuesday Workshop listing (page 8).

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, 620, Convention Center, at least one half day prior to his/her session time. It is highly recommended that you preview your presentation prior to your presentation to guarantee that it will work properly. Each presentation will be loaded onto a master file for each session. You may use your own computer, however, your 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
Sunday	1/3	Noon-7 pm
Monday-Wednesday	1/4-1/6	7 am-5 pm
Thursday	1/7	7-10 am

Business Centers

If you need to use a fax, use a computer, make photocopies or require office supplies, there is a Business Center located in the Seattle Sheraton on the second floor and staffed for designated hours Monday to Saturday. The center provides full professional service to hotel guests and is open 24 hours for self service with guestroom key. The use of the business center is at your own expense. There is also a FedEx Office Store on Level 1 of the Convention Center, open Monday-Thursday from 7 am-10 pm; Friday 7 am-9 pm; Saturday-Sunday 9 am-6 pm.

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 at 3:00. The coffee breaks will be located in the Exhibit Hall/Poster Area - 6A/B/C - on Monday-Wednesday and near the session rooms on Thursday.

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.

Future Meeting Dates

Salt Lake City, Utah, January 3-7, 2011, Annual Meeting.

Session Chairs

Contributed session chairs are listed at the beginning of each of the time periods for the morning sessions and afternoon sessions.

Keyword Index

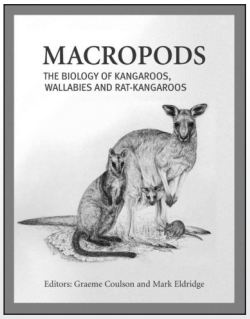
Refer to the keyword index located at the end of this program for easy access when looking up a specific subject matter. Each author who is presenting an abstract has supplied up to three keywords for your reference.

Registration

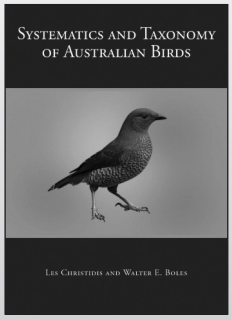
The SICB Registration area is located on the 6th floor of the Convention Center in the East Lobby. The Registration Desk will be open during the following hours:

Sunday, January 3	3:00-8:30 pm
Monday, January 4	7:00 am-5:00 pm
Tuesday, January 5	7:30 am-5:00 pm
Wednesday, January 6	7:30 am-2:00 pm
Thursday, January 7	7:30 am-Noon

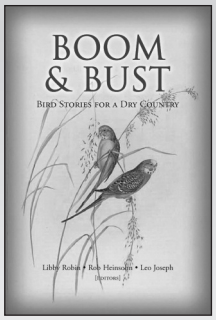
NEW FROM CSIRO AND CABI



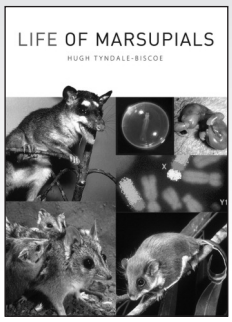
MACROPODS
The Biology of Kangaroos, Wallabies and Rat-Kangaroos
Edited by Graeme Coulson, and Mark Eldridge
April 2010
Paper, $81.50



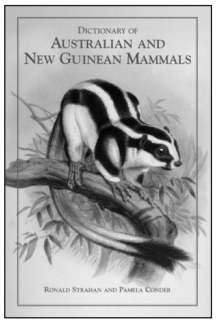
SYSTEMATICS AND TAXONOMY OF AUSTRALIAN BIRDS
Les Christidis and Walter E. Boles
Paper, $44.00



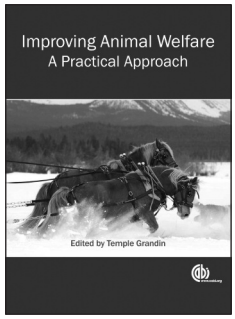
BOOM AND BUST
Bird Stories for a Dry Country
Edited by Libby Robin, Robert Heinshohn, and Leo Joseph
Cloth, $35.00



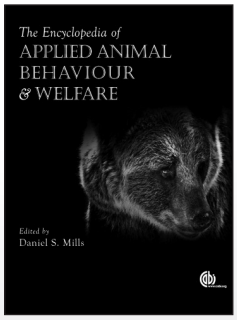
LIFE OF MARSUPIALS
Hugh Tyndale-Biscoe
Paper, $61.95



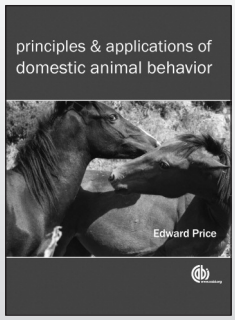
DICTIONARY OF AUSTRALIAN AND NEW GUINEAN MAMMALS
Ronald Strahan and Pamela Conder
Cloth, $43.95



IMPROVING ANIMAL WELFARE
A Practical Approach
T. Grandin
Paper, $79.95

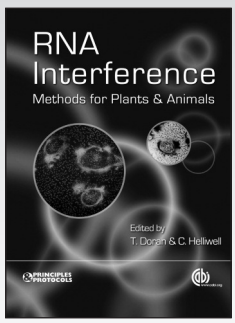


THE ENCYCLOPEDIA OF APPLIED ANIMAL BEHAVIOR AND WELFARE
Edited by D Mills
January 2010
Cloth, $310.00



PRINCIPLES AND APPLICATIONS OF DOMESTIC ANIMAL BEHAVIOR
E.O. Price
Paper, $59.95

STATISTICS AND EXPERIMENTS FOR ANIMAL SCIENCE RESEARCH
F Siewert
March 2010
Paper, $75.00



RNA INTERFERENCE
Edited by T. Doran and C. Helliwell
Principles and Protocols Series
Paper, $80.00

CSIRO PUBLISHING

Distributed in the U.S. by Stylus PUBLISHING, LLC.

www.cabi.org

Use source code **SICB10** to obtain your **20% DISCOUNT**. *Offer expires January 31, 2010.*

TO ORDER: CALL 1-800-232-0223 FAX 703-661-1501 E-MAIL StylusMail@PressWarehouse.com WEBSITE www.Styluspub.com

2010 Exhibitors

Academia Book Exhibits **Booth: 316**
3512 Willow Green Court
Oakton, VA 22124
703-716-5537; Fax:703-620-3676

Professional books and journals in a multi-publisher display

ADInstruments **Booth: 305**
2205 Executive Circle
Colorado Springs, CO 80906
719-576-3970; Fax:719-576-3971
www.adinstruments.com

ADInstruments designs and manufactures the PowerLab data acquisition system for life science research and higher education. Over 20 years providing a superior turn-key hardware/ software solution both sophisticated and intuitive. Windows/Mac/USB2.0 ready.

AEI Technologies **Booth: 303**
520 East Ogden Avenue
Naperville, IL 60563
800-793-7751; Fax: 630-548-3546
www.aeitechnologies.com

AEI Technologies is the leading manufacturer of single and multi-chamber respirometry systems and system components. The AEI MOXAR Modular Animal Respirometry System uses our O_2 and CO_2 analyzers, recognized worldwide as the Gold Standard for laboratory analysis for over 30 years. AEI's fast response time analyzers are used for accurate, repeatable, and exceptionally stable measurement for animals, insects, and plants. AEI also offers compact, portable MOXAR solutions for field research applications.

Allen Press, Inc. **Booth: 209**
810 E 10th Street
Lawrence, KS 66044
785-843-1234; Fax: 785-843-1226
www.allenpress.com

Allen Press Publishing services offers scholarly publications in the fields of medicine, zoology, sports science, botany, ecology, and environmental sciences. Our publications serve professionals, researchers, scientists, doctors, students, and faculty in many different disciplines.

American Microscopical Society Inc. **Booth: 215**
The Citadel, Department of Biology
171 Moultrie St.
Charleston, SC 29409
843-953-7511; Fax: 843-953-7264
www.amicros.org

Featuring the AMS Buchsbaum Photomicrography contest and Society publications and fellowships.

American Physiological Society **Booth: 102**
9650 Rockville Pike
Bethesda, MD 20814
301-634-7164; Fax:301-634-7241
www.the-aps.org

APS provides up-to-date information to the scientific community through its extensive publications and meeting programs. Complimentary copies of *Advances in Physiology Education* will be available, as will other APS information.

BIOPAC Systems, Inc. **Booth: 203**
42 Aero Camino
Goleta, CA 93117
805-685-0066; Fax: 805-685-0067
www.biopac.com

BIOPAC has complete systems for life science research and education - human, animal, or in vivo studies. Powerful software & automated analysis tools plus industry-standard data acquisition amplifiers, transducers & electrodes. New noninvasive BP via finger cuff or animal tail. Get great data, save lab time, and standardize interpretation of results.

Brill **Booth: 301**
153 Milk Street,6th Floor
Boston, MA 02109
617-263-2323; Fax: 617-263-2324
www.brill.nl/bookseries/bio

Brill, founded in 1683, offers journals and book (series) titles on evolution, systematics and ecology, with emphasis on insecta, crustacea, nematoda and animal behavior. Come see us and find out why authors return to us for publishing quality and service.

COPUS **Booth: 104**
Northwest School
1415 Summit Avenue
Seattle, WA 98122
206-682-7309
www.copusproject.org

Coalition on the Public Understanding of Science, USA Science and Engineering Festival 2010, Understanding Evolution Understanding Science

CRC Press-Taylor & Francis **Booth: 214**
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487
561-994-0555; Fax: 561-998-2507
www.crcpress.com

Visit our booth to browse and receive special discounts on new and bestselling titles and to learn more about our noteworthy journals. New titles include *Sharks and Their Relatives II*, *Biodiversity*, *Adaptive Physiology,* and *Conservation*, *Systema Naturae 250*, *The Linnaean Ark*, and the *Handbook of Venoms and Toxins of Reptiles*.

Darling Marine Center, University of Maine **Booth: 313**
193 Clarks Cove Road
Walpole, ME 04573
207-563-3146; Fax:207-563-3119
www.dmc.maine.edu

The DMC functions year round as a field station for marine research and education. We invite visiting investigators and students to use our flowing seawater laboratories, scuba facilities, and research vessels. Our conference center is available for scientific meetings and workshops. Graduate degrees are offered through the University of Maine's School of Marine Science.

Defend Science **Booth: 212**
2124 Kittridge Street, #182
Berkeley, CA 94704
808-271-7688
www.defendscience.org

Booth will provide information and discussion on the continuing interference with science-based decision making at all levels of government in the U.S.

Fastec Imaging **Booth: 216**
17150 Via Del Campo #301
San Diego, CA 92127
858-592-2342; Fax: 858-592-2615
www.fastecimaging.com

TroubleShooter is a self-contained, battery powered, hand-held, high-speed digital video camera with built-in display screen and CompactFlash download designed for biology research both in the lab and in the field.

Gene Tools, LLC **Booth: 311**
1001 Summerton Way
Philomath, OR 97370
541-929-7840; Fax: 541-929-7841
www.gene-tools.com

Gene Tools manufactures morpholino antisense oligos and ancillary products for gene knockdowns in cultures, embryos and adult organisms.

H. Stevan Logsdon/ Wildlife Artist **Booth: 314**
PO. Box 4070
Silver City, NM 88062
505-388-8101

Quality wildlife jewelry and T-shirts, with scientific emphasis.

IMPRS for Organismal Biology **Booth: 310**
Max Planck Institute for Ornithology,
Schlossallee 2
Radolfzell, Germany 78315
49-7531-884916; Fax: 49-7531-884917
www.uni-konstanz.de/organismal-biology

The International Max Planck Research School for Organismal Biology is a close cooperation between the Max Planck Institute for Ornithology and the University of Konstanz, both located in southern Germany. Its aim is to provide first class training and education for outstanding PhD students from all over the world in animal behavior, ecology, evolution, and physiology.

Innovision Systems, Inc. **Booth: 111**
3717 Peters Road
Columbiaville, MI 48421
810-793-5530; Fax: 810-793-1714
www.innovision-systems.com

Over 20 years of experience supplying motion capture and analysis (cameras and software) worldwide for applications in biomechanics, biology, physics, research, animation, etc. MaxMOTION suite of modules are intuitive, easy to use and affordable. Capture, track and analyze videos, still photos with or without markers. Free Upgrades and Free Support when you purchase at this conference.

IOP Publishing **Booth: 304**
150 S Independence Mall W
Philadelphia, PA 19106
215-627-0880; Fax: 215-627-0879
www.publishing@iop.org

Scientific journals

iWorx Systems **Booth: 315**
1 Washington Street
Dover, NH 03820
800-234-1757; Fax: 603-742-2455
www.iworx.com

iWorx provides a full range of advanced hardware and software tools for physiology and metabolic teaching and research.

National Evolutionary Synthesis Center (NESCent) **Booth: 114**
2024 W. Main Street, Suite A200
Durham, NC 27705
919-668-4578; Fax: 919-668-9198
www.nescent.org

NESCent staff will be at our booth to discuss funding opportunities in synthetic evolutionary biology research (including postdoctoral fellowships, sabbaticals and working groups).

National Science Foundation **Booth: 307**
4201 Wilson Blvd.
Arlington, VA 22230
703-292-8420; Fax: 703-292-9153
www.nsf.gov

Oxford University Press **Booths: 101/103**
198 Madison Ave
New York, NY 10016
212-726-6065; Fax: 212-726-6494
www.oup.com/us

Oxford University Press is a leading international publisher of books and journals in the sciences and is proud to be the publisher of *Integrative and Comparative Biology*, the SICB Journal. Remember to visit the Oxford University Press booth to receive a free sample copy of the *Integrative and Comparative Biology* and browse our newest offerings such as Angilletta's *Thermal Adaptation*, Telford's *Animal Evolution*, Dodd's *Amphibian Ecology and Conservation*, and Valiela's *Doing Science 2e*.

Photron **Booth: 312**
9520 Padgett Street, Suite 110
San Diego, CA 92126
858-684-3555; Fax: 858-684-3558
www.photron.com

High speed video cameras for the slow motion analysis and study of fast biological events and phenomena. Super light sensitive cameras record at hundreds or thousands of picures per second before replaying in glorious slow motion detail.

Qubit Systems Inc. **Booth: 202**
700 Gardiners Rd, Unit #105
Kingston, ON K7M 3X9 Canada
613-384-1977; Fax: 613-384-9118
www.qubitsystems.com

See our new METABOX field portable respirometry system with Toughbook laptop. Measure metabolic rate of mammals, fish, insects and humans with our multichannel gas exchange systems. We customize equipment to meet your needs.

Sable Systems International Inc. **Booth: 302**
6000 S. Eastern Avenue, Building 1
Las Vegas, NV 89119
702-269-4445; Fax: 702-269-4446
www.sablesys.com

Sable Systems International provides integrative researchers with the most trusted and proven instruments and methodologies for gas analysis and metabolic measurement with support from respirometry experts. Versatile whole-animal systems support demanding applications including measurement or control of O_2, CO_2, kPa, $^{\circ}C$, activity monitoring and HTP Metabolic Screening.

Smithsonian Tropical Research Institute (STRI) **Booth: 213**
Smithsonian Marine Science Network, Unit 0948
APO, AA 34002-0948
703-487-3770
www.stri.org

STRI's mission is to increase understanding of past, present and future of tropical biodiversity and its relevance to human welfare. Educational materials and fellowship information will be offered.

The Company of Biologists Ltd. **Booth: 306**
Bidder Building, 140 Cowley Road
Cambridge, UK CB4 ODL
011-44-1223 426164; Fax: 011-44-1223-423353
www.biologists.com

The Company of Biologists is the not-for-profit publisher of the leading Journal in integrative and comparative biology, *The Journal of Experimental Biology*.

The Crustacean Society **Booth: 211**
7180 S. Foster Road
San Antonio, TX 78222
210-648-1214
www.vims.edu/tcs

The Crustacean Society produces *The Journal of Crustacean Biology*. We are an international Society of crustacean researchers inviting you to come by our booth, meet our members, and consider joining.

The Royal Society **Booth: 308**
6-9 Carlton House Terrace
London, UK SW1Y 5AG
44-207-4512654; Fax: 44-207-9761837
www.royalsocietypublishing.org

The Royal Society publishes seven journals spanning the physical and life sciences. Please visit our booth for free sample journal issues and meet Fiona Pring who will be available to provide further information.

The University of Chicago Press **Booth: 205**
1427 E. 60th Street
Chicago, IL 60637
773-702-0285; Fax: 773-702-9756
www.press.uchicago.edu

TSI Inc. **Booth: 208**
500 Cardigan Road
Shoreview, MN 55126
651-490-2738; Fax: 651-490-3824
www.tsi.com

TSI is a world-renowned supplier of laser-based instrumentation for Fluid Mechanics research. Information on a wide range of TSI products, including PIV, LDV and PDPA, as well as our award-winning Volumetric 3-Component Velocimetry (V3V™) System, will be available. Visit us to learn more!

Uni Bio Press **Booth: 207**
Toshin-Building, Hongo 2-29-2, Bunkyo-Ku
Tokyo, Japan 113-0033
81-3-3814-5461; Fax: 81-3-3814-6216
www.unibiopress.org

University of California Press **Booth: 115**
2120 Berkeley Way
Berkeley, CA 94704
510-642-2035; Fax: 510-643-7127
www.ucpress.edu

University of California Press is a leading publisher of general interest and academic titles specializing in biology and the natural sciences.

Vision Research **Booth: 116**
100 Dey Road
Wayne, NJ 07470
973-696-4500; Fax: 973-696-0560
www.visionresearch.com

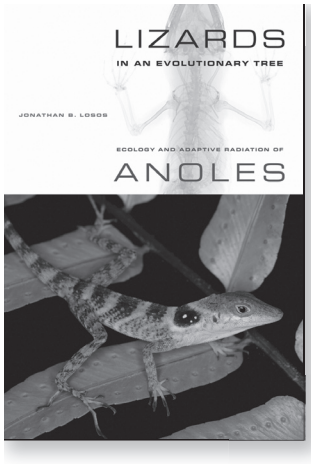
Digital high-speed camera systems.

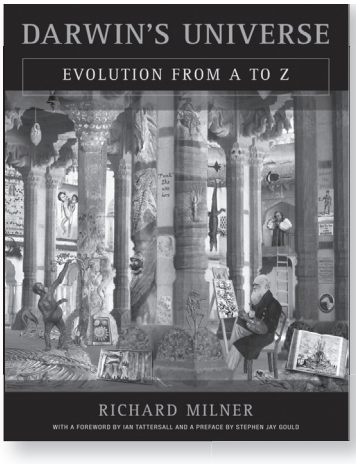
Wiley-Blackwell **Booths: 204/206**
350 Main Street
Malden, MA 02148
781-388-8361; Fax: 781-388-8361
www.wiley.com

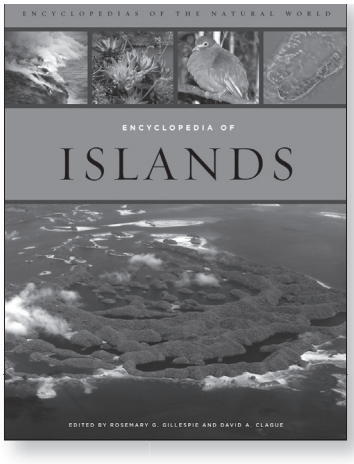
Wiley-Blackwell is one of the world's foremost academic and professional publishers and the largest society publisher. With a combined list of more than 1,400 scholarly peer-reviewed journals and an extensive collection of books with global appeal, this new business sets the standard for publishing in the life and physical sciences, medicine and allied health, engineering, humanities and social sciences.

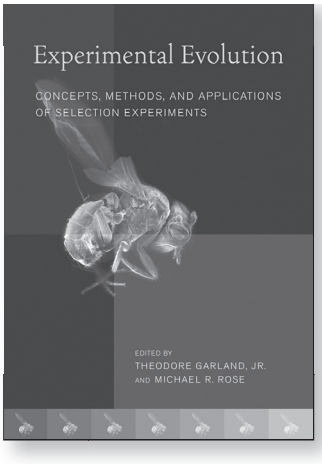
Xcitex Corp. **Booth: 201**
25 1st Street, Suite 105
Cambridge, MA 02141
617-225-0080; Fax: 617-225-2529
www.xcitex.com

Xcitex is an innovator in the industries of motion analysis and video-based motion capture. ProAnalyst[R] is the world's leading software for extracting, tracking, analyzing, and presenting motion from pre-recorded video.









Martha Holmes and Michael Gunton

Life

Extraordinary Animals, Extreme Behaviour
39.95 cloth

Channa Bambaradeniya, Cinthya Flores, Joshua Ginsberg, Dwight Holing, Susan Lumpkin, George McKay, John Musick, Patrick Quilty, Bernard Stonehouse, Eric John Woehler, and David Woodruff

The Illustrated Atlas of Wildlife

39.95 cloth

Jonathan B. Losos

Lizards in an Evolutionary Tree

Ecology and Adaptive Radiation of Anoles
Foreword by Harry W. Greene
Organisms and Environments
75.00 cloth

Jerry A. Powell and Paul A. Opler

Moths of Western North America

95.00 cloth

Darren Naish

The Great Dinosaur Discoveries

29.95 cloth

Scott D. Sampson

Dinosaur Odyssey

Fossil Threads in the Web of Life
Foreword by Philip J. Currie
29.95 cloth

eBooks coming soon—please inquire at our booth for more information.

Douglas Palmer

Evolution

The Story of Life
Peter Barrett, Illustrator
$39.95 cloth

Richard Milner

Darwin's Universe

Evolution from A to Z
Foreword by Ian Tattersall,
Preface by Stephen Jay Gould
$39.95 cloth

John O. Reiss

Not by Design

Retiring Darwin's Watchmaker
$49.95 cloth

Joan Roughgarden

The Genial Gene

Deconstructing Darwinian Selfishness
$24.95 cloth

John S. Wilkins

Species

A History of the Idea
Species and Systematics
$49.95 cloth

Randy Moore and Mark D. Decker

More Than Darwin

The People and Places of the Evolution-Creationism Controversy
New in Paper $29.95

Eugenie C. Scott

Evolution vs. Creationism

An Introduction
Second Edition
New in Paper $22.95

Jonathan Hoekstra, Jennifer L. Molnar, Michael Jennings, Carmen Revenga, Mark D. Spalding, Timothy M. Boucher, James C. Robertson, and Thomas J. Heibel, with Katherine Ellison

The Atlas of Global Conservation

Changes, Challenges, and Opportunities to Make a Difference
$49.95 cloth

Rosemary G. Gillespie and David A. Clague, Editors

Encyclopedia of Islands

Encyclopedias of the Natural World
$95.00 cloth

Lynne R. Parenti and Malte C. Ebach

Comparative Biogeography

Discovering and Classifying Biogeographical Patterns of a Dynamic Earth
Species and Systematics
$39.95 cloth

Walter K. Dodds

Laws, Theories, and Patterns in Ecology

$19.95 paper, $50.00 cloth

Michael S. Rosenberg, Editor

Sequence Alignment

Methods, Models, Concepts, and Strategies
$59.95 cloth

Theodore Garland, Jr. and Michael R. Rose, Editors

Experimental Evolution

Concepts, Methods, and Applications of Selection Experiments
$45.00 paper, $75.00 cloth

Please visit us in booth #215 for the special meeting discount • www.ucpress.edu

UNIVERSITY OF CALIFORNIA PRESS

Royal Society **Publishing**

Informing the science of the future

The Royal Society publishes seven journals, covering the biological and physical sciences and the history of science.

Each journal provides high-quality peer review and rapid, broad dissemination to a wide, international audience. For further information, please visit Fiona Pring at booth 308 in the exhibition hall, where samples of our journals will be available.

In celebration of the Royal Society's 350th anniversary, all our digital content - more than 65,000 articles dating back to 1665 - is currently free to access online until the end of February 2010.

Please visit royalsocietypublishing.org

Sunday Schedule of Events

EVENT	TIME	LOCATION
Registration	3:00-8:00 PM	6th Flr East Lobby, Convention Ctr
Exhibitor Setup	Noon-8:00 PM	6A/B/C
Poster Session 1 Setup	5:30-8:00 PM	6A/B/C
SPECIAL LECTURE		
SICB Opening Plenary Session	7:00-8:00 PM	6E, Convention Center
COMMITTEE & BOARD MEETINGS		
Executive Committee	2:30-5:30 PM	Cirrus Room, Sheraton Hotel
WORKSHOPS AND PROGRAMS		
Student Orientation	5:30-6:30 PM	602/603, Convention Center
SOCIAL EVENTS		
SICB Welcome Reception	8:00-9:30 PM	Grand Ballroom, Sheraton Hotel

CHANGE TO POSTER SET-UP TIMES FOR TUESDAY AND WEDNESDAY

Posters for Poster Session 2 will be set up on Tuesday from 7:00-8:00 AM
Posters for Poster Session 3 will be set up on Wednesday from 7:00-8:00 AM

Poster removal is at 5:30 PM immediately following your poster session.

Note: All Scientific Sessions and Lectures will take place in the Convention Center.

Monday Schedule of Events

EVENT	TIME	LOCATION
Registration	7:00 AM-5 PM	6th Flr East Lobby, Convention Ctr
Exhibit Hall	9:30 AM-6 PM	6A/B/C
Poster Session 1 Even Numbers Viewing	3:00-4:00 PM	6A/B/C
Poster Session 1 Odd Numbers Viewing	4:00-5:00 PM	6A/B/C
Poster Session 1 Teardown	5:00-5:30 PM	6A/B/C
Coffee Breaks	9:30-10:30 AM; 3:00-5:00 PM	6A/B/C
SPECIAL LECTURE		
George A. Bartholomew Award Lecture	6:30-7:30 PM	606/607/608/609
SYMPOSIA ORAL PRESENTATIONS		
S1: Insights of Early Chordate Genomics...	7:45 AM-3:00 PM	602/603
S2: Metabolism, Life History and Aging	8:00 AM-3:00 PM	607
S3: Evolutionary Paths among Developmental Possibilities...	7:45 AM-3:00 PM	615/616
S4: Mechanics without Muscle: Evolutionary Design of Macrophytes	8:15 AM-3:00 PM	617
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 1: Environmental Stress Responses and Proteomics	8:00 AM-Noon	604
Session 2: Nuerobiology-Molecular Neurobiology & Neuroanatomy	8:00-9:40 AM	605
Session 3: Neurobiology-Neuroethology	10:00 AM-Noon	605
Session 4: Growth & Life History	8:00-9:40 AM	606
Session 5: Exotic Morphology	10:00 AM-Noon	606
Session 6: Molecular Evolution I-Genes and Genomes	8:20-10:00 AM	608
Session 7: Molecular Evolution II-Smell and Vision	10:20 AM-Noon	608
Session 8: Evolutionary Morphology I	8:20-9:40 AM	609
Session 9: Community Ecology	10:00 AM-Noon	609
Session 10: Metabolism and the Environment	8:00-9:40 AM	610
Session 11: Terrestrial Locomotion-Soft Substrates	10:00-11:40 AM	610
Session 12: Evolutionary Physiology-Vertebrates	8:00-11:40 AM	611
Session 13: Swimming-Invertebrate Swimming	8:20-9:40 AM	612
Session 14: Swimming-Fin Function	10:00 AM-Noon	612
Session 15: Endo: Regulation of Development and Growth	8:20 AM-Noon	613/614
Session 16: Development-Morphogenesis	8:00-10:00 AM	618
Session 17: Development-Regulation of Development	10:20 AM-Noon	618
Session 18: Reproductive Behaviors	8:00-9:40 AM	619
Session 19: Behavioral Ecology-Abiotic Factors	10:00 AM-Noon	619
Session 20: Musculoskeletal Morphology and Mechanics	1:20-3:00 PM	604
Session 21: Animal Communication	1:00-2:40 PM	605
Session 22: Coral Reef Ecology	1:00-3:00 PM	606
Session 23: Life History Evolution	1:00-3:00 PM	608
Session 24: Population Ecology	1:00-3:00 PM	609
Session 25: Terrestrial Locomotion-Non-Traditional Locomotion	1:00-3:00 PM	610
Session 26: Evolutionary Physiology-Invertebrates & Fish	1:20-3:00 PM	611
Session 27: Swimming-Non-piscine Swimming	1:00-3:00 PM	612
Session 28: Physical Ecology	1:20-3:00 PM	613/614
Session 29: Complementary Session: Animal Regeneration I	1:00-3:00 PM	618
Session 30: Behavioral Ecology-Biotic Factors	1:00-3:00 PM	619
COMMITTEE & BOARD MEETINGS		
Division Chair Presidents/Presidents Elect	Noon-1:00 PM	Douglas Room, Sheraton
DPOs/Symposium Organizers for Salt Lake City	Noon-1:00 PM	601
Public Affairs Committee	Noon-1:00 PM	Alki Board Room, Sheraton
SICB Nominating Committee	8:00-9:00 PM	Eagle Board Room, Sheraton
AMS Executive Committee	8:00-11:00 PM	Greenwood Room, Sheraton
BUSINESS MEETINGS		
DAB Business Meeting/Social	5:15-5:45 PM	Aspen Room, Sheraton
DNB Business Mtg	5:15-5:45 PM	619
DCPB Business Mtg	5:15-6:15 PM	604
DEE Business Mtg	5:15-6:15 PM	610
DIZ Business Mtg	5:15-6:15 PM	611
DCB Business Mtg	5:15-6:15 PM	612
DEDB/DDCB Business Mtg	5:15-6:15 PM	617
DSEB Business Mtg	5:15-6:15 PM	618
SOCIAL EVENTS		
DAB/DNB Social	6:00-7:00 PM	Aspen Room, Sheraton
DDCB/DEDB/DSEB Social	6:30-8:30 PM	Willow Room, Sheraton
DCPB Social	7:30-8:30 PM	Registration Foyer

MONDAY
7:45 AM-3:00 PM
602/603

Symposium S1: Late Breaking Symposium: Insights of Early Chordate Genomics: Endocrinology and Development in Amphioxus, Tunicates and Lampreys

Supported by: National Science Foundation and DCE (SICB)

Organized by: Stacia Sower, Linda Holland

7:45 AM		SOWER, S, HOLLAND, LZ	Opening Remarks
8:00 AM DEDB	S1.1	HOLLAND, LZ, SHORT, S; University of California San Diego, Portsmouth University, UK	From genome to development in amphioxus
8:30 AM DCE	S1.2	KUBOKAWA, K, TANDO, T; Oceanic Research Institute, University of Tokyo	Evolution of reproductive endocrine system in chordates
9:00 AM DEDB	S1.3	PARIS, M, ESCRIVA, H, SCHUBERT, M, BRUNET, F, BRTKO, J, CIESIELSKI, F, JAMIN, E, CRAVEDI, JP, RENAUD, JP, SCANLAN, TS, HOLLAND, ND, LAUDET, V; University of California, Berkeley, Ecole Normale Superieure de Lyon, France, Oregon Health and Science University, Scripps Institute of Oceanography	Amphioxus thyroid hormone signaling pathway and the evolution of metamorphosis in chordates
9:30 AM DEDB	S1.4	ZELLER, RW; San Diego State University	Tunicate genomics: a window into chordate development and evolution
10:00 AM	COFFEE BREAK		
10:30 AM	S1.5	PANI, A, DARRAS, S, ARONOWICZ, J, LOWE, CJ*; University of Chicago, IBDML-CNRS - University de la Méditeranée	Early deuterostome origins of the vertebrate head
11:00 AM DCE	S1.6	SHERWOOD, NM, ROCH, GJ, TELLO, JA; University of Victoria	Genomics of amphioxus and tunicates: tracing the evolution of the endocrine system
11:30	S1.7	SAUKA-SPENGLER, T; Caltech	Sympathoadrenal lineage in lampreys
NOON	LUNCH BREAK		
1:00 PM	S1.8	RETAUX, S, OSORIO, J, GUERIN, A, XIAO, JH, KANO, S; CNRS Institut A. Fessard, Gif sur Yvette, France	Midline signaling and the evolution of the lamprey forebrain
1:30 PM DCE	S1.9	SOWER, SA, KOSUGI, T, AQUILINA-BECK, A, FREAMAT, M; University of New Hampshire, Durham	Origins of the neuroendocrine system in a basal vertebrate, the sea lamprey
2:00 PM DEDB	S1.10	KURAKU, S; University of Konstanz	'Post-2R' cyclostomes: a molecular phylogenetic view of the vertebrate ancestor
2:30 PM	S1.11	LARHAMMAR, D; Uppsala University, Sweden	Early vertebrate chromosome duplications and the evolution of the neuropeptide Y receptor gene regions

8:00 AM-3:00 PM
607

Symposium S2: Metabolism, Life History and Aging

Supported by: National Science Foundation, the Glenn Foundation for Medical Research, the American Federation for Aging Research, the Ellison Medical Foundation and DCPB and DEE (SICB)

Organized by: James Harper, Anne Bronikowski

8:00 AM	S2.1	AUSTAD, SN; University of Texas Health Science Center, San Antonio	Comparative biology of aging in the 21st Century

8:30 AM	S2.2	VAN VOORHIES, WA, GOTTSCHLING, DE; New Mexico State University, Fred Hutchinson Cancer Research Center	Metabolic function and aging in yeast
9:00 AM	S2.3	SPEAKMAN, J; University of Aberdeen	The heat dissipation limitation theory and the evolution of life histories
9:30 AM	COFFEE BREAK		
10:00 AM	S2.4	HULBERT, AJ; University of Wollongong, Australia	Metabolism and longevity: is there a role for membrane fatty acids?
10:30 AM DCPB	S2.5	JUDD, ET, DREWRY, M, WRIGHT, K, WESSELS, F, HAHN, DA, HATLE, JD*; University of North Florida, University of Florida	Nutrient allocation in long-lived ovariectomized grasshoppers: tests of the disposable soma hypothesis
11:00 AM	S2.6	LEWIS, K, MELE, J, KIM, S-A, BUFFENSTEIN, R*; University of Texas Health Science Center at San Antonio	Xenobiotic metabolism, lifespan and aging
11:30 AM	LUNCH BREAK		
1:00 PM	S2.7	PROMISLOW, D; University of Georgia	A network perspective on metabolism and aging
1:30 PM DCPB	S2.8	WILLIAMS, JB; Ohio State University, University of Michigan	Functional linkages for the pace of life, life-history, and environment in birds
2:00 PM	S2.9	SHI, Y, LIU, YH, JERNIGAN, AL, BHATTACHARYA, A, BUFFENSTEIN, R, AUSTAD, SN, VAN REMMEN, H*; University of Texas Health Science Center, San Antonio	Skeletal muscle mitochondrial metabolism in three rodent species with disparate longevity
2:30 PM DEE	S2.10	BRONIKOWSKI, A; Iowa State University	Physiological evolution in natural populations of snakes with divergent lifespans, but negligible senescence

7:45 AM-3:00 PM
615/616

Symposium S3: Evolutionary Paths among Developmental Possibilities: A Symposium Marking the Contributions and Influence of Richard Strathmann

Supported by: DEE, DIZ (SICB) and the American Microscopical Society (AMS)

Organized by: Michael Hart, Molly Jacobs, Bob Podolsky

7:45 AM		KOHN, A	Opening Remarks
8:00 AM	S3.1	GROSBERG, RK, VERMEIJ, G*; University of California, Davis	Does life evolve differently in the sea?
8:30 AM DEDB	S3.2	EMLET, RB; University of Oregon	Evolution of morphological and functional novelties among invertebrate larvae - opportunities and limitations
9:00 AM DEE	S3.3	OYARZUN, FX, GROSBERG, RK; University of Washington, Seattle	Empirical evidence of familial conflict in the sea
9:30 AM	S3.4	PALMER, AR; University of Alberta	Learning, developmental plasticity and the evolution of morphological asymmetry
10:00 AM	COFFEE BREAK		
10:30 AM DEE	S3.5	MCDONALD, KA, GRUNBAUM, D; Smithsonian Tropical Research Institute, University of Washington, School of Oceanography	Swimming embryos point to planktonic performance standards for early-developmental motility

11:00 AM DIZ	S3.6	VAUGHN, D, ALLEN, JD; University of Washington, Friday Harbor Laboratories, College of William and Mary	The peril of the plankton
11:30 AM DIZ	S3.7	KOEHL, M, HADFIELD, M; University of California, Berkeley, University of Hawaii	Hydrodynamics of larval settlement from a larva's point of view
NOON	LUNCH BREAK		
1:00 PM DIZ	S3.8	JACOBS, MW, PODOLSKY, RD; Woods Hole Oceanographic Institution, Grice Marine Laboratory, College of Charleston	Developmental variation, carryover effects, and the importance of scale and context
1:30 PM DEE	S3.9	COHEN, CS, PADILLA, DK; San Francisco State University, Stony Brook University	Balancing local differentiation and adaptation with dispersal potential: limits and opportunities for range extensions, divergence, and invasion
2:00 PM DIZ	S3.10	HART, MW, MARKO, PB; Simon Fraser University, Clemson University	It's about time: divergence, demography, and the evolution of developmental modes in marine invertebrates
2:30 PM	S3.11	HARVELL, CD, HEWSON, I; Cornell University	Climate change and invertebrate microbial interactions

8:15 AM-3:00 PM
617

Symposium S4: Mechanics Without Muscle: Evolutionary Design of Macrophytes

Organized by: Patrick Martone

8:15 AM		MARTONE, PT	Introduction
8:30 AM	S4.1	ROWE, NP; CNRS, University Montpellier, France	How do climbing plants climb?
9:00 AM	S4.2	BURGERT, I, FRATZL, P; Max Planck Institute of Colloids and Interfaces, Germany	Plant movement mechanisms - cell wall architectures enable actuation without muscles
9:30 AM	S4.3	RUEGGEBERG, M, BURGERT, I, FRATZL, P; Max-Planck-Institute of Colloids and Interfaces, Germany	Elucidating the mechanical principles of stem movements in heliotropism
10:00 AM	COFFEE BREAK		
10:30 AM DCB	S4.4	MACH, KJ, STAAF, AV, TEPLER, SK, BOHNHOFF, JC, DENNY, MW; Hopkins Marine Station of Stanford University	Killing them softly: failure by fatigue in the wave-swept macroalga *Mazzaella*
11:00 AM DCB	S4.5	BOLLER, ML; St. John Fisher College	Reconfiguration and the biomechanics of flexible wave-swept macroalgae
11:30 AM DCB	S4.6	MARTONE, PT; University of British Columbia	Bending corallines: biomechanical adaptations of segmented calcified seaweeds
NOON	LUNCH BREAK		
1:00 PM	S4.7	SEIDEL, R, THIELEN, M, SCHMITT, C, BÜHRIG-POLACZEK, A, FLECK, C, SPECK, T; University of Freiburg, Germany, Plant Biomechanics Group, Foundry-Institute of the RWTH Aachen, Germany, Institute of Technology, Germany	Functional morphology and biomechanics of fruit walls and nut shells: concept generators for innovative biomechanic materials
1:30 PM	S4.8	EDWARDS, J, WHITAKER, DL; Williams College, Pomona College	Floral trebuchets, airguns and elaters effect rapid spore dispersal in low growing plants
2:00 PM	S4.9	FULOP, D, KRAMER, EM, DUMAIS, J*; Harvard University	Pollinarium ejection and the evolution of hypervariable male flowers in Catasetum orchids
2:30 PM		MARTONE, PT	Closing Remarks

8:00 AM-Noon
604

Session 1: Environmental Stress Responses and Proteomics

Chairs: Lars Tomanek (8-9:40 AM), Michael Dohm (10 AM-Noon)

8:00 AM DCPB	1.1	JOST, JA, PODOLSKI, S, WILLARD, K, FREDERICH, M; University of New England	A comparison in cellular stress response between subtidal and intertidal crustacean species
8:20 AM DCPB	1.2	SERAFINI, L, TOMANEK, L; California Poly, SLO	Comparative proteomics: the response of the ascidian congeners *ciona intestinalis* and *c. savignyi* to acute temperature stress
8:40 AM DCPB	1.3	TOMANEK, L, ZUZOW, M; California Polytechnic State University	The proteomic response of *Mytilus galloprovincialis* and *M. trossulus* to acute temperature stress
9:00 AM DCPB	1.4	OWUSU-ANTWI, Y, BENNETT, VA*; Clarion University of Pennsylvania	Effects of acclimation temperature and photoperiod on antifreeze protein synthesis in the hemolymph of beetle larvae (*Dendroides canadensis*)
9:20 AM DCPB	1.5	MEDINA-RUILOBA, H, STILLMAN, JH*; San Francisco State University	Species differences in the effects of exercise on the stability of the glycolytic enzyme LDH in porcelain crabs
9:40 AM	COFFEE BREAK		
10:00 AM	1.6	POWERS, ML, HADDOCK, SHD; University of California, Santa Cruz, Monterey Bay Aquarium Research Institute	A novel luciferase from the deep-sea cephalopod *Vampyroteuthis infernalis*
10:20 AM DCPB	1.7	CHARMANTIER, G, CHARMANTIER-DAURES, M, ANGER, K; University Montpellier, France, AWI, Germany	Loss of hypo-osmoregulation in a land-locked population of the shrimp *Macrobrachium amazonicum*
10:40 AM DDCB	1.8	MCGINN, NA, CHERR, GN; University of California, Davis	Diversity and complexity of multidrug resistance phenotypes of marine invertebrate oocytes
11:00 AM DCPB	1.9	KOMAN, JS, TOMANEK, L; Cal Poly SLO	Proteomic analysis of acute salinity stress in the two ascidian species *Ciona savignyi* and *C. intestinalis*
11:20 AM DCPB	1.10	RATHBURN, CK, SHARP, NJ, BURNETT, LE, BURNETT, KG; College of Charleston	Dynamics of gene regulation in the penaeid shrimp *Litopenaeus vannamei* exposed to hypoxia and hypercapnic hypoxia
11:40 AM DCPB	1.11	JOHNSON, SE, DIEHL, JM, TOMANEK, L; Cal Poly, SLO	Ecotoxicoproteomics: protein expression profiles of fish in response to the contaminant 4-nonylphenol

8:00-9:40 AM
605

Session 2: Neurobiology - Molecular Neurobiology & Neuroanatomy

Chair: Kathy Coates

8:00 AM DNB	2.0	SATTERLIE, RA; University of North Carolina Wilmington	Nervous system “centralization” in jellyfish
8:20 AM DNB	2.1	COATES, MM, NARINS, PM; University of California, Los Angeles	Manganese-enhanced magnetic resonance imaging in the frog brain
8:40 AM	2.2	DITTMAN, AH, MAY, D, HAVEY, MA; Northwest Fisheries Science Center, NOAA Fisheries, University of Washington	Odorant-induced changes in olfactory receptor mRNA expression in sockeye salmon (*Oncorhynchus nerka*) after imprinting
9:00 AM DNB	2.3	MANSHAD, AS, SALAZAR, EE, GÜTH, R, UNGUEZ, GA; New Mexico State University	Electrical activity-dependent regulation of muscle gene expression in the electric organ after chronic stimulation in live *Sternopygus macrurus*

9:20 AM DNB	2.4	KEENEY, BK, MEEK, TH, MIDDLETON, KM, HOLNESS, L, GERDEMAN, GL, RAICHLEN, DA, GARLAND, Jr, T; University of California, Riverside, California State University San Bernardino, Eckerd College, University of Arizona	Sex-specific involvement of the CB1 receptor in the high voluntary wheel running of selectively bred mice

9:40 AM COFFEE BREAK

10:00 AM-Noon
605

Session 3: Neurobiology - Neuroethology

Chair: Duane McPherson

10:00 AM DNB	3.1	HANNAFORD, SJ, FOSTER, RL, BOSSART, C; University of Puget Sound	Age, but not task-specialization, is associated with differences in brain structure in bumblebee, *Bombus huntii*, workers
10:20 AM DNB	3.2	HINTERWIRTH, AJ, DANIEL, TL; University of Washington	Visual rotation stimuli drive activity of intrinsic antennal muscles in Manduca sexta
10:40 AM DNB	3.3	WILLIS, MA, WERNEIWSKI, M, AVONDET, JL; Case Western Reserve University	Effects of loss of proprioceptive inputs on flight motor outputs of the moth, *Manduca sexta* L
11:00 AM DNB	3.4	FOX, JL, DANIEL, TL; University of Washington	Motion feature detection in a biological gyroscope
11:20 AM	3.5	ARCH, VS, GRAFE, TU, SIMMONS, DD, NARINS, PM; University of California, Los Angeles, University of Brunei Darussalam	A neuroethological analysis of ultrasonic communication in an endemic Bornean frog
11:40 AM DCB	3.6	STEINMETZ, SM, MALADEN, RD, DING, Y, GOLDMAN, D; Bioengineering Program, Georgia Tech	Muscle activation during surface and subsurface locomotion in sandfish (*Scincus scincus*)

8:00-9:40 AM
606

Session 4: Growth & Life History

Chair: Ian Davenport

8:00 AM DDCB	4.1	MORGAN, S, NGUYEN, M, ONOURA, C, TRAN, HT, DAVENPORT, IR; Xavier University of Louisiana	Follicle cell processes in the bull shark *Carcharhinus leucas*
8:20 AM DIZ	4.2	ROGERS-LOWERY, CL; Catawba College	Effects of elevated atmospheric CO_2 on growth in newly-settled coral polyps
8:40 AM	4.3	SOFAER, HR, SILLETT, TS, GHALAMBOR, CK; Colorado State University, Smithsonian Migratory Bird Center	Offspring growth and functional performance in orange-crowed warblers: a comparison between populations that differ in life-history strategies
9:00 AM DIZ	4.4	JOHNSON, AS, ELLERS, O; Bowdoin College	Precise measurement of growth using multiple fluorochrome markers, the cubed root of weight and a new growth function
9:20 AM DVM	4.5	DESCAMPS, E, TIAN, H, SANDERS, E, VAN HENGEL, J, VAN ROY, F, ADRIAENS, D; Ghent University, Gent, Flanders Interuniversity Institute for Biotechnology, Gent	Perturbations in the E-cadherin/catenin junctional complex in mouse embryos resulting in exencephaly

9:40 AM COFFEE BREAK

10:00 AM-Noon
606

Session 5: Exotic Morphology

Chair: David Hu

10:00 AM DCB	5.1	HU, DL, MLOT, N; Georgia Tech	Ant raft
10:20 AM DIZ	5.2	MIDDLEBROOKS, ML, BELL, SS, PIERCE, SK; University of South Florida	Chloroplast retention and satiation in the photosynthetic sea slug *Elysia clarki*
10:40 AM DCB	5.3	SMITH, AM, MENGES, M; Ithaca College	Cross-linking in slug glue: gelled plaster of Paris?
11:00 AM	5.4	FIGUEROA, A, LAILVAUX, S; University of New Orleans	Use of prehensile tails in cantilevering and prey capture in treeboas, Corallus hortulanus
11:20 AM	5.5	BUDKE, JM; University of Connecticut	Examining the gametophytic calyptra and its role in moss sporophyte development using the cord moss (*Funaria hygrometrica*)
11:40 AM	5.6	KILLPACK, T, SINGH, N, KARASOV, WH; University of Wisconsin, Madison, California State University, Northridge	Effect of chronic food restriction on gut morphology and digestive enzymes in nestling house sparrows

8:20-10:00 AM
608

Session 6: Molecular Evolution I - Genes and Genomes

Chair: Kathryn Brayer

8:20 AM DSEB	6.1	HAEN, KM, LAVROV, DV; Iowa State University	Conflicting evolutionary hypotheses from the analysis of 10 glass sponge mitochondrial genomes
8:40 AM	6.2	PETT, W, KAYAL, E, LAVROV, D; Iowa State University	Mitochondrial genome rearrangements in animals: an update with perspectives on computational tractability
9:00 AM DSEB	6.3	STANHOPE, BA, BERENDZEN, PB; University of Northern Iowa	Evolution of genome size in tetraploid suckers (Catostomidae: Cypriniformes)
9:20 AM DEE	6.4	RORICK, MM, WAGNER, GP; Yale University	Protein modularity and evolvability: evolutionary origins and consequences
9:40 AM DEDB	6.5	BRAYER, KJ, LYNCH, VJ, WAGNER, GP; Yale University	Evolution of physical interactions between transcription factors HoxA-11 and FOXO1A: thinking beyond cis-regulation

10:00 AM COFFEE BREAK

10:20 AM-Noon
608

Session 7: Molecular Evolution II - Smell and Vision

Co-Chairs: Alison Sweeney, John Taylor

10:20 AM DEE	7.1	CHURCHER, AM, TAYLOR, JS; University of Victoria	Still smelling after 550 million years; the amphioxus (*Branchiostoma floridae*) genome encodes orthologs of vertebrate odorant receptors
10:40 AM DEE	7.2	OWENS, GL, WINDSOR, DJ, ALLISON, WT, TAYLOR, JT; University of Victoria, University of Alberta	The molecular contribution to bifocal vision in the four-eyed fish, *Anableps anableps*

11:00 AM DIZ	7.3	SWEENEY, AM, HOLT, AL, MASON, E, MORSE, DE; University of California, Santa Barbara	Deep-sea silver: photonics and biochemistry of semi-coherent broadband reflectors on squid eyes
11:20 AM DEE	7.4	TAYLOR, JS, BREDEN, F, CHURCHER, AM, LAVER, CR, OWENS, GL, WARD, MN, WINDSOR, DJ; University of Victoria, Simon Fraser University	Gene duplication and divergence in live-bearer opsin genes
11:40 AM DEE	7.5	WINDSOR, DJ, OWENS, GL, ALLISON, WT, TAYLOR, JS; University of Victoria, University of Alberta	Characterizing the pattern of opsin gene expression in the retina: insight into how guppies (*Poecilia reticulata*) see their mate's true colors

8:20-9:40 AM
609

Session 8: Evolutionary Morphology I

Co-Chairs: Tristan Stayton, David Collar

8:20 AM DVM	8.1	STAYTON, CT; Bucknell University	The influence of mechanics on morphological disparity in the evolution of emydid turtle shell shape
8:40 AM DVM	8.3	COLLAR, D; Harvard University	Rates of morphological evolution vary with habitat use in dragon lizards
9:00 AM DVM	8.4	GARTNER, GE, JAYNE, BC, GARLAND JR, T; University of California, Riverside, University of Cincinnati	Comparative analysis of axial musculature in snakes
9:20 AM DEE	8.5	BERGMANN, PJ, IRSCHICK, DJ; University of Arizona, University of Massachusetts Amherst	Tempo and mode of lizard axial evolution. Is body elongation a key innovation?
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
609

Session 9: Community Ecology

Chair: Blair Wolf

10:00 AM	9.1	PAKES, MJ, WRIGHTON, KC, THRASH, JC, SANTIS, TD, ANDERSON, GL, ILIFFE, TM, COATES, JC, LINDBERG, DR, CALDWELL, RL; University of California, Berkeley, Lawrence Berkeley National Laboratory, Texas A&M, Galveston	Anchialine cave ecology: a multi-disciplinary approach
10:20 AM DEE	9.2	ORR, TJ, HYDE, TC, WOLF, BO; University of California, Riverside, University of New Mexico	How important are water developments to the Sonoran Desert bat community?
10:40 AM DEE	9.3	BURNAFORD, JL; California State University Fullerton	Slow recovery or community shift? Assessing the long-term effects of kelp canopy removal in the rocky intertidal zone
11:00 AM	9.4	TURNER, KR, SEBENS, KP; University of Washington	Indirect effects of marine protected areas on early community development in the San Juan Islands, WA
11:20 AM DEE	9.5	FERRER, RP, ZIMMER, RK; Seattle Pacific University, University of California, Los Angeles	Community ecology, evolution, and molecules of keystone significance
11:40 AM DEE	9.6	PARNELL, NF, STREELMAN, JT; Georgia Tech	The macroecology of rapid adaptive radiation

8:00-9:40 AM
610

Session 10: Metabolism and the Environment

Chair: Sherry Tamone

8:00 AM DCPB	10.1	BABONIS, LS, EVANS, DH; University of Florida	Salinity acclimation in sea snakes: a comparison of specialized and unspecialized cephalic glands
8:20 AM DIZ	10.2	DONOVAN, DA, ELSASSER, PA, WITTES, JW; Western Washington University, Swarthmore College, Pennsylvania	Broad salinity tolerances of the invasive clam *Nuttallia obscurata*
8:40 AM	10.3	HEINRICH, EC, KLOK, CJ, HARRISON, JF, FARZIN, M, MCKINLEY, B; Arizona State University	Mechanisms of hypoxia effects on body size of *Drosophila melanogaster*
9:00 AM DCPB	10.4	SHILLINGTON, C; Eastern Michigan University	Feeding metabolics and prey capture in newly emerged tarantula spiderings (*Theraphosa leblondi*)
9:20 AM DCPB	10.5	BEN-HAMO, M, PINSHOW, B, MCWILLIAMS, SR, BAUCHINGER, U; Ben-Gurion University of the Negev, Israel, University of Rhode Island	A reassessment of the proximate factors that trigger hypothermia in Japanese quail *Coturnix japonica*
9:40 AM	COFFEE BREAK		

10:00-11:40 AM
610

Session 11: Terrestrial Locomotion - Soft Substrates

Chair: Cinnamon Pace

10:00 AM DCB	11.1	LI, C, UMBANHOWAR, PB, GOLDMAN, DI*; Georgia Tech, Northwestern University	The effects of limb kinematics on the motion of a legged robot on sand
10:20 AM DCB	11.2	MAZOUCHOVA, N, GRAVISH, N, SAVU, A, GOLDMAN, D; Georgia Institute of Technology, Atlanta	No slip locomotion of hatchling loggerhead sea turtles on granular media
10:40 AM DCPB	11.3	PEYER, SM, HERMANSON, JC, LEE, CE; University Wisconsin-Madison, Forest Products Laboratory	Morphology and the mechanics of zebra and quagga mussel movement
11:00 AM DVM	11.4	PACE, CM, GIBB, AC, VAN WASSENBERGH, S; Northern Arizona University, University of Antwerp	Locomotion in catfishes: are catfishes exapted for walking on land?
11:20 AM	11.5	MILLER, CE, REN, L, HUTCHINSON, JR; Royal Veterinary College, University of London, Kings College, University of London	Cushioning the blow: foot-substrate interactions in elephants

8:00-11:40 AM
611

Session 12: Evolutionary Physiology - Vertebrates

Co-Chairs: Anne Maglia, Tony Williams

8:00 AM	12.1	TSAI, HP, OWERKOWICZ, T, SANCHEZ, L, FELBINGER, K, ANDRADE, F, BLANK, JM, EME, J, GWALTHNEY, J, HICKS, JW; University of California, Irvine	Exhaustive terrestrial and aquatic exercise does not affect periosteal deposition, structural properties or mineral content in limb bones of the American alligator
8:20 AM DSEB	12.2	BATAVIA, MP; University of California, Berkeley	The evolution of 'endothermy': terminological constraints and a phylogenetic analysis of metabolic rate evolution in non-mammalian therapsids
8:40 AM DAB	12.3	STEFFEN, JE, APPEL, AG; Auburn University	The energetic costs of different components of the social display in male Brown Anoles

9:00 AM	12.4	TOOMEY, MB, BUTLER, MW, MCGRAW, KJ; Arizona State University	Long-term immune system activation depletes carotenoids from retina of house finches (*Carpodacus mexicanus*)
9:20 AM	12.5	CROSSIN, GT, TRATHAN, PN, PHILLIPS, RA, WILLIAMS, TD; Simon Fraser University, Canada, Centre for Ecology and Hydrology, UK, British Antarctic Survey	Trade-off between migration and reproduction, and the physiological basis of egg size dimorphism in Macaroni penguins
9:40 AM	COFFEE BREAK		
10:00 AM DEE	12.6	WILLIAMS, TD; Simon Fraser University, Burnaby, Canada	Why do we know so little about mechanisms underlying avian reproduction?
10:20 AM DEE	12.8	GEBCZYNSKI, AK*, SADOWSKA, J, KONARZEWSKI, M; University of Bialystok, Poland	Basal Metabolic Rate (BMR) of parents is positively correlated with postnatal growth rate of offspring in laboratory mice
10:40 AM DCPB	12.9	DOWNS, CJ, WONE, B, DONOVAN, ER, HUNTER, K, HAYES, JP; University of Nevada, Reno, University of California, Riverside	Immune function in mice selected for high metabolic rate
11:00 AM DAB	12.10	CAREAU, V, REALE, D, HUMPHRIES, MM, THOMAS, DW; Université de Sherbrooke, Canada, Université du Université Montréal, Canada, McGill University, Canada	Of voles, mice, chipmunks and dogs: the energetics of animal personality
11:20 AM DCPB	12.11	ACOSTA, W, SCHUTZ, H, DLUGOSZ, EM, MEEK, TH, HANNON, RM, KEENEY, BK, RADOJCIC, BE, MACIEL, RC, GARLAND, Jr T; University of California, Riverside	Food choice in mice selectively bred for high voluntary wheel running

8:20-9:40 AM
612

Session 13: Swimming - Invertebrate Swimming

Co-Chairs: Jeannette Yen, Frank Fish

8:20 AM DCB	13.1	YEN, J, CHANG, Y; Georgia Tech, Atlanta	Locomotory kinematics of the pteropod *Limacina helicina*
8:40 AM DCB	13.2	CAMPOS, EO; University of Washington, Seattle	Rowing with multiple appendages in stomatopod crustaceans: beyond single paired appendages
9:00 AM DEE	13.3	ROBINSON, HE, FINELLI, CM, BUSKEY, EJ; University of California, Berkeley	Turbulence over a coral reef interferes with zooplankton escape behavior
9:20 AM DCB	13.4	HERMANSON, JC, PEYER, SM, JOHNSON, JA; USFS Forest Products Laboratory, University of Wisconsin-Madison, University of Washington	Determination of lift and drag coefficients of zebra and quagga mussels using an inverse method
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
612

Session 14: Swimming - Fin Function

Co-Chairs: Jeannette Yen, Frank Fish

10:00 AM	14.1	BAKER, TV, ANDERSON, EJ, LIM, JL, LAUDER, GV; Grove City College, Harvard University	Locomotion by flexible foils: effect of length and stiffness on performance
10:20 AM DCB	14.2	FISH, FE; West Chester University, Pennsylvania	Swimming kinematics of manta rays: oscillatory winged propulsion by a large pelagic batoid
10:40 AM DVM	14.3	MAIA, A, WILGA, CD; University of Rhode Island	Dorsal fin function in spiny dogfish and bamboo sharks during steady swimming
11:00 AM DCB	14.4	PORTER, ME, EWOLDT, RH, LONG, JH; Vassar College, University of Minnesota	Non-linear viscoelastic properties of *Squalus acanthias* vertebral columns bending dynamically
11:20 AM DVM	14.5	TAFT, NK; University of Chicago	Exploring the adaptive significance of morphological specializations of the pectoral fins among benthic scorpaeniform fishes
11:40 AM	14.6	FOSTER, KL, HIGHAM, TE; University of British Columbia, Clemson University	Functional morphology and biomechanics of ratfish steady swimming

8:20 AM-Noon
613/614

Session 15: Endo: Regulation of Development and Growth

Co-Chairs: Penny Hopkins, Julie Richmond

8:20 AM DCE	15.1	HOPKINS, PM, DURICA, DS, DAS, S, KHAMBADAKONE, D; University of Oklahoma, Norman	Differential response to eyestalk removal and multiple autotomy in the fiddler crab, *Uca pugilator*
8:40 AM DCPB	15.2	HEALY, JE, OSTROM, CE, GEARHART, CN, FLORANT, GL; Colorado State University	Effects of peripheral ghrelin injections on food intake and behavior of golden-mantled ground squirrels (*Spermophilus lateralis*)
9:00 AM DCE	15.3	JIAO, S, LU, L, JIANFENG, Z, YUN, L, CUNMING, D; University of Michigan, Ocean University of China	Molecular and functional characterization of the zebrafish clusterin gene: specific expression in the developing choroids plexus and regulation by Notch signaling
9:20 AM	15.4	WILSON, CH, CHRISTIE, AE; Denison University, Mount Desert Island Biological Laboratory	Distribution of allatostatin C-like immunoreactivity in the central nervous system of the copepod crustacean *Calanus finmarchicus*
9:40 AM DCE	15.6	DUNCAN, CA, COHICK, WS, JOHN-ALDER, HB; Rutgers University, New Brunswick	Effects of food deprivation on the insulin-like growth factor-I system in eastern fence lizards (*Sceloporus undulatus*)
10:00 AM	COFFEE BREAK		
10:20 AM DCE	15.7	RICHMOND, JP, KEOGH, M, ATKINSON, S, ZINN, SA; University of Connecticut, Storrs, University of Alaska Fairbanks	Seasonal changes in leptin and ghrelin concentrations associated with intake and body condition of captive Steller sea lions
10:40 AM DDCB	15.8	ADAMS, N, CAMPANALE, J, GRAVEM, S, MALLICOAT, A, MALLONEE, M; California Polytechnic State University, San Luis Obispo	Long-term exposure of adult purple sea urchins, *Strongylocentrotus purpuratus*, to sunlight protects embryos from ultraviolet radiation

11:00 AM DCPB	15.9	CHEN, Q, BRANN, K, PHANPAKTRA, A, DORES, RM; University of Denver	Novel posttranslational processing of POMC in the anterior pituitary of the adult frog Silurana tropicalis
11:20 AM	15.10	WHITAKER, SE, COOLEY, J, SWEENEY, S, DAVIDSON, B; University of Arizona	Cdc42 activity drives fate specification of the heart lineage
11:40 AM DCE	15.11	DAI, W, HWANG, PP, DUAN, C; University of Michigan, Institute of Cellular and Organismic Biology, Taiwan	Exploring the duplicated zebrafish genes: discovery of a novel role of insulin-like growth factor binding protein (IGFBP)-5 in calcium homeostasis

8:00-10:00 AM
618

Session 16: Development - Morphogenesis

Chair: Craig Magie

8:00 AM DEDB	16.1	VIRTA, VC; University of Washington	Structural components and morphogenetic mechanics of the zebrafish yolk extension developmental module
8:20 AM DEDB	16.2	MAGIE, CR, DALY, M, MARTINDALE, MQ; California State University, Fresno, Ohio State University, University of Hawai'i	Cell adhesion and the cell biology of gastrulation in the cnidarian, *Nematostella vectensis*
8:40 AM DDCB	16.3	SEMON, SN, ROBIN, F, SHERRARD, K, MUNRO, E; University of Washington, MGCB, University of Chicago, The Center for Cellular Dynamics	Neural tube closure: zipper propagation in ascidian embryos
9:00 AM DDCB	16.4	MONTGOMERY, MS, MUNRO, E, SHERRARD, K, ROBIN, F; University of Washington, Seattle	Initiation of neural tube closure in *Ciona Intestinalis*
9:20 AM DDCB	16.5	VELASQUEZ-CARVAJAL, D, SHERARD, KM, ROBIN, FB, MUNRO, EM; University of Washington, University of Antioquia, University of Chicago	Computational approach to neural tube closure
9:40 AM DDCB	16.6	DANAHER, B, MUNRO, E, SHERRARD, K, ROBIN, F; University of Washington	Ascidian neural tube morphogenesis proceeds normally following ablation of the notochord

10:00 AM COFFEE BREAK

10:20 AM-Noon
618

Session 17: Development - Regulation of Development

Chair: Stephen Roberts

10:20 AM DIZ	17.1	HEATH-HECKMAN, EAC, MCFALL-NGAI, MJ; University of Wisconsin - Madison	Chitin as a component of the invertebrate immune system
10:40 AM DCE	17.2	LAUFER, H, CHEN, M, BACLASKI, B, STEWART, J, BOBBITT, J, JACOBS, M, ZUO, Y, JOHNSON, M, ZHU, Z; University of Connecticut, Woods Hole Oceanographic, University of Massachusetts	Effects of alkylphenols on lobster molting and metamorphosis
11:00 AM DCE	17.3	KULKARNI, S, ELINSON, R, SINGAMSETTY, S, BUCHHOLZ, D; University of Cincinnati, Duquesne University	Regulation of development by corticotropin releasing hormone in direct developing frog *eleutherodactylus coqui*

11:20 AM	17.4	STAHL, AL, OLSON, WM; University of Northern Iowa	A timecourse study in embryonic development of African dwarf frogs *Hymenochirus boettgeri* exposed to atrazine
11:40 AM DCPB	17.5	ROBERTS, SP, WANG, X, DE BELLE, JS; Central Michigan University, University of Nevada Las Vegas	Environmental effects on *Drosophila* brain development and learning

8:00-9:40 AM
619

Session 18: Reproductive Behaviors

Chair: Hsin-Drow Huang

8:00 AM DEE	18.1	KERR, K, CHRISTY, J, GUICHARD, F, COLLIN, R, LUQUE, J, JOLY-LOPEZ, Z; McGill University, Montreal and Smithsonian Tropical Research Institute (STRI), Panama, STRI, Panama, McGill University, Canada	The influence of temperature on courtship timing and incubation period in fiddler crabs (*Uca*)
8:20 AM DNB	18.2	CALISI, RM, PERFITO, MN, BENTLEY, GE; University of California, Berkeley, Max Planck Institute for Ornithology	How can stress affect the neural control of reproduction? An examination of gonadotropin inhibitory hormone (GnIH) and glucocorticoid receptors (GR) in songbirds
8:40 AM DCE	18.3	BERGEON BURNS, CM, WINGFIELD, JC, KETTERSON, ED; Center for the Integrative Study of Animal Behavior, Indiana University, Bloomington	Seasonal and individual differences in elevation of LH and T in response to GnRH in female dark-eyed juncos
9:00 AM DAB	18.4	HARTKE, TR, ROSENGAUS, RB; Northeastern University, Boston	A couple or a crowd? Factors influencing founding-group size in the termite *Nasutitermes corniger*
9:20 AM DIZ	18.5	HUANG, H-D; National Museum of Natural Science	Mass aggregation for reproduction by a gymnodoridid nudibranch, *Gymnodoris ceylonica* (Kelaart, 1858), in Lanyu (Orchid Is.), Taiwan
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
619

Session 19: Behavioral Ecology - Abiotic Factors

Chair: Mike Sears

10:00 AM DCPB	19.1	ANDERSON, RA; Western Washington University	Whole animal performances vary with body temperature and ecological function in a lizard
10:20 AM	19.2	CASEY, JP, GARNER, SA, SOUTHWOOD, AL; University of North Carolina, Wilmington, West Indies Marine Animal Research and Conservation Service, Inc., St. Croix, USVI	Stomach temperature recordings provide evidence of feeding during the internesting interval for leatherback turtles, *Dermochelys coriacea*
10:40 AM DAB	19.3	STAHLSCHMIDT, ZR, DENARDO, DF; Arizona State University, Tempe	Parental behavior in pythons is dependent on both the hydric and thermal dynamics of the nest
11:00 AM DCPB	19.4	LILLYWHITE, HB, LIU, Y-L, TU, M-C; University of Florida, Gainesville, National Taiwan Normal University	Do sea snakes anticipate tropical storms?

11:20 AM DEE	19.5	SPRAGUE, JC, WOODS, HA; The University of Montana	Buried alive: the physiological ecology of manduca sexta pupal chambers
11:40 AM DAB	19.6	POPE, DS, CHANG, KH; Mount Holyoke College, Massachusetts	Hood-building behavior by the fiddler crab *Uca musica* differs with sediment type and time exposed at low tide

1:20-3:00 PM
604

Session 20: Musculoskeletal Morphology and Mechanics

Chair: Nicolai Konow

1:20 PM DVM	20.1	POWERS, KL, GILMORE, LA, MONROY, JA, UYENO, TA, NISHIKAWA, KC; Northern Arizona University	Using trypsin digestion to determine the relative contributions of titin and collagen to passive elastic properties of whole muscles
1:40 PM DCB	20.2	MENDOZA BLANCO, MA, PATEK, SN*; University of California, Berkeley, University of Massachusetts, Amherst	Comparative muscle physiology of the mantis shrimp's raptorial appendage
2:00 PM DVM	20.3	MONROY, JA, UYENO, TA, GILMORE, LA, POWERS, KA, NISHIKAWA, KC*; Northern Arizona University	Activation changes the length and stiffness of elastic elements in soleus muscles of wild-type mice, but not in titin mutants
2:20 PM DCB	20.4	KONOW, N, AZIZI, M, ROBERTS, TJ; Brown University	Avian all-terrain: tendons as power attenuators during rapid energy absorption
2:40 PM DCB	20.5	GEORGE, NT, DANIEL, TL; University of Washington, Seattle	Mechanical energy gradients arise as a consequence of temperature gradients in the flight muscles of *Manduca sexta*

1:00-2:40 PM
605

Session 21: Animal Communication

Chair: Samuel Caro

1:00 PM DVM	21.1	RICE, AN, LAND, BR, BASS, AH; Cornell University	Novel toadfish swimbladder morphology creates nonlinear acoustic complexities
1:20 PM DVM	21.2	KAATZ, IM, RICE, AN, STEWART, DJ, LOBEL, PS; Bioacoustics Program, Cornell University, SUNY College of Environmental Science and Forestry, Boston University	Why are there silent catfishes: shifts in pectoral fin function and changes in pectoral spine morphology
1:40 PM DAB	21.3	HOBBS, NJ, FERKIN, MH; University of Memphis	Dietary protein content affects top-scent preference in meadow voles
2:00 PM DAB	21.4	PASCH, B; University of Florida	Role of song in the altitudinal replacement of Neotropical singing mice (Scotinomys)
2:20 PM DAB	21.5	HAMEL, JA, COCROFT, RB; University of Missouri	Receivers, functions, and costs of parent-offspring signaling in treehoppers (Hemiptera: Membracidae)

1:00-3:00 PM
606

Session 22: Coral Reef Ecology

Chair: Mikhail Matz

1:00 PM DIZ	22.1	MAZZILLO, M, KEMPF, SC; Auburn University	Mucilage secretion in different *Symbiodinium* strains
1:20 PM	22.2	COLVARD, NB, EDMUNDS, PJ; California State University, Northridge	The physiological response of tropical reef corals to light reflected from the benthos

1:40 PM DEE	22.3	WEBER, MX, FAY, SA, LIPPS, JH; University of California, Berkeley	The biogeography of *Symbiodinium* from giant clams (Tridacnidae)
2:00 PM	22.4	MEYER, E, MATZ, MV; University of Texas, Austin	Expression profiling coral responses to thermal stress and settlement cues using RNA-Seq
2:20 PM DEE	22.5	MEYER, E, WANG, S, AGYAMOVA, G, MATZ, M*; University of Texas at Austin	Quantitative genetics and genomics of reef-building coral Acropora millepora
2:40 PM	22.6	KENKEL, CD, ALAMARU, A, CUNNING, JR, KUEHL, K, MAHMOUD, H, PALMER, CV, PANTILE, R, SHASHANK, K, SILVERSTEIN, RN, TANG, PC, MATZ, MV; University of Texas, Austin, Tel Aviv University, Israel, University of Miami, Florida International University, Miami, Kuwait University, Newcastle University, UK, James Cook University, AUS, Australian Institute of Marine Science, Academia Sinica, Taiwan, University of Louisiana, Lafayette	Integrative gene expression analysis of stress response in *Porites astreoides*

1:00-3:00 PM
608

Session 23: Life History Evolution

Chair: Robert Cox

1:00 PM DEE	23.1	CLEMMENSEN, SF, HAHN, DA; University of Florida	Size matters: seasonal plasticity of development in a diapause-destined moth, *Helicoverpa zea*
1:20 PM DEE	23.2	COLEMAN, AT, WIBBELS, T, HUANG, Y-h, MARION, K, DINDO, J; University of Alabama at Birmingham, Dauphin Island Sea Lab	Do larger females produce more fit hatchlings? Effect of female age and size on egg size and hatchling growth in the Mississippi diamondback terrapin, *Malaclemys terrapin pileata*
1:40 PM DIZ	23.3	COLLIN, R, MÉROT, C; Smithsonian Tropical Research Institute	Sex change in two species of calyptraeid gastropods: effects of nutrition and perceived mortality risk
2:00 PM DEE	23.4	COX, RM, CALSBEEK, R; Dartmouth College	The ecology of life-history trade-offs: whole-island manipulations of predation regime in a wild lizard
2:20 PM DEE	23.5	WESSELS, FJ, HAHN, DA; University of Florida	Productive procrastination: stable isotopes reveal benefits associated with a reproductive delay in flesh flies
2:40 PM DEE	23.6	HOCH, JM, LEVINTON, JS; Stony Brook University	Experimental tests of sex allocation theory in two species of simultaneously hermaphroditic acorn barnacles

1:00-3:00 PM
609

Session 24: Population Ecology

Chair: Stephen Adolph

1:00 PM	24.1	LATTANZIO, MS, MILES, DB; Ohio University	Modeling shifts in resource use by lizards due to anthropogenic disturbance: an isotopic approach
1:20 PM DEE	24.2	OLIVIER, TJ, BAUER, RT; University of Louisiana-Lafayette	Downstream hatching migrations of the river shrimp *Macrobrachium ohione* in the Lower Mississippi River System
1:40 PM DEE	24.3	STREBY, HM, ANDERSEN, DE; Minnesota Cooperative Fish and Wildlife Research Unit	When is success not success? When it's songbird nesting success

2:00 PM DEE	24.4	ADOLPH, SC, DAVIS, AR, FEDEROWITZ, M, PETERSEN, J; Harvey Mudd College, University of California, Berkeley	Stochastic population dynamics of a desert lizard
2:20 PM DIZ	24.5	PRICE, RM, ELAHI, R; University of Washington, Bothell, University of Washington, Seattle	Emersion limits short term growth rates in intertidal *Nucella lamellosa*
2:40 PM	24.6	TOBIN, ED, GRUNBAUM, D, CATTOLICO, RA; School of Oceanography, University of Washington	Cell motility, life stage transitions and cyst distribution of the harmful alga, *Heterosigma akashiwo*

1:00-3:00 PM
610

Session 25: Terrestrial Locomotion - Non-traditional Locomotion

Chair: Olaf Ellers

1:00 PM DCB	25.1	YOO, EH, CARROLL, AM, BIEWENER, AA; Harvard University, University of Evansville	Forelimb dynamics and kinetics during landing jumps in African pygmy goats (*Capra hircus*)
1:20 PM DCB	25.2	ELLERS, O, YOSHIMURA, K, MOTOKAWA, T, JOHNSON, A; Bowdoin College, Tokyo Institute of Technology	Why not walk faster, underwater?
1:40 PM DCB	25.3	WEST, DM, HU, DL; Georgia Institute of Technology	Thermotaxis of jumping beans
2:00 PM DCB	25.4	RYERSON, WG; University of Connecticut	Jumping in the salamander *Desmognathus ocoee*
2:20 PM DVM	25.5	BUTLER, MA, SCALES, JA; University of Hawaii	Effects of load and reproduction on locomotor performance in the lizard *Iguana iguana*
2:40 PM DAB	25.6	HERRMANN, MH, JAYNE, BC; University of Cincinnati	Perch size and structure have species-dependent effects on the arboreal locomotion in rat snakes and boas

1:20-3:00 PM
611

Session 26: Evolutionary Physiology - Invertebrates & Fish

Chair: Ray Willis

1:20 PM DCPB	26.1	CONTRERAS, HL, BRADLEY, TJ; University of California, Irvine	Respiratory gas exchange patterns of a semi-aquatic insect: effects of environmental humidity vs. oxygen demand
1:40 PM DCPB	26.2	DALZIEL, AC, SCHULTE, PM; University of British Columbia	Evolutionary variation in physiological traits contributes to differences in swimming capacity among migratory and non-migratory threespine stickleback (*Gasterosteus aculeatus*)
2:00 PM	26.3	LOCKWOOD, BL, SANDERS, JG, SOMERO, GN; Hopkins Marine Station of Stanford University	Transcriptomic responses to heat-stress reveal the molecular basis for the success of invasive mussels
2:20 PM DEE	26.4	SPEISER, DI, LOEW, ER, JOHNSEN, S; Duke University, Cornell University	Spectral sensitivity of the concave mirror eyes of scallops: the influence of habitat and longitudinal chromatic aberration
2:40 PM DSEB	26.5	REFT, AJ; Ohio State University	Form, function, and evolution of holotrichous isorhiza nematocysts

1:00-3:00 PM
612

Session 27: Swimming - Non-piscine Swimming

Jeanette Wyneken

1:00 PM	27.1	ALMEIDA, S, IRSCHICK, DJ; University of Massachusetts, Amherst	Evaluating the affects of climate change on larval locomotor performance in *Ambystoma maculatum*
1:20 PM DVM	27.2	WYNEKEN, J, SALMON, M, HAMANN, M; Florida Atlantic University, James Cook University	Swimming and early diving behavior by juvenile flatback sea turtles (*Natator depressus*)
1:40 PM DCB	27.3	DING, Y, MALADEN, R, KAMOR, A, GOLDMAN, D; Georgia Institute of Technology	Mechanics of subsurface swimming of the sandfish *Scincus scincus*
2:00 PM DVM	27.4	PERLMAN, BM; Moss Landing Marine Laboratories	Swimming performance, as indicated by U_{crit} and C-start escape responses, in surfperches (Embiotocidae)
2:20 PM DCB	27.5	NOWROOZI, BN, BRAINERD, EL; Brown University	Lateral bending kinematics of the vertebral column in *Morone saxatilis*
2:40 PM	27.6	MICHEL, KB, STEWART, W, MULLER, U, MCHENRY, MJ; University of Groningen, University of California, Irvine, California State University, Fresno	The role of flow sensing in the undulatory swimming of teleost fish (*Notemigonus crysoleucas*)

1:20-3:00 PM
613/614

Session 28: Physical Ecology

Chair: Art Woods

1:20 PM DEE	28.1	DEVRIES, MS, LU, S, MARTÍNEZ DEL RIO, C, DAWSON, TE; University of California, Berkeley, University of Wyoming	Determining diet over multiple timescales: isotopic turnover in mantis shrimp
1:40 PM DCPB	28.2	JOHNSEN, S, HADDOCK, SHD; Duke University, Monterey Bay Aquarium and Research Institute	A glowing benthic animal is hard to find: a photographic and spectroscopic survey of bioluminescence on the deep-sea floor
2:00 PM DEE	28.3	WOODS, HA, POTTER, KA; University of Montana, University of Arizona	Life in leaf boundary layers: how two millimeters of still air affects the performance and ecology of small insects
2:20 PM DEE	28.4	POWERS, SD, ANDERSON, RA; Western Washington University	How does spatial variation in climate cause spatiotemporal patterns in lizard energetics?
2:40 PM	28.5	PLACE, SP; University of South Carolina	Linking physiological traits across rocky intertidal communities through ecological genomics

1:00-3:00 PM
618

Session 29: Complementary Session: Animal Regeneration I

Chair: Billie Swalla

1:00 PM DDCB	29.1	BROWN, FD, KEELING, EL, LE, AD, SWALLA, BJ; University of Washington, Seattle, Universidad de los Andes, University of Washington, California Polytechnic State University, San Luis Obispo	Bloody whole body regeneration!
1:20 PM DEDB	29.2	HARMON, S, BURTON, PM*; Wabash College	How many mouths are too many? Induction of oral fates in the cnidarian *Nematostella vectensis*
1:40 PM	29.3	ZATTARA, EE, BELY, AE; University of Maryland, College Park	Evolution of developmental trajectories: regeneration and fission in naidid annelids

2:00 PM	29.4	NYBERG, KG, BELY, AE; University of Maryland, College Park	Transcriptome characterization via 454 sequencing of an oligochaete annelid (*Pristina leidyi*) used in regeneration research
2:20 PM	29.5	MASHANOV, VS, ZUEVA, OR, HEINZELLER, T, GARCIA-ARRARAS, JE; University of Puerto Rico, LMU, Munich	Echinoderm nervous system as an emerging model to study neural regeneration
2:40 PM DDCB	29.6	LUTTRELL, S, BENGTSSON, BC, SWALLA, BJ*; University of Washington	Central nervous system development and regeneration in hemichordates

1:00-3:00 PM
619

Session 30: Behavioral Ecology - Biotic Factors

Chair: Denise Pope

1:00 PM	30.0	MUNSON, DA; Washington College	*Acanthamoeba spp.* distribution in a Chesapeake Bay tributary after sewage treatment upgrade
1:20 PM DAB	30.1	CLASS, AM, MOORE, IT; Virginia Tech	Food supplementation promotes molt and not reproduction in a tropical bird
1:40 PM	30.2	CLUCAS, B, MARZLUFF, JM; University of Washington, Seattle and Humboldt University, Berlin	Human-avian interactions in urban areas
2:00 PM	30.3	CSIKAR, EJ, VALENTINO, RJ, WALSBERG, GE; ASU, C.H.O.P.	Correlation between differences in CRF levels and behavior in wild-trapped kangaroo rats
2:20 PM DCE	30.4	LIEBL, AL, SCHMIDT, EJ, MARTIN, LB; University of South Florida	Physiological correlations of neophobic behavior: is regulation of the hypothalamic-pituitary-adrenal axis correlated to responses to novelty?
2:40 PM	30.5	VAN MAURIK, LN, WORTHAM, JL, MCRAE, MG; University of Tampa, FL	The setal patch of a *Macrobrachium* shrimp: grooming function, a sexual dimorphism, or our black box?

6:30-7:30 PM
606/607/608/609

George A. Bartholomew Award Lecture

	NESPOLO, R; Universidad Austral de Chile	From comparative physiology to evolutionary biology through animal bioenergetics: practicing the Krogh principle in South America

MONDAY - POSTER SESSION P1

Exhibit Hall 6A/B/C, 3:00 - 5:00 PM

Even # Posters - Authors present from 3:00 - 4:00 pm

Odd # Posters - Authors present from 4:00 - 5:00 pm

Aggression

P1.1 DAB	WOOD, K, LANGDON, Q, SCHUMER, M, RENN, S; Reed College	Genomic basis for sex-role phenotypes
P1.2 DAB	DUBIN, ME, WEISS, SL; University of Puget Sound	The effect of female ornamentation on aggressive male-male interactions in the striped plateau lizard (*Sceloporus virgatus*)
P1.3 DAB	BLACK, MP, EZEOKE, CB*, SALEM, SJ, SABULA, MJ, WILCZYNSKI, W; Georgia State University, Atlanta, Georgia Southern University, Statesboro	*Anolis carolinensis* male-male agonistic encounters: a three year study of the best predictors for determining dominant/subordinate status

Complementary Session: Evolutionary Paths Among Developmental Possibilities: A Symposium Marking the Contributions and Influence of Richard Strathmann

P1.4 DIZ	TEMKIN, MH, BELL, P, DIXON, E; St. Lawrence University	Homebox gene expression in developing zooids of the marine bryozoan *Membranipora membranacea*
P1.5 DEE	PERINO, LL, MUNCH, SB, PADILLA, DK; Stony Brook University	Predicting the impacts of fluctuating bivalve densities on phytoplankton communities
P1.6 DIZ	WHITEHILL, EAG, MCALISTER, JS, MORAN, AL; Clemson University	Respiration rates and energetic content of larvae of a tropical ophiuroid: comparisons with a sympatric echinoid
P1.7 DIZ	DIXON, JM, ALLEN, JD; Randolph-Macon College, College of William and Mary	The role of encapsulation in the marine gastropod, *Nucella lapillus*
P1.8 DIZ	SANTONI, AM, ALLEN, JD; Randolph-Macon College, College of William and Mary	Predator induced plasticity in maternal investment of the mud snail *Ilyanassa obsoleta*

Complementary Session: Late Breaking Symposium: Insights of Early Chordate Genomics: Endocrinology and Development in Amphioxus, Tunicates and Lampreys

P1.9 DSEB	PUTNAM, NH; Rice University	Testing for the action of selection on genome rearrangement dynamics deep in the metazoan tree
P1.10 DCE	AQUILINA-BECK, A, MACDONALD, C*, KAVANAUGH, SI, SOWER, SA; University of New Hampshire, Durham	Identification of two novel Type-II GnRH receptors in the sea lamprey, a basal vertebrate
P1.11	STAROBINSKA, EI, SWEENEY, S, DAVIDSON, B; University of Arizona	Identification of novel genes involved in heart formation
P1.12	MANOUSAKI, T, FEINER, N, BEGEMANN, G, MEYER, A, KURAKU, S; University of Konstanz	Relation of *Pax4* gene to the legendary *Pax6/eyeless* orthology
P1.13	KANO, S, XIAO, J, OSORIO, J, HADZHIEV, Y, EKKER, M, RETAUX, S; CNRS, Gif-sur-Yvette, France, University of Birmingham, UK, University of Ottawa, Canada	Conserved regulatory elements found in the lamprey hedgehog loci
P1.14 DCE	SOWER, SA, BALZ, E, MACDONALD, C, KAVANAUGH, SI; University of New Hampshire, Durham	Changes in brain concentrations of GnRH-I, -II, and -III during the final reproductive period in adult male and female sea lamprey
P1.15 DEDB	LU, TM, BRONNER-FRASER, M, YU, JKS*; Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan, California Institute of Technology	BMP and Delta/Notch signaling control the development of amphioxus epidermal sensory neurons

Complementary Session: Metabolism, Life History and Aging

P1.16 DEE	ELLIOTT, KH, GASTON, AJ; University of Manitoba, Canada	The prudent parent meets old age: senescence in thick-billed murres

P1.17 DEE	HOEKSTRA, LA, MONTOOTH, KL; Indiana University, Bloomington	The significance of energetic constraints on the evolution of inducible physiologies
P1.18 DCPB	DREWRY, MD, WILLIAMS, JM, HATLE, JD; University of North Florida	Effects of reduced dietary intake and reduced reproduction on longevity in the lubber grasshopper
P1.19	BASTEA, L, WALKER, L, VIRGILIO, A, BRIX, KV, WADA, RH, WESSELS, F, HAHN, DA, HATLE, JD; University of North Florida, University of Miami, University of Florida	Mild life extension and reduced reproductive output in female flesh flies on dietary protein restriction
P1.20	KHODABANDEH, S, OULAD, S, ABEDIAN KENARI, AM; University of Tarbiat Modares, Tehran, University of Tarbiat Modares	Effects of food containing nucleotide additive on the pyloric caeca Na+,K+-ATPase- α 1a and NKCC1 mRNA expression in young Caspian salmon, *Salmo trutta caspius*
P1.22 DCPB	MIZRAHY, O, BEN-HAMO, M*, BAUCHINGER, U, PINSHOW, B; Ben Gurion University	The effects of water availability on tissue rebuilding in migratory blackcaps during stopover

Developmental Patterning and Morphogenesis

P1.23 DIZ	HOCHBERG, A, HOCHBERG, R; University of Massachusetts Lowell	New insights on larval metamorphosis in sessile rotifers: species of *Stephanoceros*
P1.24 DEDB	LYONS, DC, WEISBLAT, DA; University of California, Berkeley	Coordinating cell cleavage pattern and fate determination in the leech *Helobdella*
P1.25	WEVER, JM, HENRY, JJ, NEWMARK, PA; University of Illinois - Urbana	Bringing lophotrochozoa into studies of comparative eye development and eye evolution
P1.26 DDCB	VALLEY, JR, MARTIN, VJ; Appalachian State University	Eye development in the box jellyfish Carybdea marsupialis
P1.27 DCPB	ROMNEY, AL, REIBER, CL; University of Nevada, Las Vegas	Embryonic development and cardiac morphometrics of the grass shrimp *Palaemonetes pugio*
P1.28 DDCB	BICKEL, R, BELLETIER, N, CLEVELAND, H, STERN, DL, DAVIS, G*; University of Nebraska, Lincoln, Bryn Mawr College, Princeton University	A patterning difference underlying viviparous and oviparous development in the pea aphid
P1.29 DDCB	SHERRARD, K, ROBIN, F, CARVAJAL, D, DANAHER, B, DENG, W, JOSHI, S, MONTGOMERY, M, SEMON, S, WHITE, D, MUNRO, E; University of Washington, University of Chicago, Universidad de Antioquia, Columbia, SARS Institute, Norway, University of Pittsburgh, University of Alberta, Edmonton	Cellular basis for ascidian neurulation
P1.30 DDCB	ROBIN, FB, SHERRARD, KM, MONTGOMERY, M, SEMON, S, MUNRO, EM; University of Washington, University of Chicago	A propagating zone of localized protrusive and contractile activity drives zippering and neural tube closure in ascidians
P1.31 DDCB	MORGAN, S, NGUYEN, M, ONOURA, C*, RICHARDSON, T, TRAN, HT, DAVENPORT, IR; Xavier University of Louisiana	Follicle cell processes in the sandbar shark *Carcharhinus plumbeus*
P1.32 DDCB	VON DASSOW, M, DAVIDSON, LA; University of Pittsburgh	Force generation and viscoelastic resistance in the amphibian embryonic epithelium
P1.33 DCE	MILLER, B, SCHREIBER, AM; St. Lawrence University	Treatment of Xenopus laevis tadpoles with pharmacological inhibitors of matrix-metalloproteases (MMPs) suppresses metamorphic intestinal remodeling
P1.34 DDCB	OLSON, KE, WIENS, DJ; University of Northern Iowa, Cedar Falls	Investigation of cadherin expression during secondary neurulation in the chick tail bud

P1.35 DDCB	WHARTON, WL, MARSHALL, SL, PREHODA-WYERS, MM, DEAROLF, JL; Hendrix College	Effects of betamethasone on the external abdominal oblique of prenatal *Cavia porcellus*
P1.36 DDCB	WARSINSKE, HC, GORDON, VK, PREHODA-WYERS, MM, DEAROLF, JL; Hendrix College	The effects of prenatal steroids on the rectus abdominus muscle in fetal guinea pigs
P1.37 DDCB	LAU, FO, TAYLOR, KN, BAATZ, JE, DEAROLF, JL; Hendrix College, Medical College of Charleston	Do guinea pig fetuses express lung surfactant proteins after being exposed to betamethasone at seventy-percent gestation
P1.38 DDCB	CHUGHTAI, A, BREWINGTON, AK, PREHODA-WYERS, MM, DEAROLF, JL; Hendrix College	Prenatal steroids: do they affect the development of the guinea pig rectus thoracis muscle?
P1.39	CHEN, HY, WATSON, RD; University of Alabama at Birmingham	Effect of eyestalk ablation in the blue crab (*Callinectes sapidus*) on intracellular calcium in Y-organ cells and the hemolymphatic ecdysteroid titer
P1.40 DEE	TOLEDO-HERNANDEZ, C, TORRES-VAZQUEZ, I, SERRANO-VELEZ, J, ROSA-MOLINAR, E*; University of Puerto Rico	Microwave-assisted processing of coral tissue
P1.41 DDCB	MARTIN, KLM, MORAVEK, CL; Pepperdine University	Heterochrony in development during extended incubation in California grunion
P1.42 DDCB	JOPLIN, KH, SEIER, E, KARKI, P, BRAY, A; ETSU	Differential gene expression during diapause in the flesh fly, *Sarcophaga crassipalpi*s by subtractive hybridization library screening
P1.43 DDCB	WOOD, MJ, DEMARAIS, A; University of Puget Sound	The expression of spindle assembly checkpoint protein Bub-1 in zebrafish (*Danio rerio*) oocytes

Distributions of Populations and Communities

P1.44	WELLS, S, MCCONAUGHA, JR; Old Dominion University, Old Dominion Unversity	Reproductive varations in an exploited decapod crustacean
P1.45	SHISHIDO, CM, BURNAFORD, JL, HENDERSON, SY; University of Puget Sound, CSU Fullerton	The effect of sediment type of the distribution of the invasive purple varnish clam and associated native kleptoparasitic pea crabs on Pacific Northwest beaches
P1.47 DEE	MURRELL, EG, JULIANO, SA; Illinois State University	Succession of dipterans in container communities: is the IFC hypothesis supported in an animal community?
P1.48	WAITE, JN, BURKANOV, VN, ANDREWS, RD; University of Alaska, Fairbanks, Alaska SeaLife Center, NMML, Pacific Institute of Geog., Kamchatka Branch	Dietary resource partitioning between sympatrically breeding Steller sea lions (*Eumetopias jubatus*) and northern fur seals (*Callorhinus ursinus*) on Lovushki Island, Russia
P1.49 DEE	PEREZ-REYES, O, CROWL, TA; Utah State University, Logan	Comparisons of the decapod community structure in urban and natural streams in Puerto Rico
P1.50	PARISH, ER, TURNER, T; University of the Virgin Islands	Reduced herbivory by Caribbean sea urchins in response to chemical cues of a known predator
P1.51	ZIPPAY, ML, HOFMANN, GE; University of California, Santa Barbara	Studies of ocean acidification: the physiological response of marine larval snails to elevated CO_2
P1.52 DIZ	SMITH, J, PHILLIPS, NE*; Victoria University Wellington, New Zealand	Vulnerability of embryos in benthic intertidal egg masses in New Zealand to summertime ultraviolet radiation and conditions at low tide
P1.53	MATSON, PG, HOFMANN, GE; University of California, Santa Barbara	Ecological genomics of ocean acidification: habitat-related differences in response to elevated CO_2 in larval sea urchins

P1.54 DCB	O'DONNELL, MJ, CARRINGTON, EC; Friday Harbor Labs, University of Washington	High resolution measurements of intertidal relative humidity
P1.55 DAB	COBB, V, MASSEY, D; Middle Tennessee State University, Brock University	Prey choice in snakes may be influenced by temperature
P1.56	KIMOKEO, BK, FORSMAN, ZH, HUNTER, CL, TOONEN, RJ; University of Hawaii, Manoa, Hawaii Institute of Marine Biology	Coral farming: species specific effects of light, water motion and artificial foods
P1.57 DIZ	HOADLEY, KD, SZMANT, AM, PYOTT, SJ; University of North Carolina Wilmington	The role of cryptochrome photoreceptors in regulation of *Favia fragum* diel and lunar reproductive cycle
P1.58	PASCUA, MT, HOLLAND, BS; University of Hawaii	Juvenile density and birth rate in the endangered Hawaiian tree snails *Achatinella lila* and *A. fuscobasis*
P1.59 DIZ	SLOAN, LM, ANDERSON, SV, PERNET, B; California State University, Long Beach	Kilometer-scale spatial variation in prevalence of the rhizocephalan *Lernaeodiscus porcellanae* on the porcelain crab *Petrolisthes cabrilloi*

Evo-Devo

P1.60 DEDB	JIN, L, SHARMA, A*, SUZUKI, Y; Wellesley College	Developmental plasticity and robustness of pigmentation in the milkweed bug, *Oncopeltus fasciatus*
P1.61 DEDB	ARMFIELD, BA, THEWISSEN, JGM, VINYARD, CJ; Northeastern Ohio Universities Colleges of Medicine and Kent State Biomedical Science	Protein expression of genes that may be involved in initiating and developing the secondary dentition in mammals
P1.62 DEDB	MORAN, MM, GEORGE, C, THEWISSEN, JGM; Northeastern Ohio Universities College of Medicine and Pharmacy, North Slope Borough, Alaska	Development of the sacrum in land mammals and cetaceans
P1.63 DEDB	WINSLOW, BB, BURKE, AC; Wesleyan University	Development of the chick costal joint
P1.64 DEE	OCHS, G, RAGLAND, GJ, HAHN, DA; University of Florida	Pinpointing termination of diapause in apple maggot flies by reconciling metabolic increase with resumption of cell division and development
P1.66 DEDB	SYLVESTER, JB, RICH, CA, STREELMAN, JT; Georgia Institute of Technology	Boundary integration generates brain diversity
P1.67	LOEFFLER, J, MARTINDALE, MQ; Kewalo Marine Laboratories, University of Hawaii at Manoa	Origins of triploblasty: what corals can tell us
P1.68	MININ, VN, OAKLEY, TH, SUCHARD, MA; University of Washington, Seattle, University of California, Santa Cruz, University of California, Los Angeles	A Bayesian approach to testing the independent origin hypothesis
P1.69 DEDB	ESTEVA-SANDERS, A, HERNANDEZ, LP; George Washington University	Disruption of hedgehog signaling during different developmental stages in zebrafish reveals discrete cranial features potentially affected by regulation of hedgehog during evolution
P1.70 DEDB	HAMILTON, MA, WARD, AB; Adelphi University	Determining the relationship between environmental conditions and somite development in zebrafish (*Danio rerio*)
P1.71 DEDB	SWIDERSKI, DL; University of Michigan, Ann Arbor	Coordination of branchial arch development in neonatal mice
P1.72 DIZ	PIRES, A, LEWIS, EL; Dickinson College	Regulation of metamorphosis by mechanosensory stimulation and catecholamines in a gastropod

P1.73 DEDB	YAMAGUCHI, E, SEAVER, EC; University of Hawaii at Manoa, Honolulu, PBRC, Kewalo Marine Lab, Honolulu	Characterization of apoptosis during the development and metamorphosis of *Capitella teleta*
P1.74 DIZ	PEROTTI, EA, TRAN, C, HUANG, Y, CAMERON, RA, HADFIELD, MG; University of Hawaii, Cal Tech	Using cDNA libraries and *in situ* hybridization for analysis of receptors involved in the settlement and metamorphosis of a dominant biofouling tubeworm, *Hydroides elegans*
P1.75	MUNOZ, EE, VANDENBROOKS, JM, HALE, JA, HARRISON, JF; Arizona State University	Effects of atmospheric oxygen on body size, development time, growth rate, and tracheal systems in *Blatella germanica*, the German cockroach
P1.75A DCPB	CEASE, A, ELSER, J, HAO, S, KANG, L, HARRISON, J; Arizona State University, Chinese Academy of Sciences, Institute of Zoology	Grasshopper developmental plasticity in heavily-grazed Asian Steppe pastures

Evo-Devo: Genomics and Molecular Evolution

P1.76	PANG, K, RYAN, JF, MULLIKIN, JC, BAXEVANIS, AD, MARTINDALE, MQ; University of Hawaii at Manoa, National Institutes of Health, NHGRI	Wnt and TGF-beta signaling in the ctenophore, *Mnemiopsis leidyi*
P1.77 DCPB	TWEETEN, KA; St. Catherine University	*Lumbriculus variegatus* populations show variations in chromosome number, protein expression, response to toxicants, and modes of reproduction
P1.78 DEE	GRASSA, C, HSIEH, T, KULATHINAL, R; University of Florida, Temple University	Using comparative and functional genomics to infer past lineage-specific processes among vertebrates
P1.79 DEE	MACHADO, H, JOYCE, D, LUNT, D, RENN, S; Reed College, University of Hull, UK	Genomic architecture of adaptive radiation: the role for gene duplication in African cichlid fishes
P1.80	HOPKINS, JM, HAEN, KM, LAVROV, DV; Iowa State University	Evolutionary analysis of single nucleotide insertions in the mitochondrial genomes of glass sponges
P1.81 DEE	EDWARDS, DD, ERNSTING, BR; University of Evansville	The complete mtDNA sequence of the water mite *Unionicola foili* (Acari: Acariformes): another highly rearranged genome among Acariformes
P1.82	MARGOTTA, JW, HRANITZ, JM, BARTHELL, JF, BRUBAKER, KD; Bloomsburg University, PA, University Central Oklahoma, Edmond	Evolutionary genetics of heat shock cognate 70 in the leafcutting bee, *Megachile apicalis* (Hymenoptera: Megachilidae)
P1.83	SMITH, VL, GROBER, MS; Georgia State University	Is SOX9 expression sexually dimorphic in the gonads of a sex changing fish?
P1.84	AMIEL, A, SEAVER, EC; Kewalo Marine Laboratory, Hawaii	Evolution of the Wnt pathway, insights from the annelid *Capitella teleta*
P1.84A	SEGOVIA, R, WALKER, P, TREWICK, S, GLEASON, D, LAVROV, D; Iowa State University, Massey University, EcoGene New Zealand	Extensive tRNA editing in mitochondrial genomes of Onychophora

Feeding,Digestion and Endocrine Control

P1.85 DCE	CLEVER, TN, RILEY, LG; California State University, Fresno	Investigating the interaction between ghrelin and insulin on the endocrine control of appetite in the brain of tilapia (*Oreochromis mossambicus*)
P1.86 DCPB	KITTILSON, JD, REINDL, KM, SHERIDAN, MA*; North Dakota State University, Fargo	Rainbow trout possess two hormone sensitive lipase-encoding mRNAs that are differentially expressed and differentially regulated by fasting
P1.87	HALL, DJ, DAY, R, SECOR, SM; University of Alabama, University of Queensland	Effects of fasting and food habits on the intestinal performance of fishes

P1.88 DCPB	OBI, IE, AHEARN, GA; University of North Florida	D-glucose and D-fructose transport across lobster intestine
P1.89 DCPB	SECOR, SM, TAYLOR, JR, GROSELL, M; University of Alabama, University of Miami	Postprandial matching of intestinal function and metabolism
P1.90	SMITH, ME, DUREAU, J, DUKE, JT, SECOR, SM; University of Alabama	Meal type effects on lizard specific dynamic action
P1.91 DCE	BENOWITZ-FREDERICKS, M, LI, WW, KITAYSKY, AS; Bucknell University, University of Alaska Fairbanks	Effects of dietary restriction on the development of avian endocrine axes: hormone receptor mRNA expression and response to GnRH challenges by captive rhinoceros auklet chicks (*Cerorhinca monocerata*)
P1.92 DCPB	WOJNARWSKY, PKL, AHEARN, GA; University of North Florida, Jacksonville	Net ^{3}H-L-histidine transport across lobster intestine is stimulated by luminal zinc
P1.93 DCPB	YEOH, AJ, LONG, RA, GILLEN, CM, HARTLAUB, BA; Kenyon College	Gene expression in fourth and fifth instar *Manduca sexta*
P1.94 DCPB	YOUNG, KE, QUINN, SM, WAITE, JN, USENKO, S, ANDREWS, RD, TRUMBLE, SJ; Baylor University, University of Alaska Fairbanks	Using GC-FID in conjunction with GC-MS to identify fatty acid methyl esters in sympatric marine mammal species

Neurobiology: Structure and Function in the Nervous System

P1.95	LAVER, CRJL, TAYLOR, S; University of Victoria, Canada	O, Darwin, our opsin genes are so many, but our expressed otions are so few - a gene expression 'tale' of the 10-opsin gene repertoire in guppies (*Poecilia reticulata*)
P1.96 DNB	WILSON, MA, SPRAYBERRY, DH; Muhlenberg College	Effects of pollution on antennal nerve responses to plant odors in bumblebees
P1.97 DNB	KATO, DF, HUYNH, M, MINTER, JL, SINGH, G, MURRAY, JA; California State University, East Bay	The activity of a magnetically responsive ciliary motor neuron during crawling in normal and reversed magnetic fields in the nudibranch *Tritonia diomedea*
P1.98 DNB	GIBBONS, KR, BALTZLEY, MJ; St. Mary's College of Maryland	Same wiring, different effect: how pressure mechanosensory neurons interact in the leeches *Macrobdella decora* and *Hirudo verbana*
P1.99 DNB	CAIN, SD, CLARK, M, KELLY, D; Eastern Oregon University	The functional morphology and transmitter distribution an olfactory organ of *Tritonia diomedea*
P1.100	TALLEY, JL, CHIEL, HJ, WHITE, EB, WILLIS, MA; Case Western Reserve University, Texas A&M University	Male insect pheromone tracking behavior is affected by physical structures in the air flow
P1.101 DCPB	BAKKEN, GS, COLAYORI, SE, DUONG,, T; Indiana State University, Indiana University School of Medicine	Optical characteristics of the facial pit of 4 pitviper species from different habitats
P1.102	PERRIN, GE, WANG, F, MÜLLER, R, GRASSO, FW; BioMimetic and Cognitive Robotics Lab, Brooklyn College, CUNY, Shandong University, Jinan, China, Virginia Tech	A role for outer ear features in the ability of bats to localize sound?
P1.103 DNB	MCGOWAN, L, STRIEDTER, G; University of Califonia, Irvine	Species differences in early patterning of the avian brain
P1.104 DNB	JOHNSON, JI, BUCHANAN, KJ, MORRIS, JA, FOBBS JR., AJ; Michigan State University, Allen Institute for Brain Science, National Museum of Health and Medicine	Consistencies and variations in sulcal and gyral patterns in human insular cortex

Physiological and Biochemical Responses to Environmental Stresses and Water Balance

P1.106 DCPB	KAUFER, MJ, MARKOWSKI, DE, LOVETT, DL; The College of New Jersey, Ewing	A time-course study of gene expression in gills of the blue crab *Callinectes sapidus* transferred from dilute to high-salinity seawater
P1.107 DCPB	CLAUSEN, RC, FIELDS, PA; Franklin and Marshall College	Hyposalinity causes changes in gill protein expression in the ribbed salt marsh mussel *Geukensia demissa*
P1.108 DCPB	HRANITZ, JM, ABRAMSON, CI, CARTER IV, RP; Bloomsburg University, Oklahoma State University	An ethanol-induced hormetic stress response in honey bee (*Apis mellifera*) brain tissue
P1.109	TROUTMAN, AR, HRANITZ, JM, BRUBAKER, KD; Bloomsburg University	A comparison of several forkhead protein dna binding domains in two species of leafcutting bee
P1.110 DCE	FRENCH, SS, DENARDO, DF, GREIVES, TJ, STRAND, CR, DEMAS, GE; Utah State University, Arizona State University, Max Planck Institute for Ornithology Vogelwarte Radolfzell, California Polytechnic State University, Indiana University	Effects of human disturbance on immunocompetence and stress responses in Galapagos marine iguanas (Amblyrhynchus cristatus)
P1.111	SOUTHWOOD, A, SNODDY, J, PARGA, ML, SWIMMER, Y; University of North Carolina Wilmington, SUBMON Conservacion Estudio, NOAA Pacific Islands Fisheries Science Center	Blood biochemistry of sea turtles incidentally entangled in fishing gear
P1.112	SUCRE, E, BOSSUS, M, CHARMANTIER-DAURES, M*, CHARMANTIER, G, CUCCHI-MOUILLOT, P; Equipe AEO, University Montpellier, France	Gill ionocytes ontogeny in the sea bass: from embryos to juveniles, developmental and functional aspects.
P1.113	BYSTRIANSKY, JS, CLARKE, C, DEVLIN, RH, SCHULTE, PM; University of British Columbia, Pacific Biological Station, Canada, Department of Fisheries and Oceans Canada	Smoltification and salinity tolerance of growth hormone transgenic coho salmon (*Oncorhynchus kisutch*)
P1.114	HARDEN, LA, SOUTHWOOD, AL, BLANVILLAIN, G; University of North Carolina, Wilmington, Grice Marine Lab, College of Charleston	Seasonal variation in blood biochemistry of diamondback terrapins *Malaclemys terrapin* in southeastern North Carolina
P1.115	GEFEN, E; University of Haifa- Oranim, Israel	Respiratory water loss and the effects of activity on the water budget in scorpions
P1.116 DEE	LEMENAGER, LA, TRACY, CR, MALONEY, N; University of Nevada, Reno	Comparison of water potential in two anuran species, *Anaxyrus boreas* and *Pseudacris sierra*
P1.118 DCPB	STAHLSCHMIDT, ZR, HEULIN, B, DENARDO, DF; Arizona State University, Tempe, Centre National de la Recherche Scientifique, Paimpont	Plasticity of python eggshell permeability and its role in a dynamic respiration-hydration tradeoff
P1.119 DCPB	RO, J, WILLIAMS, JB; Ohio State University	Cutaneous and respiratory water loss of temperate passerine birds
P1.120 DCPB	MUNOZ-GARCIA, A, REICHARD, J, RO, J, WILLIAMS, J, KUNZ, T; Ben-Gurion University, Boston University, Ohio State University	Cutaneous water loss and lipids of the stratum corneum in two sympatric species of bats

Regulation of Development, Growth or Molt

P1.121 DCE	CLAIRARDIN, SG, PAITZ, RT, BOWDEN, RM; Illinois State University	Are estrogenic effects of bisphenol A due to inhibition of estrogen metabolism?
P1.122 DCE	REGELSON, KW, COVI, JS, CHANG, SA, CHANG, ES, MYKLES, DL; Colorado State University, University of California, Davis Bodega Marine Lab	Studies on the signaling pathways regulating facultative and constitutive ecdysteroidogenesis in the crustacean molting gland

P1.123 DEDB	KLEIN, TA, ROSTAL, DC, WILLIAMS, KL, FRICK, MG; Georgia Southern University, Caretta Research Project	Seasonal variation in maternal investment of the loggerhead sea turtle (*Caretta caretta*)
P1.124 DCE	GUNDERSON, JL, MACLEA, KS, COVI, JA, CHANG, SA, CHANG, ES, MYKLES, DL; Colorado State University, UC Davis Bodega Marine Lab	Cloning and characterization of guanylyl cyclases from the European green crab
P1.125 DDCB	TILDEN, A, KUSEMA, E, LANGTON, R, MYERS, J; Colby College	Influence of melatonin, glutamate, and melatonin receptor antagonists on neurite growth in crustacean X-organ cells
P1.126 DCE	PFAU, DR, POTTER, SY, DENARDO, DF, TAYLOR, EN, STRAND, CR; California Poly State University, Arizona State University	Effects of testosterone and captivity on medial and dorsal cortex volumes and neurogenesis in adult male Western fence lizards, *Sceloporus occidentalis*
P1.127 DCE	PAITZ, RT, BOWDEN, RM; Illinois State University	Progesterone metabolites, “xenobiotic-sensing” nuclear receptors, and the metabolism of maternal steroids
P1.128 DCE	NORBECK, LA, SHERIDAN, MA; North Dakota State University	Regulation of the growth hormone-insulin-like growth factor system by cortisol and thyroxin in rainbow trout
P1.129	NIMITKUL, S, MYKLES, DL, CHANG, ES; Bodega Marine Laboratory, University of California, Davis, Colorado State University	Feedback regulation of ecdysteroid analog on Y-organs of the green crab Carcinus maenas
P1.130	LUCKENBACH, JA, METZGER, DC, DICKEY, JT, SWANSON, P, BECKMAN, BR; Northwest Fisheries Science Center, University of Washington	Development and validation of a quantitative, multiplex gene expression assay for components of the endocrine growth axis in salmon
P1.131 DCE	JOHNSON, KM, LEMA, SC; University of North Carolina, Wilmington	Identifying pathways of thyroid hormone production in the parrotfish thyroid gland
P1.133	HOLLAR, AR, BUCHHOLZ, DR; University of Cincinnati	The role of thyroid hormone receptors in the evolution of accelerated metamorphosis in desert frogs
P1.134	FROEHLICH, JM, BIGA, PR; North Dakota State University	Characterization of novel teleost systems for studying muscle growth
P1.135 DDCB	DAS, S, HOPKINS, PM, KHAMBADAKONE, D, DURICA, DS; University of Oklahoma	RNAi mediated disruption of ecdysteroid signaling during limb regeneration in the fiddler crab, *Uca pugilator*

Vertebrate Morphology

P1.136 DCB	BERGAM, BA, FRIEDMAN, A, SWANSON, BO; Gonzaga University	Building a biological hammer
P1.138 DCB	BRIGHT, JA, GRÖNING, F; University of Bristol, University of York	Strain accommodation in the zygomatic arch of the pig (*Sus scrofa*) *in vitro* and *in silico*
P1.139 DCB	BUTCHER, MT, HUDZIK, NB, WHITE, BJ, WOLFF, LM, GOSNELL, WC, PARRISH, JHA, BLOB, RW; Youngstown State University, Clemson University	Patterns of strain in the femur of the opossum (*Didelphis virginiana*) during terrestrial locomotion
P1.140 DCB	CLARK, AJ, SUMMERS, AP; Clemson University, Friday Harbor Laboratories	Mechanical properties of the hagfish egg capsule
P1.141 DCB	CROFTS, SB, SUMMERS, A; University of Washington	Poisson’s ratio of crustacean exoskeleton
P1.142 DCB	CRYNES, GL, AZIZI, E, ROBERTS, TJ; Brown University	Variable gearing in artificial pneumatic “muscles”

P1.143	GERSTNER, GE, CARDINAL, MD, ZELDITCH, ML; University of Michigan	Impact of chronic mandibular loading on craniomandibular size and shape in the laboratory rat
P1.144	HAYASHI, M, WANG, J, GERRY, SP, ELLERBY, DJ; Wellesley College	Explosive seed dispersal mechanism in sand bittercress (*Cardamine parviflora*)
P1.145 DCB	KELSEY, TJ, ASHLEY-ROSS, MA; Wake Forest University	3-dimensional kinematics of prey capture in tarantulas
P1.146 DCB	MARSHALL, CD, HIGGINS, BM, FLANAGAN, JP, KANE, EA, NEUENHOFF, RD; Texas A&M University, NOAA Galveston, The Houston Zoo, Clemson University, Pacific States Marine Fisheries Commission	Bite force and *in vivo* stimulation of the loggerhead sea turtle (*Caretta caretta*) adductor mandibulae complex
P1.147 DVM	OCONNOR, P, GUTZWILLER, S; Ohio University	Body plan evolution in birds: postcranial skeletal pneumaticity and its role in relaxing constraints on body size and locomotor potential
P1.148	RAHEMI, H, NIGAM, N, WAKELING, JM*; Simon Fraser University, Canada	Effects of muscle pennation on its kinematics and force development
P1.149 DCB	ROSARIO, MV, TAYLOR, JRA, PATEK, SN; University of California, Berkeley, University of Massachusetts, Amherst	Probing the evolutionary biomechanics of elastic energy storage in mantis shrimp
P1.150 DVM	SIMONS, ELR; Midwestern University	Mechanical properties of the forelimb skeleton of birds utilizing different primary flight modes
P1.151 DCB	STURM, JJ, LONG, JH, PORTER, ME; Vassar College	Bending strain at intervertebral joints and centra in the cartilaginous vertebral columns of Squalus acanthias
P1.152	WONG, I, WAKELING, JM; Simon Fraser University	Muscle pennation and bulge varies with the mechanical demands of a movement
P1.153 DVM	HERRING, SW, DUTRA, E, CARIA, PHF, RAFFERTY, KL; University of Washington, UNICAMP, Brazil	The cheek during mastication: activity of the buccinator muscle
P1.154 DVM	AKELLA, T, GILLIS, GB*; Mount Holyoke College	Pectoral and forelimb muscle activity during landing in *Bufo marinus*
P1.156 DCB	BIKNEVICIUS, AR, REILLY, SM, KLJUNO, E; Ohio University	Modeling the consequences of non-steady speed locomotion on walking mechanics
P1.157	BLAKE, OM, FORSMAN, K, WAKELING, JM; Simon Fraser University, Burnaby	Patterns of muscle coordination vary with terrain during locomotion
P1.158 DCB	BROWN, B, JINDRICH, DL; Arizona State University	Effects of increased rotational inertia on the mechanics of human cutting turns
P1.159 DCB	BYRNES, G, JAYNE, BC; University of Cincinnati	Decreased substrate diameter and increased surface compliance decrease climbing performance in snakes
P1.160 DCB	CRANDELL, KE, HERREL, A, AUTUMN, K, LOSOS, JB; University of Montana, CNRS/ Museum National d'Histoire Naturelle, Paris, Lewis & Clark College, Harvard University	Frictional adhesion and toe pad micro-morphology of *Anolis*
P1.161 DCB	DAWSON, T, JINDRICH, DL; Arizona State University	Mechanical properties of rat hindlimbs during locomotion

P1.162 DCB	KILBOURNE, BM; University of Chicago	The scaling of limb rotational inertia in quadrupedal mammals
P1.163 DCB	MYERS, MJ, BOEFF, KA, WALL-SCHEFFLER, CM; St Catherine University, Seattle Pacific University	Effect of age, walking speed, and frontal load on step width and its variability
P1.164 DCB	GOSNELL, WC, BUTCHER, MT, MAIE, T, BLOB, RW; Clemson University, Youngstown State University	Ground reaction forces on the hindlimb of the opossum (*Didelphis virginiana*) during terrestrial locomotion: implications for femoral loading
P1.165 DCB	HANCOCK, JA, BIKNEVICIUS, AR; Marietta College, Ohio University	Head-bobbing and terrestrial locomotion in charadriiform birds
P1.166 DCB	JONES, ZM, JAYNE, BC; University of Cincinnati	Perch diameter and secondary branching have interactive effects on the locomotion of anole lizards
P1.167 DCB	KIM, HT, SAITO, C, MEKDARA, NT, CHOUDHURY, S, GOODARZI, A, MAZLOOMI, F, SAKHA, T, SOLTANI, M, UBHI, S, CAO, Y, GOTO, JJ, MULLER, UK; California State University, Fresno	The effects of the glutamate agonist BMAA on the walking behavior of adult fruit flies
P1.168 DCB	LEMELIN, P; University of Alberta	Locomotor mechanics of the kinkajou (*Potos flavus*)
P1.169 DCB	MCELROY, EJ, BAUR, A, MCBRAYER, LD; College of Charleston, Georgia Southern University	Functional morphology of acceleration in the phyrnosomatine lizard, *Sceloporus woodi*
P1.170 DCB	MORRISON, D, JINDRICH, DL; Arizona State University	Contributions of active muscles to joint impedance in rats
P1.171	NGUYEN, C, DAVIDSON, B, KANG, J, KOH, S, AHN, A; Harvey Mudd, Claremont	Variability of walking: size and neural activation patterns in calf muscles of runners
P1.172	NORTON, E, ELLERS, O, JOHNSON, AS; Bowdoin College	Testing an inverted pendulum model for underwater walking in the crab *Carcinus maenus*
P1.173 DCB	O'NEILL, M, HANNA, J; Stony Brook University School of Medicine, West Virginia College of Osteopathic Medicine	Rapid horizontal vs. vertical locomotion in the mouse lemur (*Microcebus murinus*)

Tuesday Schedule of Events

EVENT	TIME	LOCATION
Registration	7:30 AM-5 PM	6th Flr East Lobby, Convention Ctr
Exhibit Hall	9:30 AM-6 PM	6A/B/C
Poster Session 2 Setup	7:00-8:00 AM	6A/B/C
Poster Session 2 Even Numbers Viewing	3:00-4:00 PM	6A/B/C
Poster Session 2 Odd Numbers Viewing	4:00-5:00 PM	6A/B/C
Poster Session 2 Teardown	5:00-5:30 PM	6A/B/C
Coffee Breaks	9:30-10:30 AM; 3:00-5:00 PM	6A/B/C
SPECIAL LECTURE		
Howard Bern Lecture	6:30-7:30 PM	6E
AMS Lecture	7:00-8:00 PM	602/603
SYMPOSIA ORAL PRESENTATIONS		
S5: Animal Regeneration: Integrating Development, Ecology & Evo	7:50 AM-3:00 PM	602/603
S6: Integrative Migration Biology	8:00 AM-3:00 PM	604
S7: Advances in Antarctic Marine Biology	8:00 AM-3:00 PM	607
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 31: Comp Session: Evol Paths among Develop Possibilities	8:20-11:40 AM	605/610
Session 32: Functional Design of Heads-Working under Water I	8:00 AM-Noon	606
Session 33: Musculoskeletal Morphology and Mechanics-Bone	8:20-9:40 AM	608
Session 34: Musculoskeletal Morphology and Mechanics-Muscle	10:00 AM-Noon	608
Session 35: Biodiversity and Biogeography	8:00-9:40 AM	609
Session 36: Species Limits and Climate Change	10:00 AM-Noon	609
Session 37: Population Genetics and Biogeography...	8:00 AM-Noon	611
Session 38: Stress Endocrinology	8:00 AM-Noon	612
Session 39: Evolutionary Paleobiology I	8:20-9:40 AM	613/614
Session 40: Evolutionary Paleobiology II	10:00 AM-Noon	613/614
Session 41: Metabolic Rates	8:00-9:40 AM	615/616
Session 42: Flight-Stability and Maneuverability	10:00 AM-Noon	615/616
Session 43: Terrestrial Locomotion-Jumping	8:00-10:00 AM	617
Session 44: Energetics and Fuel Allocation	10:20 AM-Noon	617
Session 45: Sensory Physiology	8:00 AM-Noon	618
Session 46: Aggression-Females	8:20-9:40 AM	619
Session 47: Aggression-Ecological Relationships	10:00 AM-Noon	619
Session 48: Comp Session: Evol Paths among Develop Possibilities	1:20-3:00 PM	605/610
Session 49: Functional Design of Heads-Working under Water II	1:20-2:40 PM	606
Session 50: Comp Session: Evolution of Fish Body Plan	1:00-2:40 PM	608
Session 51: Complementary Session: Metabolism and Aging	1:20-3:00 PM	609
Session 52: Phylogenetics and Speciation I	1:00-3:00 PM	611
Session 53: Morphogenesis and Life History	1:00-3:00 PM	612
Session 54: Comp Session: Insights of Early Chordate Genomics	1:00-3:00 PM	613/614
Session 55: Flight-Control	1:00-3:00 PM	615/616
Session 56: Reproductive Physiology	1:00-2:40 PM	617
Session 57: Functional Design of Fish Sensory Systems	1:00-3:00 PM	618
Session 58: Terrestrial Locomotion-Climbing and Training	1:00-3:00 PM	619
COMMITTEE & BOARD MEETINGS		
SRC Breakfast	6:30-8:00 AM	Daily Grill, Sheraton
AMS IB Editors	7:00-8:00 AM	Alki Boardroom, Sheraton
SICB Division Secretaries	Noon-1:00 PM	Alki Boardroom, Sheraton
Educational Council/DLAB Meeting	Noon-1:00 PM	Aspen Room, Sheraton
SICB Editorial Board	Noon-1:00 PM	Diamond Room, Sheraton
TCS Board Meeting	4:30-6:30 PM	Diamond Room, Sheraton
Advisory Committee	7:00 PM	Satterlie Suite, Sheraton
Student Support Committee	8:00-9:00 PM	Cedar Room, Sheraton
BUSINESS MEETINGS		
DVM Business Mtg	5:15-6:15 PM	612
DCE Business Mtg	5:15-6:15 PM	615/616
TCS Business Meeting/Social	6:30-10:00 PM	Issaquah Room, Sheraton
WORKSHOPS AND PROGRAMS		
COPUS Workshop	Noon-1:00 PM	601
Phylogenetics for Dummies, Part 1	7:30-10:30 PM	619
SOCIAL EVENTS		
Broadening Participation (Cash lunch)	Noon-1:00 PM	6E
Migration Biology Reception	5:00-6:30 PM	Aspen Room, Sheraton
DIZ/DEE/AMS Strathmann Social	5:00-7:00 PM	Registration Foyer
DVM/DCB Social	6:30-8:00 PM	608/609
DCE Social	7:30-10:00 PM	6E (back of room)
TCS Business Meeting/Social	6:30-10:00 PM	Issaquah Room, Sheraton

7:50 AM-3:00 PM
602/603

Symposium S5: Animal Regeneration: Integrating Development, Ecology, and Evolution

Supported by: National Science Foundation, DCDB, DEE, DEDB, DIZ (SICB), Society for Developmental Biology, American Microscopial Society (AMS)

Organized by: Alexa Bely, Sara Lindsay

7:50 AM		BELY, A, LINDSAY, S	Introduction
8:00 AM DIZ	S5.1	LINDSAY, SM; University of Maine, Orono	Ecology of injury and regeneration in marine benthic invertebrates: from individuals to ecosystems
8:30 AM DEDB	S5.2	WULFF, J; Florida State University	Sponge regeneration in ecological context
9:00 AM	S5.3	LAWRENCE, JM; University of South Florida	Costs of arm loss and regeneration in stellate echinoderms
9:30 AM DAB	S5.4	MAGINNIS, TL; The University of Texas at Austin	Regeneration: a framework for future research
10:00 AM	COFFEE BREAK		
10:30 AM	S5.5	GAHN, FJ, BAUMILLER, TK; Brigham Young University, Idaho, University of Michigan	Evolutionary morphology of regenerative abilities among crinoids: a paleontological perspective
11:00 AM DEDB	S5.6	BELY, AE; University of Maryland, College Park	Evolutionary loss of animal regeneration: pattern and process
11:30 AM	S5.7	BROCKES, JP; UCL	Evolution of mechanisms underlying limb regeneration in salamanders
NOON	LUNCH BREAK		
1:00 PM	S5.8	SANCHEZ ALVARADO, A; Howard Hughes Medical School, University of Utah School of Medicine	Stem cells, regeneration and the developmental plasticity of planarians
1:30 PM	S5.9	TSENG, A, LEVIN, M; Tufts University	Bioelectric events and vertebrate appendage regeneration
2:00 PM	S5.10	STEELE, R; University of California, Irvine	Exploring hydra regeneration and budding with genomics, transgenics, and chemical genetics

8:00 AM-3:00 PM
604

Symposium S6: Integrative Migration Biology

Funding provided by MIGRATE, an NSF-funded Research Coordinator Network, and SICB

Organized by: Melissa Bowlin, Isabelle-Anne Bisson, Martin Wikelski

8:00 AM DAB	S6.1	BOWLIN, MS, BISSON, I-A, WIKELSKI, M; Lund University, Princeton University, Max Planck Institute for Ornithology	Integrative migration biology: past, present and an exciting future
8:30 AM DAB	S6.2	RAMENOFSKY, M, MOFFAT, J, GUGLIELMO, C; University of California, Davis, University of Washington, Seattle, University of Western Ontario	Endocrine and metabolic parameters track daily changes in behavior of a captive migrant
9:00 AM	S6.3	HEDENSTRÖM, A; Lund University, Sweden	Testing migration theory: the utility of integrative approaches using field experiments and wind tunnels
9:30 AM DCPB	S6.4	GUGLIELMO, CG; University of Western Ontario	Move that fatty acid: fuel selection and transport in migrating birds and bats

10:00 AM	COFFEE BREAK		
10:30 AM	S6.5	ÅKESSON, S; University of Lund	Endogenous migration programs and orientation in passerine birds
11:00 AM	S6.6	THORUP, K; University of Copenhagen	Understanding the migratory orientation program in birds: extending laboratory studies to studying free-flying migrants in a natural setting
11:30 AM DEE	S6.7	KUNZ, TH, REICHARD, JD, PRAJAPATI, SI, AUSTAD, SN, KELLER, Charles; Boston University, University of Texas Health Center	A unique adaptation of bats in the family molossidae for long-distance foraging and migration
NOON	LUNCH BREAK		
1:00 PM DEE	S6.8	SAPIR, N, NATHAN, R, WIKELSKI, M, AVISSAR, R; The Hebrew University, Israel, Max Planck Institute for Ornithology, Konstanz University, Germany, University of Miami	The effect of weather on migrating bee-eaters studied by radio-telemetry and numeric atmospheric model
1:30 PM	S6.9	SHAMOUN-BARANES, J, BOUTEN, W, VAN LOON, E; University of Amsterdam	Integrating measurements and models to study the influence of weather on migration
2:00 PM	S6.10	MARRA, PP; Smithsonian Institution	Seasonal interactions and carry-over effects: understanding the biology of migratory organisms within the context of the annual cycle
2:30 PM	S6.11	WILCOVE, DS; Princeton University	Conserving animal migrations: key research challenges

8:00 AM-3:00 PM
607

Symposium S7: Advances in Antarctic Marine Biology

Sponsored by National Science Foundation

Organized by: James McClintock, Charles Amsler, Amy Moran, Art Woods, Bill Baker

8:00 AM	S7.1	STEINBERG, DK, SCHOFIELD, OME, FRASER, WR, STAMMERJOHN, SE, MARTINSON, DG, DONEY, SC, MONTES-HUGO, M, DUCKLOW, HW; Virginia Institute of Marine Science, Institute of Marine and Coastal Sciences, Rutgers University, Polar Oceans Research Group, University of California, Santa Cruz, Lamont-Doherty Earth Observatory of Columbia University, Woods Hole Oceanographic Institution, Marine Biological Laboratory	The changing ecosystem of the West Antarctic Peninsula
8:30 AM	S7.2	ARRIGO, KR; Stanford University	Marine microalgae in Antarctic Sea ice
9:00 AM	S7.3	DEMASTER, DJ, SMITH, CR, THOMAS, CJ; North Carolina State University, University of Hawaii, Honolulu	Evidence for a benthic food bank in West Antarctic Peninsula sediments: radiochemical and benthic biological approaches
9:30 AM DIZ	S7.4	MCCLINTOCK, JB, AMSLER, CD, BAKER, BJ; University of Alabama, Birmingham, University of South Florida	An overview of the chemical ecology of marine macroalgae and benthic invertebrates along the Antarctic Peninsula
10:00 AM	COFFEE BREAK		

10:20 AM DCPB	S7.5	MARSH, A, KENDALL, L, GUIDA, S; University of Delaware	Environmental imprinting (Epigenetics) and adaptation in Antarctic Marine invertebrates
10:50 AM DIZ	S7.6	MORAN, AL, WOODS, HA; Clemson University, University of Montana, Missoula	Temperature, oxygen, and body size in the Southern Ocean: why might they be giants?
11:20 AM DSEB	S7.7	HALANYCH, KM; Auburn University	Phylogeography, larval dispersal and recent history of Antarctic continental shelf fauna
11:50 AM	LUNCH BREAK		
1:00 PM DCPB	S7.8	O'BRIEN, KM, MUELLER, I; University of Alaska, Fairbanks	Pumping without iron: the unique architecture of cardiomyocytes in the hemoglobinless Channichthyids
1:30 PM DCPB	S7.9	COSTA, DP, CROCKER, DE, GOEBEL, ME, FEDAK, MA, MCDONALD, BI, HUCKSTADT, LA; University of California, Santa Cruz, Sonoma State University, AMLR Southwest Fisheries Science Center, Sea Mammal Research Unit	Climate change and habitat selection of seals in the Western Antarctic Peninsula
2:00 PM	S7.10	FRASER, WR, SCHOFIELD, OME, KAHL, A, MARTINSON, DG, PATTERSON-FRASER, DL; Polar Oceans Research Group, Institute of Marine and Coastal Science, Rutgers University, Lamont-Doherty Earth Observatory of Columbia University	The distribution of Adélie penguins in the Western Antarctic Peninsula region: causal mechanisms and implications to research in the Southern Oceans
2:30 PM	S7.11	KIM, S, THURBER, A, HAMMERSTROM, K; Moss Landing Marine Labs, Scripps Institution of Oceanography	Community dynamics in a polar ecosystem: benthic recovery from organic enrichment in the Antarctic

TUESDAY PROGRAM
MORNING SESSIONS

8:20-11:40 AM
605/610

Session 31: Complementary Session: Evolutionary Paths Among Developmental Possibilities

Co-Chairs: Louise Page, Justin McAlister

8:20 AM DIZ	31.2	MALISKA, ME, SWALLA, BJ; Friday Harbor Laboratories and University of Washington	Settlement cues and their effect on gene flow in sibling species of rocky intertidal gastropods, *Littorina plena* and *Littorina scutulata*
8:40 AM DIZ	31.3	PAGE, LR; University of Victoria	Cone snail metamorphosis: differentiation of the venom apparatus from the foregut of the planktotrophic larva
9:00 AM DEDB	31.4	HODIN, J, BISHOP, CD, HEYLAND, A; Hopkins Marine Station, Stanford University, Dalhousie University, University of Guelph	Towards a metamorphic and settlement signaling network in echinoids
9:20 AM DIZ	31.5	HADFIELD, MG, CROLL, RP; University of Hawaii, Dalhousie University	Formation and fate of the musculatue in larvae of the nudibranch *Phestilla sibogae*
9:40 AM	COFFEE BREAK		

10:00 AM	31.6	MARKS, JA, BIERMANN, CH; University of Oslo, Norway, Portland State University	Reproductive character displacement in egg-jelly carbohydrates reinforces mating barriers in two broadcast-spawning marine invertebrates
10:20 AM DEE	31.7	ZIGLER, KS, BYRNE, M, RAFF, RA, RAFF, EC, LESSIOS, HA; Sewanee: The University of the South, University of Sydney, Indiana University, Smithsonian Tropical Research Institute	Natural hybridization in echinoderms: a case study from the sea urchin genus *Pseudoboletia*
10:40 AM	31.8	BIERMANN, CH, WHITE, TA, PALUMBI, SR; Friday Harbor Labs, Portland State University, University of Washington, Seattle, Hopkins Marine Lab	*Strongylocentrotus* sea urchin eggs choose conspecific over heterospecific fertilization
11:00 AM DIZ	31.9	MCALISTER, JS, MORAN, AL; Clemson University	Assaying echinoid eggs for evolutionary associations among egg size, egg composition, and egg energy
11:20 AM DIZ	31.10	PERNET, B, MCHUGH, D; California State University, Long Beach, Colgate University	Differences in the timing of development of feeding structures and the acquisition of feeding ability between small-egg and large-egg larvae of *Streblospio benedicti* (Annelida, Spionidae)

8:00 AM-Noon
606

Session 32: Functional Design of Heads - Working Under Water I

Chair: Lara Ferry-Graham

8:00 AM DVM	32.1	FERRY-GRAHAM, LA, HUBER, DR, DEAN, M, CLAES, JM, MALLEFET, J; California State University, University of Tampa, University of California Irvine, University Catholique de Louvain	Prey processing in chimaeroid fishes
8:20 AM DIZ	32.2	GONZALEZ, P, CAMERON, CB*; Université de Montréal	Filter feeding in hemichordate worms and the evolution of the vertebrate adenohypophysis
8:40 AM	32.3	GEERINCKX, T, HERREL, A, ADRIAENS, D; Ghent University, Belgium, Musée National de l'Histoire Naturelle, France	Suckermouth armoured catfishes crack the paradox between respiration and suckermouth attachment
9:00 AM DVM	32.4	GIBB, AC, ARENA, A*; Northern Arizona University	Prey acceptance and feeding kinematics in native and non-native fishes from Colorado River tributaries, or "My what a big mouth you have!"
9:20 AM DVM	32.5	BURNETTE, MF, GIBB, AC; Northern Arizona University	Feeding behavior and jaw kinematics in *Ptychocheilus lucius*, an endangered, cyprinid piscivore
9:40 AM	COFFEE BREAK		
10:00 AM DVM	32.6	STAAB, KL, FERRY-GRAHAM, LA, HERNANDEZ, LP; George Washington University, Moss Landing Marine Labs	Morphological and kinematic variation in upper jaw protrusion in cypriniform fishes
10:20 AM DVM	32.7	MCGEE, MD, WAINWRIGHT, PC; University of California, Davis	Contingency and determinism in the trophic apparatus of threespine stickleback: implications for adaptive evolution
10:40 AM	32.8	TKINT, T, VERHEYEN, E, ADRIAENS, D; Evolutionary Morphology of Vertebrates, Ghent University, Belgium, Royal Belgian Institute of Natural History, Belgium	The implications of mouthbrooding on feeding performance of two closely related cichlid species

11:00 AM DVM	32.9	LEYSEN, H, ROOS, G, VAN WASSENBERGH, S, ADRIAENS, D; Ghent University, Belgium, University of Antwerp, Belgium	Syngnathid feeding apparatus morphology: long vs short snouts
11:20 AM DVM	32.10	MARA, KR, MOTTA, PJ; University of South Florida	Feeding morphology and bite force generation in hammerhead sharks (Sphyrnidae)
11:40 AM DAB	32.11	MULVANY, SL, MOTTA, PJ; University South Florida, Tampa	Feeding kinematics of three batoid species: Atlantic stingray (*Dasyatis sabina*), yellow stingray (*Urobatis jamaicensis*) and clearnose skate (*Raja eglanteria*)

8:20-9:40 AM
608

Session 33: Musculoskeletal Morphology and Mechanics - Bone

Co-Chairs: Maria de Boef, Gregory Sawicki

8:20 AM DVM	33.1	DE BOEF, M, BIEWENER, AA; Concord Field Station, Harvard University	The structure-function relationship in bone microstructure: an experimental study in helmeted guinea fowl (*Numida meleagris*)
8:40 AM DCB	33.2	ANDERSON, PSL, RAYFIELD, EJ; University of Bristol	The intersection of experiment and theory: using cutting tests and FEA models to understand how teeth fracture food
9:00 AM DCB	33.3	RAYFIELD, EJ; University of Bristol	How accurately does finite element analysis reproduce strain in the ostrich mandible during simulated pecking behavior?
9:20 AM DVM	33.5	HOLLIDAY, CM, GARDNER, N, DOUTHITT, M, PAESANI, S, RATLIFF, J; University of Missouri, Marshall University, Biomimetics Inc	Microanatomy of the mandibular symphysis in lizards
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
608

Session 34: Musculoskeletal Morphology and Mechanics - Muscle

Co-Chairs: Gregory Sawicki, Maria de Boef

10:00 AM DCB	34.1	SAWICKI, GS, ROBERTS, TJ; University North Carolina at Chapel Hill, North Carolina State University, Brown University	Muscle-tendon architecture shapes conditions for economical force production
10:20 AM DVM	34.2	AZIZI, E, ROBERTS, TJ; Brown University	Geared up to stretch: pinnate muscle behavior during active lengthening
10:40 AM DVM	34.3	BRAINERD, EL, RITTER, DA, DAWSON, MM, SULLIVAN, A; Brown University	XROMM analysis of rib kinematics and intercostal muscle strain during breathing in *Iguana iguana*
11:00 AM DCB	34.4	FLAMMANG, BE; Harvard University	Functional morphology of the radialis muscle in shark tails
11:20 AM	34.5	RANA, M, HAMARNEH, G, WAKELING, JM; Simon Fraser University, Burnaby	In- vivo determination of 3D muscle architecture of the human triceps surae using free hand ultrasound
11:40 AM DCB	34.6	RICHARDS, CT; Harvard University	Building a robotic link between muscle dynamics and hydrodynamics

8:00-9:40 AM
609

Session 35: Biodiversity and Biogeography

Chair: Ansa Schulze

8:00 AM DEE	35.1	KENAGY, J; University of Washington	Natural history of mammals in Native American art
8:20 AM DEE	35.2	TRACY, CR, FORISTER, M, HAGERTY, B, SANDMEIER, F, SIMANDLE, E, NOLES, P, BECK, M, FISHER, R; University of Nevada Reno, Paul Smiths University, USGS Western Region	Phylogeny and phylogeography of western toads in the western Great Basin
8:40 AM	35.3	ROELKE, CE, GREENBAUM, EB; University of Texas at Arlington, University of Texas at El Paso	The natural history, taxonomic status, and conservation biology of the endangered African treefrog, *Leptopelis karissimbensis*
9:00 AM	35.4	ELAHI, R, SEBENS, KP; University of Washington	Diversity, consumer pressure and resource availability on subtidal rock walls
9:20 AM DEE	35.5	MCGUIRE, JL, DAVIS, E, ORCUTT, JD; University of California, Berkeley, University of Oregon	Using the fossil record to test phylogeographic and ecological niche model hypotheses about the locations of glacial refugia
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
609

Session 36: Species Limits and Climate Change

Chair: Donald Miles

10:00 AM DIZ	36.1	JONES, SJ, WETHEY, DS; University of South Carolina	Mussels, models, and mortality: exploring the respective roles of air and seawater temperatures in the southern range limit contraction of *Mytilus edulis*
10:20 AM	36.2	GILMAN, S; Friday Harbor Laboratories, University of Washington	Climate change and species interactions: predicting indirect effects
10:40 AM DCE	36.3	BUSCH, DS, ROBINSON, TR, ROBINSON, WD, WINGFIELD, JC; NOAA - Northwest Fisheries Science Center, Oregon State University, University of California, Davis	Living on the edge: does proximity to a geographical range boundary influence physiology in tropical song wrens (*Cyphorhinus phaeocephalus*)?
11:00 AM	36.4	WOLF, BO, MCKECHNIE, AE; University of New Mexico, Albuquerque, University of Pretoria, Pretoria	Climate change increases the likelihood of catastrophic avian mortality events during extreme heat waves
11:20 AM DEE	36.5	KIM, T, MICHELI, F; Stanford University	Global dimming or warming: the effect of light radiation and temperature variability on the invasion of fouling species
11:40 AM DEE	36.6	MILES, DB; Ohio University	Climate change perturbs activity patterns, social structure and population dynamics of the lizard *Urosaurus ornatus*

8:00 AM-Noon
611

Session 37: Population Genetics and Biogeography - Marine Population Genetics and Biogeography

Co-Chairs: Peter Marko, Carson Keever

8:00 AM	37.1	FLY, EK, HILBISH, TJ; University of South Carolina	Comparing British mussel hybrid zones to a temperature-sensitive hybrid zone on the coast of France
8:20 AM DEE	37.2	KEEVER, CC, HART, MW; Simon Fraser University	Life history and population genetic structure in live bearing asterinid sea stars
8:40 AM DEE	37.3	PURITZ, JB, KEEVER, CC, ADDISON, JA, HART, MW, GROSBERG, RK, BYRNE, MA, TOONEN, RJ; Hawaii Institute of Marine Biology, University of Hawaii at Manoa, Simon Frasier University, University of New Brunswick, University of California, Davis, University of Sydney	Contrasting population structure between two sympatric sea stars with differing life history strategies
9:00 AM DEE	37.4	ROGNSTAD, RL, HILBISH, TJ; University of South Carolina, Columbia	Genetic recombination within *Mytilus* as evidence of past species distributions
9:20 AM DEE	37.5	MARKO, PB, HOFFMAN, JM, EMME, SA, MCGOVERN, TM, KEEVER, C, COX, LN; Clemson University, Limestone College, Simon Fraser University	The “expansion-contraction” model of pleistocene biogeography: rocky shores suffer a sea change?
9:40 AM DEE	37.6	NANCE, HA, MARKO, PB; Clemson University	Demographic history and ecological connectivity of the scalloped hammerhead shark, *Sphyrna lewini*, in the Eastern Pacific
10:00 AM	COFFEE BREAK		
10:20 AM	37.7	LOPEZ-MEJIA, M, MEJIA-ORTIZ, LM; Universidad de Quintana Roo	Morphological phylogeny of crayfish from Yucatán Peninsula, México
10:40 AM DEE	37.8	FOX, A, SCHREY, A, MCCOY, E, MUSHINSKY, H; University of South Florida	Genetic relatedness in the Florida sand skink, *Plestiodon reynoldsi*, in the scrub of Central Florida
11:00 AM DEE	37.9	ARCHIE, JW, QUIJANO, MO; California State University, Long Beach	Fine scale phylogeography of (*Sceloporus occidentalis*) in the transverse ranges of California reveals coincidence with geological complexity
11:20 AM	37.10	FIERST, JL; Florida State University	Sexual dimorphism increases evolvability in a computational model of a genetic regulatory network
11:40 AM DEDB	37.11	PAVLICEV, M, CHEVERUD, JM, HANSEN, TF; University of Oslo, Norway, Washington University	The relationship between pleiotropy and evolvability

8:00 AM-Noon
612

Session 38: Stress Endocrinology

Co-Chairs: Erica Crespi, Luke Butler

8:00 AM DCE	38.1	CRESPI, EJ, WARNE, RW; Vassar College	Interactions between social stress and resource availability on tadpole growth, development and physiology
8:20 AM DCE	38.2	RENSEL, MA, SCHOECH, SJ; University of Memphis	Road disturbance and its impact on stress physiology and growth in young Florida scrub-jays

8:40 AM DCE	38.3	SMITH, LC, MENDONCA, MT; Auburn University	Effects of capture and restraint stress on neutrophil/lymphocyte ratio in big brown bats
9:00 AM DCE	38.4	MALISCH, JL, CRINO, OL, BREUNER, CW; University of Montana	Corticosterone, corticosteroid-binding globulin, and free corticosterone, 24-72 hours following an acute stressor in a wild population of white-crowned sparrows
9:20 AM DCE	38.5	MENDONCA, MT, PATTERSON, ST; Auburn University	Relationship between corticosterone, immune response, and parasite load in two species of tropical anurans (*Chaunus marinus* and *Agalychnis callidryas*)
9:40 AM DCE	38.6	CRINO, OL, KLAASSEN VAN OORSCHOT, B, MALISCH, JL, BREUNER, CB; University of Montana	The effects of distance to road, nest site characteristics, and parental stress response on nestling stress response in the mountain white-crowned sparrow (*Zonotrichia leucophrys oriantha*)
10:00 AM	COFFEE BREAK		
10:20 AM DCE	38.7	BUTLER, LK, HAYDEN, TJ, ROMERO, LM; The College of New Jersey, Tufts University	Environmental and life-history correlates of glucocorticoid physiology in an arid-country bird
10:40 AM DCE	38.8	JANZEN, WJ, RILEY, LG; California State University, Fresno	The effects of acute cortisol administration on appetite control in the tilapia
11:00 AM	38.9	DI POI, C, ATKINSON, S*, HOOVER-MILLER, A, BLUNDELL, G; University of Alaska Fairbanks, Alaska Sea Life Center, Alaska Department of Fish and Game	Presence of the mother influences the stress response in harbor seal pups
11:20 AM DCE	38.10	MERRILL, L, ROTHSTEIN, SI, O'LOGHLEN, AL, WINGFIELD, JC; University of California, Santa Barbara, University of California, Davis	Changes in the innate immune systems of male and female brown-headed cowbirds in response to CORT: why do the sexes differ?
11:40 AM	38.11	BRYER, PJ, DAVIS, BL, SUTHERLAND, MA; Lamar University, Texas Tech University, AgResearch	Science based criteria for assessing humane euthanasia

8:20-9:40 AM
613/614

Session 39: Evolutionary Paleobiology I

Chair: Francesco Santini

8:20 AM DSEB	39.1	SANTINI, F, ALFARO, ME; University of California, Los Angeles	Origin ad evolution of the coral reef fish fauna
8:40 AM	39.2	RUNDELL, RJ, LEANDER, BS; University of British Columbia	Microeukaryotes and the masters of miniaturization: diversification in marine sand
9:00 AM DEDB	39.3	VANDENBROOKS, JM, HARRISON, JF; Arizona State University	Atmospheric oxygen influences on the size of modern and fossil insects
9:20 AM DVM	39.4	OWERKOWICZ, T, ANDRADE, FC, ELSEY, RM, HICKS, JW; University of California, Irvine, Fullerton College, Rockefeller Wildlife Refuge	Atmospheric hypoxia increases bone robusticity in the American alligator
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
613/614

Session 40: Evolutionary Paleobiology II

Chair: Graham Slater

10:00 AM	40.1	CALEDE, JM, HOPKINS, SB; University of Oregon	Does the red queen control the evolution of fossorial rodents in the Miocene of the southern Columbia Plateau?

10:20 AM	40.2	SCHMITZ, L, MOTANI, R; University of California, Davis	Inference of diel activity pattern suggests complex temporal resource and habitat partitioning among Mesozoic archosaurs
10:40 AM DSEB	40.3	SLATER, GJ, PRICE, SA*, SANTINI, F, ALFARO, ME; University of California, Los Angeles, University of California, Davis	Are extant cetaceans the product of an adaptive radation?
11:00 AM	40.4	ORCUTT, JD, LEVERING, D, DAVIS, EB; University of Oregon, Oklahoma State University	Evolution of locomotion and predation in saber-toothed cats
11:20 AM DVM	40.5	HINIC-FRLOG, S, MOTANI, R; Carleton University, Canada, University of California, Davis	Aquatic locomotion in fossil birds and early avian transitions from aquatic to terrestrial environments
11:40 AM	40.6	DYKE, G, PALMER, C; University College Dublin, University of Bristol	The unique pterosaur pteroid bone: wing function in extinct flying reptiles

8:00-9:40 AM
615/616

Session 41: Metabolic Rates

Chair: John Lighton

8:00 AM DCPB	41.1	LIGHTON, JRB; Sable Systems International	Background baselining: a new approach to metabolic measurement
8:20 AM DCPB	41.2	BEAUPRE, SJ; University of Arkansas, Fayetteville	Long-term studies of field metabolic rate in timber rattlesnakes (*Crotalus horridus*): annual variation, critical factors, and implications for bioenergetic studies
8:40 AM	41.3	STOLTEY, T, SHILLINGTON, C; Eastern Michigan University	Metabolic rates and movements of male tarantulas during the breeding season
9:00 AM DCPB	41.4	WONE, B, DONOVAN, ER, HAYES, JP; University of Nevada, Reno, University of California, Riverside	Metabolomic evidence that increased basal metabolic rate is linked to elevated metabolism in skeletal muscle of mice selected for high maximal metabolic rate
9:20 AM	41.5	NOREN, DP, DUNKIN, RC, WILLIAMS, TM; NOAA NMFS Northwest Fisheries Science Center, University of California, Santa Cruz	The energetic cost of surface active behaviors in dolphins
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
615/616

Session 42: Flight - Stability and Maneuverability

Chair: Tyson Hedrick

10:00 AM DCB	42.1	BERGOU, AJ, RISTROPH, L, GUCKENHEIMER, J, COHEN, I, WANG, ZJ; Cornell University	Fruit flies modulate passive wing pitching to generate in-flight turns
10:20 AM DCB	42.2	CHENG, B, DENG, X; Purdue University	Rotational flapping counter torque in insect flight
10:40 AM DCB	42.3	HEDRICK, TL, ROBINSON, AK*; University of North Carolina, Chapel Hill, California Institute of Technology	Voluntary and perturbed free flight yaw maneuvers in hawkmoths
11:00 AM DCB	42.4	MOUNTCASTLE, AM, DANIEL, TL; University of Washington, Seattle	Unsteady forces occur at ventral stroke reversal in the hawkmoth, *Manduca sexta*

11:20 AM DAB	42.5	RISTROPH, L, BERGOU, AJ, GUCKENHEIMER, J, WANG, ZJ, COHEN, I; Cornell University	How flying insects recover from in-flight “stumbles”
11:40 AM DCB	42.6	RISKIN, DK, IRIARTE-DÍAZ, J, MIDDLETON, K, BREUER, KS, SWARTZ, SM*; Brown University, The University of Chicago, California State University San Bernardino	How do bats accelerate?

8:00 - 10:00 AM
617

Session 43: Terrestrial Locomotion - Jumping

Chair: Steve Reilly

8:00 AM DVM	43.1	ABBOTT, EM, MARSH, RL, ASTLEY, HC, AZIZI, E, ROBERTS, TJ; Brown University, Northeastern University	The celebrated jumping frogs of Calaveras County: how far can a frog really jump?
8:20 AM DCB	43.2	ASTLEY, HC, ROBERTS, TJ; Brown University	Decoupling of muscle shortening and joint kinematics during frog jumping
8:40 AM DVM	43.3	REILLY, SM, JORGENSEN, ME, ESSNER, RL; Ohio University	A new look at the evolution of jumping in frogs
9:00 AM DVM	43.4	ESSNER, RL, SUFFIAN, DJ, REILLY, SM; Southern Illinois University Edwardsville, Ohio University	A comparison of jumping behavior in the rocky mountain tailed frog, *Ascaphus montanus* and fire-bellied toad, *Bombina orientalis*
9:20 AM DVM	43.5	JORGENSEN, ME; Ohio University	Patterns of axial and pelvic muscle architecture and fiber composition in frogs with different locomotor modes
9:40 AM DCB	43.6	KUO, CY, IRSCHICK, DJ; University of Massachusetts Amherst	Loading effects on jumping and running in green anole lizards (*Anolis carolinensis*)
10:00 AM	COFFEE BREAK		

10:20 AM-Noon
617

Session 44: Energetics and Fuel Allocation

Chair: Marshall McCue

10:20 AM	44.1	FLETCHER, QE, BOUTIN, S, MCADAM, AG, SPEAKMAN, JR, HUMPHRIES, MM; McGill University	Seasonal energetics of a northern free-ranging mammal in a resource pulse system
10:40 AM	44.2	MCDONALD, BI, GOEBEL, ME, CROCKER, DE, COSTA, DP; University of California, Santa Cruz, Antarctic Ecology Research Division, NOAA, Sonoma State University	Maternal investment in the Antarctic fur seal: impacts of maternal traits, pup traits, and provisioning strategy
11:00 AM DCPB	44.3	CHAMPAGNE, CD, FOWLER, MA, COSTA, DP, HOUSER, DS, CROCKER, DE; University of California Santa Cruz, Sonoma State University	A complete profile of carbohydrate metabolism during prolonged fasting in the northern elephant seal
11:20 AM DCPB	44.4	PRICE, ER, GUGLIELMO, CG; University of Western Ontario	Fueling flight with fat: substrate selectivity of avian CPT
11:40 AM DCPB	44.5	MCCUE, MD, SIVAN, O, MCWILLIAMS, SR, PINSHOW, B; Blaustein Institutes for Desert Research, Ben Gurion University, University Rhode Island	Tracking the oxidative kinetics of carbohydrates, amino acids, and fatty acids in the house sparrow using exhaled $^{13}CO_2$

8:00 AM-Noon
618

Session 45: Sensory Physiology

Co-Chairs: Duane McPherson, Shaun Cain

8:00 AM	45.1	MULCAHEY, TI, HORSTMANN, JT, HU, DL, SABRA, K, WEISSBURG, M; Georgia Institute of Technology	Autonomous cricket biosensors for acoustic detection
8:20 AM DNB	45.2	BATTELLE, B-A, KATTI, C, LEGG, A, GONZALES, R, RIVERA, E, KEMPLER, K; Whitney Laboratory, University of Florida	Diurnal and circadian regulation of opsins co-expressed in *Limulus* photoreceptors
8:40 AM DAB	45.3	PANKEY, MS, SUNADA, H, SAKAKIBARA, M; University of California, Santa Barbara, Tokai University	Dermal photoreception in the pond snail *Lymnaea*
9:00 AM DSEB	45.4	OAKLEY, TH, RIVERA, AS, OZTURK, N, FAHEY, B, PLACHETZKI, DC, DEGNAN, BM, LEYS, SP, SANCAR, A; University of California, Santa Barbara, University of Richmond, University of North Carolina, University of Queensland, University of California, Davis, University of Alberta	Convergent evolutionary origin of an eye in the demosponge *Amphimedon queenslandica*
9:20 AM DNB	45.5	SUNADA, H, SAKAKIBARA, M*; Tokai University	The shadow response of RPeD11, in *Lymnaea*
9:40 AM	COFFEE BREAK		
10:00 AM DNB	45.6	BALTZLEY, MJ; St. Mary's College of Maryland	Comparative physiology of mechanosensory neurons in three species of leeches
10:20 AM DNB	45.7	VAN GRIETHUIJSEN, LI, TRIMMER, BA; Tufts University	Anticipation of obstacles in soft bodied terrestrial locomotion
10:40 AM DCB	45.8	WEISSBURG, MJ, BERKENKAMP, K, MANKIN, D; Georgia Tech	Turbulent mixing inhibits discrimination of attractive vs. aversive chemicals in crabs by eroding small scale filament structure impinging on antennulary chemosensors
11:00 AM	45.9	ENDRES, C, PUTMAN, N, LOHMANN, KJ; University of North Carolina, Chapel Hill	Detection of airborne odorants by loggerhead sea turtles
11:20 AM	45.10	CARO, SP, SEWALL, KB, SALVANTE, KG, ALDREDGE, RA, SOCKMAN, KW; University of North Carolina, Chapel Hill, Simon Fraser University, Burnaby, Canada	Behavioral and brain responses of female Lincoln's sparrows to variation in male song quality
11:40 AM DAB	45.11	SEWALL, KB, CARO, SP, SOCKMAN, KW; University of North Carolina, Chapel Hill	Quality of the song environment affects monoaminergic activity in the forebrain of male Lincoln's sparrows

8:20-9:40 AM
619

Session 46: Aggression - Females

Chair: Jodie Jawor

8:20 AM DAB	46.1	JAWOR, JM, WINTERS, CP; University of Southern Mississippi, Hattiesburg	Testosterone and melanin face mask coloration in female northern cardinals (*Cardinalis cardinalis*)
8:40 AM DAB	46.2	CAIN, KE, RICH, MS, DAPPER, AL, KETTERSON, ED; Indiana University, Swarthmore College	Trade-offs between aggression and parenting in female birds: what's testosterone got to do with it?

9:00 AM DAB	46.3	CARLETON, J, RENN, SCP; Reed College	Molecular modules of maternal aggression in the African cichlid *Astatotilapia burtoni*
9:20 AM	46.4	ROSVALL, KA; Indiana University, Bloomington	A novel cost of a sexually selected trait in females: more aggressive female tree swallows incubate less
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
619

Session 47: Aggression - Ecological Relationships

Chair: Laurie Dizney

10:00 AM	47.1	DIZNEY, L, VARNER, J, DEARING, MD; University of Utah	Behavioral analysis of deer mice with respect to hantavirus transmission
10:20 AM DEE	47.2	ROBERTSON, JM, ROSENBLUM, EB; University of Idaho, Moscow	Male aggression and territoriality in recently diverged populations of desert lizards
10:40 AM DAB	47.3	D'ORAZIO, AE, DALY, M; Ohio State University	Mid-intertidal movement: variation among and within clones of *Anthopleura elegantissima*
11:00 AM	47.4	EGGE, AR, BRANDT, Y, SWALLOW, JG; The University of South Dakota, Vermillion	Sequence analysis of aggressive interactions between male dyads of stalk-eyed flies
11:20 AM	47.5	FOX, RA, LADAGE, LD, ROTH, TC, PRAVOSUDOV, VV; University of Nevada, Reno	Behavioral profile and aggression in mountain chickadees
11:40 AM DAB	47.6	SCHRANDT, MN, HARDY, KM, JOHNSON, KM, LEMA, SC; University of North Carolina, Wilmington	Ecological correlates of intraspecific behavioral variation in the bicolor damselfish (*Stegastes partitus*): interacting influences of physical and social conditions

1:20-3:00 PM
605/610

Session 48: Complementary Session: Evolutionary Paths Among Developmental Possibilities

Chair: Douglas Eernisse

1:20 PM	48.1	LEVINTON, J, MACKIE, J, KOZAK, K, RODGERS, B; Stony Brook University, Moss Landing Marine Laboratory, Bell Museum of Natural History	Dynamics of speciation, larval dispersal, and biogeographic overlap in a pantropical group of crustacea, the fiddler crabs
1:40 PM DSEB	48.2	EERNISSE, DJ, CORSTORPHINE, E, CLARK, RN, STRATHMANN, MF; California State University, Fullerton, University of Guelph, Santa Barbara Museum of Natural History, Friday Harbor Labs, University of Washington	Seastars across the oceans: molecules help untangle biogeographic patterns for a species-rich genus, *Henricia*
2:00 PM DIZ	48.4	FERNANDES, DAO, PODOLSKY, RD; Grice Marine Laboratory, College of Charleston	The effects of the association with eelgrass on the embryonic development of the gastropod *Haminoea vesicula* (Gould, 1855)
2:20 PM DIZ	48.5	SHUTTARI, N, JACOBS, MW; Boston University, Woods Hole Oceanographic Institution	Variation in behavior of larval lobsters as a function of population, parentage, and development time
2:40 PM DDCB	48.6	HEYLAND, A, GOODALL, S, SOHN, D, LEYS, S, MOROZ, L; University of Guelph, The Whitney Laboratory for Marine Biosciences, University of Florida, University of Alberta, Biological Sciences	Neurotransmitter functions in the placozoan *Trichoplax adherens*

1:20-2:40 PM
606

Session 49: Functional Design of Heads - Working Under Water II

Chair: Tim Higham

1:20 PM DCB	49.1	GOLDBOGEN, JA, CALAMBOKIDIS, J, OLESON, EM, POTVIN, J, SCHORR, G, SHADWICK, RE; University of British Columbia, Cascadia Research Collective, University of California, San Diego, Saint Louis University	Big heads, big gulps and high drag: mechanics and energetics of rorqual lunge feeding
1:40 PM DCB	49.2	KANE, EA, MARSHALL, CD; Texas A & M University	Behavioral performance of ram and suction feeding odontocetes, and a preliminary evolutionary analysis using functional data
2:00 PM DCB	49.3	VENESKY, M, WASSERSUG, R, PARRIS, M; University of Memphis, Dalhousie University	Labial tooth number affects feeding kinematics in a ranid tadpole
2:20 PM	49.4	KLEINTEICH, T; University of Hamburg	The ontogeny of feeding systems in caecilians (Lissamphibia: Gymnophiona) - sucking, scraping, and biting

1:00-2:40 PM
608

Session 50: Complementary Session: Evolution of Fish Body Plan

Chair: Jeff Walker

1:00 PM DEDB	50.1	PARSONS, KJ, MARQUEZ, E, COOPER, WJ, ALBERTSON, RC; Syracuse University, Florida State University	The genetic basis of modularity in the African cichlid mandible
1:20 PM DCB	50.2	VAN WASSENBERGH, S, ROOS, G, AERTS, P; University Antwerpen	The head-down posture of seahorses: an adaptation for pivot feeding?
1:40 PM DVM	50.3	HULSEY, CD, STREELMAN, JT; University of Tennessee, Georgia Institute of Technology	Comparative evolutionary dynamics in cichlid adaptive radiations: linking lower jaw genetics, morphology, and mechanics
2:00 PM DVM	50.4	WALKER, JA, ALFARO, ME, FULTON, CJ; University Southern Maine, University California, Los Angeles, Aust. Nat. University	Fluid dynamic drag, body shape, and endurance swimming performance among coral reef fishes
2:20 PM	50.5	SVENDSEN, JC, TUDORACHE, C, JORDAN, AD, STEFFENSEN, JF, AARESTRUP, K, DOMENICI, P; Technical University of Denmark, University of Antwerp, University of Copenhagen, International Marine Centre Localita Sa Mardini	Partition of aerobic and anaerobic swimming costs related to gait transitions in a labriform fish

1:20-3:00 PM
609

Session 51: Complementary Session: Metabolism and Aging

Co-Chairs: Craig Frank, Ned Place

1:20 PM DCPB	51.1	FRANK, CL, REEDER, D, HICKS, A, RUDD, R; Fordham University, Bucknell University, NY DEC, Albany, NY Rabies Lab	The effects of White Nose Syndrome (WNS) on bat hibernation
1:40 PM DEE	51.2	HAUSSMANN, MF, MAUCK, RA; Bucknell University, Kenyon College	Energy, growth and oxidative stress in Leach's storm-petrels (*Oceanodroma leucorhoa*)

2:00 PM DCPB	51.3	VALENCAK, TG, RUF, T; University of Veterinary Medicine Vienna	Dietary n-3 and n-6 polyunsaturated fatty acid supplementation alters heart phospholipid composition but does not affect lifespan
2:20 PM DCE	51.4	PLACE, NJ, CRUICKSHANK, J; Cornell University, Ithaca	Reproductive aging in Siberian hamsters: greater litter success in older females when short photoperiod is initiated after rather than before puberty
2:40 PM DCPB	51.5	ELEKONICH, MM, ROBERTS, SP; University of Nevada Las Vegas, Central Michigan University	The cellular cost of highly metabolic behavior for aging and life histories

1:00-3:00 PM
611

Session 52: Phylogenetics and Speciation I

Co-Chairs: Bob Thacker, Luke Harmon

1:00 PM DSEB	52.1	BOYER, SL, HOWE, AA, HOVE, MC; Macalester College, University of Minnesota	A DNA barcoding approach to identifying newly transformed juvenile freshwater mussels (Bivalvia: Unionidae) recovered from naturally infested fishes
1:20 PM DEE	52.2	BRANNOCK, PM, HILBISH, TJ; University of South Carolina	Hybrid sterility limits introgression between invasive and endemic blue mussels
1:40 PM	52.3	GOULDING, T, COHEN, S; Romberg Tiburon Center for Environmental Studies, San Francisco State University	Examining genetic variation of the Acanthocephalan *Profilicollis altmani* parasitizing mole crabs (*Emerita spp.*) in North America
2:00 PM	52.4	HARMON, LJ; University of Idaho	A semiparametric method to test for correlated evolution in a phylogenetic context
2:20 PM DSEB	52.5	INGLEY, SJ, BYBEE, SM, BRANHAM, MA, WHITING, MF; University of Florida, University of California, Irvine, Brigham Young University	Life on the fly: evolution and ecology of the endangered helicopter damselflies (Odonata: Pseudostigmatidae)
2:40 PM DEE	52.6	SPERLING, EA, ROBINSON, JM, PISANI, D, PETERSON, KJ; Yale University, Dartmouth College, The National University of Ireland, Maynooth	Where's the glass? Biomarkers, molecular clocks and microRNAs suggest a 200 million year missing precambrian fossil record of siliceous sponge spicules

1:00-3:00 PM
612

Session 53: Morphogenesis and Life History

Chair: Tobias Landberg

1:00 PM	53.1	BENNETT, KC, EMLET, RE, YOUNG, CM; Oregon Institute of Marine Biology	Larval development and metamorphosis of the deep-sea cidaroid urchin *Cidaris blakei*
1:20 PM DIZ	53.2	SCHWARTZ, ML, NORENBURG, JL; University of Puget Sound, Smithsonian Institution	Comparative morphology and evolution of pilidiophoran larvae (Nemertea)
1:40 PM DEDB	53.3	KERNEY, Ryan; Dalhousie University, Canada	Embryology of the red-backed salamander (*Plethodon cinereus*)
2:00 PM DVM	53.4	BUCKLEY, D, WAKE, MH, WAKE, DB*; University of California, Berkeley	Comparative skull morphology of *Karsenia koreana* (Amphibia, Caudata, Plethodontidae)
2:20 PM DVM	53.5	LANDBERG, T; University of Connecticut	Oxygen-induced plasticity and evolution of larval tail morphology in stream and pond-breeding salamanders (genus Ambystoma)
2:40 PM DEE	53.6	KINGSOLVER, J, DIAMOND, S, SMITH, M, ANGELL, C; University of North Carolina, Chapel Hill	Laboratory evolution of instar number in Manduca: consequences for growth, size and developmental plasticity

1:00-3:00 PM
613/614

Session 54: Complementary Session: Insights of Early Chordate Genomics

Chair: Ed Rosa-Molinar

1:00 PM DEDB	54.1	AMEMIYA, CT, SAHA, NR, SMITH, JJ; Benaroya Research Institute	Programmed genome dynamism and its evolutionary cooption in a basal vertebrate
1:40 PM	54.2	KANO, S, SATOU, Y, DESCHET, K, MARTIN, P, HAEUSSLER, M, JOLY, JS; CNRS, Gif-sur-Yvette, France, Kyoto University, Japan, INRA, France	A dual origin of the pituitary primordium in the ascidian
2:00 PM	54.3	RÖTTINGER, E, DUBOC, T, MARTINDALE, MQ; Kewalo Marine Laboratory, University of Hawaii	Investigating the role of the Nodal signaling pathway in a indirect developing hemichordate, *Ptychodera flava*
2:20 PM	54.4	SMITH, JJ, AMEMIYA, CT; Benaroya Research Institute	Tight regulation of large-scale genome rearrangements: the sea lamprey (*Petromyzon marinus*)
2:40 PM	54.5	KOOP, D, HOLLAND, LZ; University of California, San Diego	Multiple roles of retinoic acid in the pharyngeal endoderm development of amphioxus

1:00-3:00 PM
615/616

Session 55: Flight - Control

Co-Chairs: Itai Cohen, Richard Bomphrey

1:00 PM DCB	55.1	BOMPHREY, RJ, TAYLOR, GK; University of Oxford	Optomotor frequency response in hawkmoths
1:20 PM DCB	55.2	DICKERSON, BH, HEDRICK, TL; University of North Carolina, Chapel Hill	Accommodation of antennal perturbation in freely flying hawkmoths
1:40 PM	55.3	WALKER, SM, THOMAS, ALR, TAYLOR, GK; Oxford University	Kinematics and control in free-flying hoverflies
2:00 PM DCB	55.4	SPONBERG, S, DANIEL, TL; University of Washington	Phase modulation and control of flight power muscles during visually-induced turning responses in the hawkmoth, *Manduca sexta*
2:20 PM DAB	55.5	COHEN, I, RISTROPH, L, BERGOU, AJ, GUCKENHEIMER, J, WANG, ZJ; Cornell University	Rowing through air: a new mode of forward flight in insects
2:40 PM DCB	55.6	VANCE, JT, HUMBERT, JS; University of Maryland, College Park	Mechanisms of gust rejection in the honey bee, *Apis mellifera*

1:00-2:40 PM
617

Session 56: Reproductive Physiology

Chair: Klisa Nishikawa

1:00 PM	56.1	YAMAMOTO, Y, LUCKENBACH, JA, GOETZ, FW, YOUNG, G, SWANSON, P; University of Washington, Seattle, Northwest Fisheries Science Center, University of Wisconsin, Milwaukee	Gene expression changes during early secondary oocyte growth and onset of atresia in coho salmon
1:20 PM DAB	56.2	O'CONNOR, CM, BARTHEL, BL, GILMOUR, KM, PHILIPP, DP, VAN DER KRAAK, G, COOKE, SJ; Carleton University, Canada, University of Illinois, Champagne-Urbana, University of Ottawa, Canada, University of Guelph	Life history correlates of cortisol and androgen levels in a parental teleost fish

1:40 PM DCE	56.3	ROSEN, O, MANOR, R, WEIL, S, LINIAL, A, AFLALO, ED, SAGI, A; Ben-Gurion University of the Negev	A sexual shift induced by an androgenic gland insulin-like gene silencing in intersex crayfish
2:00 PM	56.5	FRONSTIN, RB, WILLIAMS, TD; Simon Fraser University, Burnaby	Investigating the costs of reproductive anemia associated with egg-production in European starlings
2:20 PM DCE	56.6	MCGUIRE, NL, KANGAS, K, BENTLEY, GE; University of California, Berkeley	A functional neuropeptide system in avian gonads

1:00-3:00 PM
618

Session 57: Functional Design of Fish Sensory Systems

Chair: Stephen Kajiura

1:00 PM DVM	57.1	KAJIURA, SM, MCCOMB, DM; Florida Atlantic University	Visual and electrosensory integration in hammerhead sharks
1:20 PM DVM	57.2	DICKSON, JM, WEBB, JF; University of Rhode Island	The development of widened lateral line canals in a Lake Malawi cichlid: insights into lateral line evolution
1:40 PM DVM	57.3	HACISKI, SI, WEBB, JF; University of Rhode Island	Structural organization and ontogeny of the lateral line system in embryos of the little skate, *Leucoraja erinacea*
2:00 PM DVM	57.4	VAN TRUMP, WJ, COOMBS, S, DUNCAN, K, MCHENRY, MJ; University of California, Irvine, Bowling Green State University	A hammer, not a scalpel: gentamicin ablates all hair cells in the lateral line system
2:20 PM DCB	57.5	STEWART, WJ, BREUER, KS, MCHENRY, MJ; University of California, Irvine, Brown University	Lateral line sensing depends on the volume of the swim bladder in larval fish
2:40 PM DNB	57.6	LIAO, JC; The Whitney Laboratory for Marine Biosciences, University of Florida	Organization and function of lateral line afferent neurons in larval zebrafish

1:00-3:00 PM
619

Session 58: Terrestrial Locomotion - Climbing and Training

Chair: Catherine Loudon

1:00 PM DCB	58.1	BULLOCK, JMR, CLEMENTE, CJ, FEDERLE, W; University of Cambridge	Pushing and pulling: beetles use different tarsal pads to walk and climb
1:20 PM DCB	58.2	LOUDON, C; University of California, Irvine	Walking with grappling hooks: bed bug locomotion
1:40 PM DCB	58.3	MACAYEAL, LC, RISKIN, DK, SWARTZ, SM, BREUER, KS*; Brown University, Cornell University	Vertical climbing performance and reserve power in loaded and unloaded lesser dog-faced fruit bats (*Cynopterus brachyotis*)
2:00 PM	58.4	LEE, SSM, TOM, N, PIAZZA, SJ; The Pennsylvania State University	Plantarflexor moment arm correlates with walking speed in mobility-limited older adults
2:20 PM DVM	58.5	DIAL, KP; University of Montana, Missoula	When kids out-perform adults: contrasting ontogenetic locomotor performance for two species of Galliform birds
2:40 PM DVM	58.6	O'CONNOR, JL, MCBRAYER, LD, HIGHAM, TE, ROSTAL, DC; Georgia Southern University, Clemson University	The role of testosterone and training on locomotor performance in a non-territorial lizard

6:30-7:30 PM
6E

Howard Bern Lecture

DCE	SCHRECK, CB; Oregon State University	Haruspication: why is the endocrine system so similar and why is it so dissimilar amongst fishes?

7:00-8:00 PM
602/603

American Microscopical Society Keynote Address

	WINSTON, J; Virginia Museum of Natural History	Life in the colonies: learning the foreign ways of colonial organisms

TUESDAY - POSTER SESSION P2

Exhibit Hall 6 A/B/C, 3:00 - 5:00 PM

Even # Posters - Authors present from 3:00 - 4:00 pm

Odd # Posters - Authors present from 4:00 - 5:00 pm

Animal Communication

P2.1	UHRIG, EJ, CHRISTOPHERSON, Z, LEMASTER, MP, MASON, RT; Oregon State University, Western Oregon University	Interspecific variation in the female sexual attractiveness pheromone of garter snakes
P2.2 DAB	PASCH, B, GEORGE, A, HAMLIN, HJ, GUILLETTE, JR., LJ, PHELPS, SM; University of Florida	Androgens activate advertisment songs of Neotropical singing mice (Scotinomys)
P2.3 DEE	BYWATER, CL, WILSON, RS; The University of Queensland	Competition drives the reliability of signalling in the two-toned fiddler crab (*Uca vomeris*)
P2.4 DAB	BRANDLEY, NC, SPENDEL, K, GREIG, EI; Duke University, University of Chicago	Evidence for widespread predator-elicited vocalizations in the fairy-wrens: the Type II call in *Malurus lamberti*
P2.5 DIZ	BARNARD, ME, STRANDBURG-PESHKIN, AR, YARETT, IR, MERZ, RA; Swarthmore College	The blue streak in *Uca pugnax*: fast, bright, and beautiful - but does it mean anything?

Comparative Endocrinology

P2.6 DCPB	LIU, Q, CHEN, Y, THAKKAR, M, LONDRAVILLE, RL*; University of Akron	Expression pattern of leptin and leptin receptor in developing and adult zebrafish
P2.7 DCE	RICHMOND, JP, REA, LD, ZINN, SA; University of Connecticut, Storrs, Alaska Department of Fish and Game, Fairbanks	Steller sea lion (*Eumetopias jubatus*) leptin cDNA Sequence Homology
P2.8 DCE	BOORSE, GC, LIBBON, JV; Arizona State University	Genomic characterization of two leptin genes and a leptin receptor gene in the green anole, *Anolis carolinensis*
P2.9 DCE	COPELAND, D, SHAH, S, LONDRAVILLE, RL; University of Akron	Response of carp leptin to acute cold shock
P2.10 DCE	KUMAR, A, LARSON, R, BROWN, C, CARR, JA*; Texas Tech University, Lubbock	Evidence for evolutionary reductions in both the ligand and receptor that regulate rapid skin darkening in the Texas toad, *Bufo speciosus*
P2.11 DCE	PRYCE, K, SAMUEL, D, MYRTHIL, M, CATAPANE, EJ, CARROLL, MA; Medgar Evers College, Brooklyn	Presence of octopamine in hemolymph and tissues of *Crassostrea viginica* and its possible role as a cardio-regulatory hormone
P2.12 DCE	MILLER, TC, MACKENZIE, D, JAQUES, JT, DELOVIO, ML; Texas A&M University, Texas Veterinary Medical Diagnostic Laboratory	Biological activity of mammalian thyrotropins in goldfish
P2.13 DCE	DURICA, DS, PHILLIPS, B, HOPKINS, PM; University of Oklahoma	EcR/RXR LBD isoforms in Crustacea
P2.14 DCE	HARTY, JH, FREYMILLER, HJ, EDWARDS, TM, GUILLETTE, LJ; University of Florida, Gainesville, Tulane University, New Orleans	Effects of nitrate exposure on pancreatic beta-cells in American alligator
P2.15 DCE	FREYMILLER, HJ, HARTY, JJ, EDWARDS, TM; University of Florida, Tulane University	Using Nkx6.1 to detect pancreatic beta-cells in the American alligator
P2.16 DCE	TAVES, MD, SCHMIDT, KL, RUHR, IM, KAPUSTA, K, SOMA, KK; University of British Columbia	Local steroid levels in brain: effect of saline perfusion and comparison with plasma versus whole blood levels
P2.17 DCE	TARRANT, AM, BEHRENDT, L, STEGEMAN, JJ, VERSLYCKE, T; Woods Hole Oceanographic Inst., WHOI, Gradient Corp	Characterization of the ecdysteroid receptor in the American lobster (*Homarus americanus*) and development of an in vitro screening assay

Complementary Session: Advances in Antarctic Marine Biology

P2.18	HAMMOCK, J, LEMAITRE, R*, HARASEWYCH, MG; Smithsonian Institution	Antarctic invertebrates at the Smithsonian: one-stop shopping
P2.19	MUELLER, IA, O'BRIEN, KM; University of Alaska Fairbanks	The effect of mitochondrial ultrastructure on function in Antarctic notothenioid fishes
P2.20 DIZ	KOPLOVITZ, G, MCCLINTOCK, JB, AMSLER, CD, BAKER, BJ; University of Alabama at Birmingham, University of South Florida	Potential resistance of Antarctic ascidians to sympatric bacterial epibiosis
P2.21 DCPB	CZIKO, PA; University of Oregon	Diverse antifreeze proteins as models for adaptive protein evolution

Complementary Session: Animal Regeneration: Integrating Development, Ecology, and Evolution

P2.22 DEE	CAMPBELL, BR, LINDSAY, SM, DECHARON, AV; University of Maine, Orono, Darling Marine Center	Regeneration in the classroom: linking infaunal injury and ocean literacy using integrated concept mapping
P2.23 DEDB	PINNICK, GL, COHEN, CS; San Francisco State University	Does temperature affect Whole Body Regeneration (WBR) rate in *Botrylloides* spp?
P2.24 DEDB	GIANI, VC, SEAVER, EC; University of Hawaii	Expression of *piwi* during development and regeneration in the marine polychaete *Capitella teleta*
P2.25 DCPB	RAMOS, L, OMONDI, C, HALME, A, FUSE, M*; San Francisco State University, University of California, Berkeley	Ionizing irradiation produces a delay in pupation in the hornworm, *Manduca sexta*
P2.26	MASHANOV, VS, ZUEVA, OR*, ROJAS-CARTAGENA, C, GARCIA-ARRARAS, JE; University of Puerto Rico	Expression pattern of anti-apoptotic genes *survivin* and *mortalin* in the regenerating digestive tube of a sea cucumber
P2.27 DCPB	LESCH, MA, GRIVAS, JA, FROUNTFELTER, T, GOLDEN, BL, FITZHARRIS, NT, NIDA, BA, LAFONTANT, PJ; DePauw University	Structure, inflammation, and repair in a giant danio (Danio aequipinnatus) model of heart injury
P2.28 DCPB	GRIVAS, JA, GOLDEN, BL, FROUNTFELTER, T, LESCH, MA, COBB, A, LAFONTANT, PJ; DePauw University	Inflammation and repair in a goldfish (Carassius auratus) model of heart injury
P2.29	ANDRILENAS, KK, MOROZ, L; University of Washington, Seattle, Whitney Laboratory for Marine Biosciences, University of Florida, St. Augustine	The neurogenic effect of injury and regeneration in ctenophores

Complementary Session: Integrative Migration Biology

P2.30	STAPPUT, K, KLOHMANN, KJ; University of North Carolina, Chapel Hill	Magnetic orientation in birds and sea turtles: a comparative approach
P2.31	SCHWARZ, B, LANK, DB, IRWIN, DE; Simon Fraser University, Canada, University of British Columbia, Canada	Who travels where: unraveling population structure, migratory connectivity, and song patterns in Western sandpipers
P2.32	NEMETH, Z, LUO, Y, OWEN, JC, CAO, Z, MOORE, FR; University of Southern Mississippi, Hattiesburg, University of Maryland, Baltimore, Michigan State University, East Lansing	Seasonal variation in memory formation in first-year migratory songbirds as revealed by hippocampal CREB immunoreactivity
P2.33	PAXTON, K, MOORE, F, IRWIN, D; The University of Southern Mississippi, University of British Columbia	Migratory connectivity: a multi-marker approach to identify migratory individuals during the non-breeding season

P2.34 DEE	LARSON, KW, BENSCH, S, MÜLLER, N, ÅKESSON, S; Lund University	Secondary contact zone in central Sweden for willow warblers *Phylloscopus trochilus* identified using stable isotopes, AFLP molecular markers, and morphometrics
P2.35	BOSTRÖM, J, FRANSSON, T, HENSHAW, I, JAKOBSSON, S, KULLBERG, C, ÅKESSON, S; Lund University, Sweden, Swedish Museum of Natural History, Sweden, Stockholm University, Sweden	Magnetically induced migratory fuelling in juvenile wheatears (*Oenanthe oenanthe*)
P2.36	WAGNER, DN, GREEN, D, COOPER, JM, BEAUCHESNE, S, WILLIAMS, TD; Simon Fraser University, Beauchesne and Associates Ltd.	Impact of water level management on the condition of migratory songbirds

Conservation Biology /Bioindicators and Pollution

P2.37	CASTRO, C, SANCHEZ, JA; University de los Andes, Bogotá	Zoochorous dispersal of *Symbiodinium* by the stoplight parrotfish *Sparisoma viride*
P2.38 DEE	DOUGLAS, HD, SPRINGER, AM, BUDGE, S, AUCOIN, L; University of Alaska Fairbanks, Kuskokwim, IMS, Dalhousie University	Fatty acid and stable isotope analyses explain variability in ecosystem productivity and consumption patterns of top predators
P2.39 DEE	EASTLACK, DT, DAVIS, JR, KOUBA, AJ, VANCE, CK; Memphis Zoo, Rhodes College, Mississippi State University	Is the bufonid *Anaxyrus fowleri* resistant to chytrid fungus?
P2.40 DEE	EVANS, DM; University of Washington, Seattle	Does seasonality determine the utility of landscape corridors for promoting seed dispersal by birds?
P2.41 DEE	GERVASI, SS, SEARLE, CL, RELYEA, RA, HUA, J, HAMMOND, JI, BLAUSTEIN, AR; Oregon State University, University of Pittsburgh	Interspecific variation in susceptibility to an emerging pathogen of amphibians, *Batrachochytrium dendrobatidis*
P2.42	HOWEY, CAF, ROOSENBURG, W; Ohio University	The effects of prescribed burning on reptile movement rates and energy expenditures
P2.43	KREND, KL; University of Hawaii at Manoa	Introduced vector-borne disease in native and introduced Hawaiian forest birds on Oahu
P2.44 DEE	SNYDER, SJ, TRACY, CR; University of Nevada, Reno	Impacts of fire on thermoregulatory opportunities for desert tortoise: use of operative temperature models
P2.45	SPARROW, JD, ROSTAL, DC; Georgia Southern University, Statesboro	Temperature variations within and among loggerhead sea turtle (*Carreta carreta*) nests across
P2.46 DEE	TRACY, CR, BARBER, AM, WAKELING, SR*; University Nevada, Reno	Patterns in blood parameters associated with stress responses in desert tortoise (*Gopherus agassizii*)
P2.48	SEYFABADI, J, HEYDARI, M; Tarbiat Modares University	Diel vertical distribution assessment of the invasive ctenophore, Mnemiopsis leidyi, off Anzali Coast, South Caspian Sea, Iran
P2.49 DIZ	ROCK, MO, DAVIS-BERG, EC; Columbia College Chicago	Embryogenesis and development of the sea urchin *Arbacia punctulata* in the presence of the environmental toxin hypochlorite
P2.50 DCE	HOSKINS, TD, O'BRIEN, S, HESS, CM; Butler University, Marian University	Does atrazine exposure induce hermaphroditism in American toads (*Bufo americanus*)?
P2.52 DCPB	JENSEN, BH, ARCHAMBEAULT, J*, KROUSE, S; The College of Saint Rose	A suite of tests to evaluate the effects of the common insecticide, Sevin, on development in zebrafish
P2.53 DCE	HANSON, AM, SHERIDAN, MA; North Dakota State University, Fargo	Effects of environmental estrogens on the growth hormone-insulin-like-growth factor system and seawater adaptation of rainbow trout

P2.55	ANSON, JA; University of Hawaii	Recruitment sensitivity to contaminated substrata in larvae of coral species: *Montipora capitata* and *Porites hawaiiensis*
P2.56	HUMPHRIES, AT, LA PEYRE, MK; Louisiana State University	Linking structural complexity in created oyster reefs to provision of refuge and predation success

Education, Policy and History

P2.57 DNB	ITAGAKI, H; Kenyon College	The use of mock NSF-type grant proposals as the capstone assignment in upper-level biology courses
P2.58 DIZ	SPAIN, DD, RAMIREZ III, DR, ANIAG, JP; Dominican University of California	Developing effective communication skills in undergraduate science classes
P2.59	VENN, C, HRANITZ, J, BRUNSKILL, J; Bloomsburg University of Pennsylvania	An interdisciplinary project across disciplines in undergraduate education: salt marsh vegetation, distribution of salt marsh invertebrates, and the application of geographic information science
P2.60 DEE	WILSON, BA; Texas A&M International University	Learning with and from our students
P2.61 DCE	EDWARDS, T, GUILLETTE, L; Tulane University, University of Florida	Mentoring the next generation of scientists
P2.63 DCB	MEREDITH, D, SHUBERT, C, BOLKER, J*, VESENKA, J, KRAUT, G; University of New Hampshire, University of New England, University of Southern Virginia	Creating a physics course for life science majors
P2.64 DVM	DARDA, DM; Central Washington University	Vertebrate morphology in the biology curricula of four-year colleges and comprehensive universities: observations, data, and a suggestion
P2.65 DCE	WOODLEY, SK; Duquesne University	The importance of discussing animal research in the physiology classroom

Evolutionary Ecology and Life Histories

P2.66	BORCHERT, JD, SHELDON, KS, TEWKSBURY, JJ; Indiana State University, University of Washington	Differences in the thermal tolerances of isopods, from a temperate and tropical region, will buffer temperate isopods from the impacts of climate change
P2.67 DCE	LAYTON, JE, WIBBELS, T*, JACOBSON, E, BRISETTE, M; University of Alabama at Birmingham, University of Florida, Quantum Resources, In Water Research	Evaluating the sex ratios of juvenile loggerhead sea turtles inhabiting the Atlantic coastal waters of Florida
P2.68	WATTS, HE, MACDOUGALL-SHACKLETON, SA, HAHN, TP; University of California, Davis, University of Western Ontario	Inter-individual variation in reproductive development in response to environmental cues
P2.69 DEE	PARNELL, NF, STREELMAN, JT; Georgia Tech	The generation of trophic novelty through hybridization
P2.71 DIZ	WESTERMAN, EL, DIJKSTRA, JA, HARRIS, LG; Yale University, Wells National Estuarine Research Reserve, University of New Hampshire	Colony fusion common in a colonial ascidian

P2.72	BADGER, M, ADOLPH, S; Harvey Mudd College	Imperfect detection, lag times and the evolution of phenotypic plasticity
P2.73 DEE	BENTLEY, SE, MATLACK, CL, CHOW, J, HAUSSMANN, MF; Bucknell University	A charmed life: in ovo supplementation of vitamin E and its effects on oxidative stress during early development in domestic chickens (*Gallus gallus*)
P2.74 DEE	VIG, DK, KERKHOFF, AJ; Kenyon College	Modeling caterpillar responses to inducible plant defenses
P2.75 DCPB	CLARK, PR, KRISTAN, DM; CA State University San Marcos	Interactions between parasites: tapeworms alter life history of nematodes during co-infection in the laboratory mouse host
P2.76 DEE	MARCHETTO, NM, CARLTON, ED, MAUCK, RA, HAUSSMANN, MF; Bucknell University, Lewisburg, Kenyon College, Gambier	Red hot: lipid peroxidation and color based assortative mating in black guillemots (*Cepphus grylle*)

Muscle Physiology and Biochemistry

P2.77 DCPB	REAVES PIERCE, H, RIQUELME, CA, LEINWAND, LA, SECOR, SM; University of Alabama, University of Colorado	Python model of pathological cardiac hypertrophy
P2.78 DCPB	OWERKOWICZ, T, EME, J, GWALTHNEY, J, BLANK, JM, HICKS, JW; University of California, Irvine	Cardiac shunting does not constrain aerobic capacity of the American alligator
P2.79	SWART, JC, TATE, KB, REED, WL, CROSSLEY II, DA; University of North Dakota, North Dakota State University	Cardiovascular function in embryonic Canada geese (*Branta canadensis*)
P2.80 DDCB	SCHROEDER, JR, MCCORMICK, MM, PREHODA-WYERS, MM, DEAROLF, JL; Hendrix College	The effects of betamethasone on myosin expression patterns of fetal *Cavia porcellus* rectus thoracis muscle
P2.81	PRIESTER, C, MORTON, LC, KINSEY, ST, WATANABE, WO, DILLAMAN, RM; University of North Carolina, Wilmington	Distribution of nuclei in white muscle fibers of juvenile and adult black sea bass, *Centropristis striata*
P2.82 DCPB	CHO, I-G, COVI, JA, BADER, BD, CHANG, ES, MYKLES, DL; Colorado State University	Effects of molt induction on expression of a myostatin-like protein in the green crab, *Carcinus maenas*
P2.83 DDCB	LIMONCELLI, KA, PREHODA-WYERS, MM, DEAROLF, JL; Hendrix College	Effects of betamethasone on the extensor digitorum longus in fetal guinea pigs
P2.84	HAUZE, AE, DING, Z, ROOT, RG; Lafayette College	Modeling muscle force biochemically accurately and computationally efficiently
P2.85 DCB	GILLEN, CM, WHITE, AJ, CARPENTER, RO, ROHRBACK, SE, GAO, Y, WHEATLY, MG; Kenyon College, Wright State University	Analysis of sarcoplasmic calcium binding protein in *Procambarus clarkii* muscle
P2.86	LEASER, AE, CRAWFORD, EA, GAY, DM, DILLAMAN, RM; University of North Carolina at Wilmington	Ultrastructure and immunocytochemistry of the apodemes and associated tissue in the chelae of the blue crab, *Callinectes sapidus*
P2.87 DCPB	REISER, PJ, BICER, S, PATEL, R, AN, Y, CHEN, Q, QUAN, N; Ohio State University	The myosin light chain 1 isoform associated with masticatory myosin heavy chain in mammals and reptiles is embryonic/atrial mlc1

Neurobiology: Neurotransmitters and Neurochemistry

P2.88 DNB	MILLER, TM, KRAJNIAK, KG; Southern Illinois University Edwardsville	The intesintal FMRFamide receptor in the earthworm *Lumbricus terrestris*

P2.89 DNB	NELSON, M, ADAMS, T, CARROLL, MA, CATAPANE, EJ; Medgar Evers College, Brooklyn	Correlation of membrane potential and ciliary activity of lateral ciliated cells of gill of the bivalve *Crassostra virginica* and the neurotoxic effects of manganese
P2.90 DNB	NEAL, MW, KRAJNIAK, KG; Southern Illinois University Edwardsville	The effect of 5-hydroxytryptamine on each region of the alimentary canal of *Lumbricus terrestris*
P2.91 DNB	MURRAY, S, HERNANDES, A, CARROLL, MA, CATAPANE, EJ; Medgar Evers College	Neurotoxic actions of 6-OHDA, 5,7-DHT, manganese and denervation on serotonergic and dopaminergic innervation of lateral ciliated cells of gill of *Crassostrea virginica*
P2.92 DNB	LEHMAN, HK, BERRY, N, BERTINO, S, BRODSKI, A, CHAPONIS, S; Hamilton College	TbhR: a novel gene family related to tyramine beta-hydroxylase
P2.93	BATEMAN, JL, HEALY, JE, FLORANT, GL, HANDA, RJ; Colorado State University, University of Arizona College of Medicine, Phoenix	Investigation of seasonal AMP-activated protein kinase expression in golden-mantled ground squirrels (*Spermophilus lateralis*)
P2.94	KLATT, JD, KABELIK, D, GOODSON, JL; Indiana University, Bloomington	Avian partner preference is differentially affected by dopamine receptor subtypes and is sex-specific
P2.95 DNB	ANADOR, S, BROWN, C, LICORISH, R, CILLI, N, FLEMING, R, CARROLL, MA, CATAPANE, EJ; Medgar Evers College, Brooklyn	Pharmacological and immunofluorescence identification of dopamine D2 receptors in the lateral ciliated cells of the gill of the bivalve mollusc *Crassostra virginica*
P2.96 DNB	ALDREDGE, RA, SALVANTE, KG, SEWALL, KB, SOCKMAN, KW; University of North Carolina, Chapel Hill, Simon Fraser University, Canada	Experience with photostimulation upregulates vasoactive intestinal polypeptide in the hypothalamus of female house finches
P2.97 DNB	HALL, IC, SELL, GL, HURLEY, LM; Indiana University Bloomington	Social interactions influence serotonin in the auditory system
P2.98 DNB	WACK, CL, WOODLEY, SK; Duquesne University	Effects of pheromone treatment on gonadotropin-releasing hormone and arginine vasotocin neurons in the brain of a terrestrial salamander

Phylogenetics, Macroevolution and Biogeography

P2.99	LARSON, PG, FRANCIS, L; The Ohio State University, Columbus	Phylogeny of Pacific brooding anemones in *Epiactis* (Actiniaria, Actiniidae)
P2.100	ARELLANO, L, DREWES, RC; University of California, Santa Barbara, College of Creative Studies, California Academy of Sciences	Resolving the relationship among *Lamprophis lineatus* populations from the islands of São Tomé and Príncipe
P2.101 DIZ	DEMAINTENON, MJ; University of Hawaii, Hilo	Systematics and evolution of Panamic Anachis and related taxa (Neogastropoda: Columbellidae)
P2.102 DEE	LOH, T-L, LOPEZ-LEGENTIL, S, SONG, BK, PAWLIK, JR; University of North Carolina Wilmington	Molecular phylogenetic analysis of the sponge genus *Mycale* (Demospongiae; Poecilosclerida)
P2.103 DSEB	LOPEZ, AI, GOSLINER, TM, JOHNSON, RF; California State Polytechnic University, Pomona, California Academy of Sciences	Slugs with an identity crisis: phylogenetic analysis of the *Hypselodoris bullocki* complex
P2.104 DSEB	RECCIA, L, MOOI, R; California State Polytechnic University, California Academy of Sciences	Cake sand dollars with combed tube feet: morphometry and phylogenetics of Indo-Pacific arachnoidid clypeasteroids
P2.105	ESCOBAR, DA, SANCHEZ, JA; Universidad de los Andes	Molecular phylogenetics inside the *Cliona viridis* complex (Porifera, Demospongiae, Hadromerida)

P2.106 DSEB	THACKER, RW, BANGALORE, P, DIAZ, MC, HILL, A, LAVROV, D, LOPEZ, J, PETERSON, K, POMPONI, S, REDMOND, N, COLLINS, AG; University of Alabama, Birmingham, Museo Margarita, University of Richmond, Iowa State University, Nova Southeastern University, Dartmouth University, Florida Atlantic University, Smithsonian Institution	Integrative approaches for reconstructing the Porifera Tree of Life (PorToL)
P2.107	WILLIS, RE, PRESSLEY, TA; Texas Tech University Health Sciences Center, Lubbock	Genetic variation in the alpha 1 subunit of the Na,K-pump in a freshwater serpent
P2.108 DSEB	VOLLRATH, K, MOOI, R; San Francisco State University, San Francisco, California Academy of Sciences	The origin and phylogeny of major sea urchin clades since the Paleozoic
P2.109	SPERLING, EA, VINTHER, J, MOY, VM, WHEELER, BM, SEMON, M, BRIGGS, DEG, PETERSON, KJ; Yale University, Dartmouth College, North Carolina State University, Universite de Lyon	MicroRNAs resolve an apparent conflict between annelid systematics and their fossil record
P2.110 DVM	ROLIAN, C, LIEBERMAN, D, HALLGRIMSSON, B; University of Calgary, Harvard University	Did human fingers and toes coevolve?
P2.111	LUQUE, J, DOUGLASS, JK, JARAMILLO, CA; Université de Montréal, Canada, Smithsonian Tropical Research Institute, Panamá	How much have raninid crab eyes changed after 94 m.y. of evolution?
P2.112 DEE	ARCHIE, JW, THOMPSON, M; California State University, Long Beach	Genetic differentiation, range expansion, and loss of allelic diversity within the western fence lizard (*Sceloporus occidentalis*) in the basin and range province
P2.113 DSEB	MYERS, EA, WEAVER, RE, ALAMILLO, H; Washington State University	Historical demography of *Hypsiglena chlorophaea* in the Great Basin
P2.114 DSEB	COX, LN, EMME, SA, ZASLAVSKAYA, NI, MARKO, PB; Clemson University, Russian Academy of Sciences	Going all the way: phylogeography and trans-Pacific divergence genetics of two rocky-shore snails
P2.115	STREICHER, JW, HARVEY, MB, SMITH, EN; University of Texas, Arlington, Broward College	Biogeographic patterns in morphologically conserved and genetically diverse anuran lineages from the sunda shelf
P2.116	YEUNG, NW; University of Hawaii	Ecology, evolution, and conservation biology: tales from a feather as told by the white tern
P2.117 DEE	BASIL, J, CROOK, R, GRASSO, F; Brooklyn College, CUNY, University of Texas Medical School, BioMimetic and Cognitive Robotics Laboratory	The evolution of flexible behavioral repertoires in cephalopod molluscs
P2.118	FERRER, EA; University of California, Berkeley	A biomechanical comparison between three large theropod dinosaurs: relative roles of functional and phylogenetic constraints

Regulation of Behavior

P2.119 DCE	HO, JM, DEMAS, GE; Indiana University, Bloomington	Endocannabinoid levels in Siberian hamsters across sex and season
P2.120 DCPB	GAO, S, LUTTERSCHMIDT, WI, LUTTERSCHMIDT, DI; The College of New Jersey, Sam Houston State University, Georgia State University	Diel variation in standard metabolic rate: mediation by photoperiod cues and melatonin?
P2.121	ZENEL, AM, GILMAN, SE, CARRINGTON, E; Scripps College	The effect of aerial temperature on behavior and respiration in two rocky intertidal snails

P2.122	TRAN, MC, TSUKIMURA, B; California State University, Fresno	Effects of methyl farnesoate on cyst production and growth in *Triops longicaudatus*
P2.123 DCE	TEARE, AR, ROSTAL, DC; Georgia Southern University, Statesboro	Reproductive biology of the alligator snapping turtle (*Macrochelys temminckii*)
P2.124	SMITH, NS, ADAMS, SA*, HO, JM, DEMAS, GE; Xavier University of Louisiana, Indiana University	Functional effects of endocannabinoid signaling on ingestive behavior in Siberian hamsters
P2.125 DCE	SARGENT, ML, LOVERN, MB; Oklahoma State University	Short- and long-term consequences of yolk steroid exposure for green anole lizards
P2.126	ANDRIEUX, SJ, CHESTER, EM, DEMAS, GE; SUNY College at Old Westbury, Indiana University	Prenatal social stress affects Siberian hamster (phodopus sungorus) offspring social behavior and physiology
P2.127	LACY, EL, WOODLEY, SK; Mars Hill College, Duquesne University	Activity, but not mating behavior is suppressed by an acute stressor in male and female Ocoee salamanders
P2.128 DCE	RUIZ, ME, MCNERNEY, CA, HORNUNG, KL, TAYLOR, EN, STRAND, CR; Allan Hancock College, Cal Poly State University	Orexin/hypocretin immunoreactivity in the brains of fed and fasted ball pythons (*Python regius*)
P2.129	PRADHAN, DS, GROBER, MS; Georgia State University	Inhibition of 11β-HSD reduces 11-Ketotestosterone levels in *Lythrypnus dalli*
P2.130 DCE	PARKER, MR, FRIESEN, CR, MASON, RT; Oregon State University, Corvallis	Associated reproduction in a model dissociated breeder, the red-sided garter snake

Reproductive Behavior

P2.131 DAB	PEREYRA, ME; University of Tulsa	Effects of climate-related variance in environmental conditions on reproductive timing and productivity in a high altitude and high latitude passerine (*Empidonax oberholseri*)
P2.132 DCE	KLAASSEN VAN OORSCHOT, B*, CRINO, O, BREUNER, C; University of Montana	The effect of nest microhabitat on reproductive success of the mountain white-crowned sparrow
P2.133 DAB	PETERSEN, CL, GRASSO, FW; Brooklyn College, CUNY, The Graduate Center, CUNY	Seasonal changes in nest maintenance behavior of monk parakeets (*Myiopsitta monachus*)
P2.134 DAB	BRAZEAL, KR, DECASTRO, DM, WATTS, HE, HAHN, TP; University of California, Davis	The effect of social cues on the timing of the breeding-molt transition in house finches (*Carpodacus mexicanus*)
P2.135 DCE	HURLEY, LL, DEVICHE, P; Arizona State University	Population differences in reproductive biology of free-living Cassin's sparrows, Aimophilla cassinii
P2.136 DEE	FRIESEN, CR, MASON, RT; Oregon State University	Sperm competition and mate order effects in red-sided garter snakes
P2.137 DAB	LEMASTER, MP, STEFANI, AC, MASON, RT; Western Oregon University, Oregon State University	Heavy-bodied vs. light-bodied - does it matter? Size dependent mate selection and pheromone production in garter snakes
P2.138 DAB	WILLIS, PM, RYAN, MJ, ROSENTHAL, GG; University of Texas at Austin, Texas A&M University	Predation risk and encounter rates with conspecific males influence female mate choice in hybridizing swordtail fishes
P2.139 DVM	MOSS, AL, ROSTAL, DC; Georgia Southern University	Use of ultrasound, x-ray, and oxytocin to determine reproductive state of female *Trachemys scripta* not collected at the nesting site
P2.140 DAB	MCDERMOTT, CG, POPE, D; Mount Holyoke College	Effects of mangrove pneumatophore density on Uca crenulata

Thermal Biology and Metabolism

P2.141 DCPB	SCHOLNICK, DA, MANIVANH, RV, NELSON, WN; Pacific University	Effects of malaria infection on post-exercise thermoregulation and metabolism in the western fence lizard, *Sceloporus occidentalis*
P2.142 DCPB	NIENOW, TE, WHITTINGTON, AC, GROVE, TJ; Valdosta State University, Florida State University	Homology model of *Fundulus heteroclitus* calsequestrin reveals structural differences that may contribute to thermal adaptation of *F. heteroclitus*
P2.143	ORCZEWSKA, JI, O'BRIEN, KM; University of Alaska Fairbanks	Timecourse for metabolic remodeling in response to cold acclimation in threespine sticklebacks
P2.144 DEE	KOBEY, RL, EGGLESTON, EE, MONTOOTH, KL; Indiana University	Cold-induced mortality in *Drosophila*: starvation, desiccation, or neither?
P2.145 DCPB	CUPP, JR., PV; Eastern Kentucky University	Variation in critical thermal maxima of eastern narrowmouth toads, *Gastrophryne carolinensis* over a latitudinal gradient
P2.146 DCPB	VAN UITREGT, VO, WILSON, RS, FRANKLIN, CE; The University of Queensland, Australia	Cooler temperatures increase sensitivity to ultraviolet B radiation in embryos and larvae of the frog *Limnodynastes peronii*
P2.147 DCPB	BURDICK, SL, SWANSON, DL*; University of South Dakota, Vermillion	Overwintering physiology and hibernacula microclimates of Blanchard's cricket frogs at their Northwestern range boundary
P2.148 DCPB	BURDETT, KA, BUCK, CL, FLORANT, GL; Colorado State University, University of Alaska	Torpor patterns during hibernation in golden-mantled ground squirrels (*Spermophilus lateralis*) under natural conditions
P2.149 DCPB	DOHERTY, ARH, ROBL, NJ, VINYARD, CJ; Northeastern Ohio Universities Colleges of Medicine	Preliminary analyses of blood serum to assess bone maintenance in wild woodchucks (*Marmota monax*) before and after hibernation
P2.150	PORTER, WR, WITMER, LM; Ohio University	Vasculature and dinosaur physiology: patterns in the extant realm
P2.151	RICHTER, MM, KOHL, F, BUCK, CL, BARNES, BM; University of Alaska, Fairbanks, University of Alaska, Anchorage	Effect of presence of post-hibernation food availability on reproductive development in male arctic ground squirrels (*Urocitellus parryii*)
P2.152 DCPB	FOWLER, MA, CHAMPAGNE, CD, HOUSER, DS, CROCKER, DE; University of California, Santa Cruz, Sonoma State University	Adiposity, development and lactation impact responses to glucagon in northern elephant seals
P2.153 DCPB	SEARS, KE, MESSERMAN, AF, KERKHOFF, AJ, ITAGAKI, H; Kenyon College	Modeling growth and metabolism in *Manduca sexta* larvae: variation across individuals and instars
P2.154 DCPB	FINKLER, MS, HAYES, CJ; Indiana University Kokomo	Sexual dimorphisms in visceral organ mass, metabolism, and energetics in pre-breeding American toads (*Anaxyrus americanus*)
P2.155 DCPB	TRACY, CR, CHRISTIAN, KA, MCARTHUR, LJ; Charles Darwin University	Peeing out transmitters: anuran amphibians appear to possess a unique method of removing foreign objects from their body cavities
P2.156 DCPB	WESSELS, FJ, HAHN, DA; University of Florida	Not all lipids are created equal: differential carbon 13 discrimination during lipid biosynthesis

Vertebrate Morphology - Flight

P2.157 DCB	ALDWORTH, Z, LOCKEY, J*, OTTEN, D, LANG, J, VOLDMAN, J, DANIEL, T; University Washington, Massachusetts Institute Technology	Radio controlled stimulation of abdominal flexion in *Manduca sexta* affects the flight path
P2.158	BROWNING, JA, SANTHANAKRISHNAN, A, MILLER, LA; University of North Carolina, Chapel Hill	The effects of wing flexibility on small insect flight

P2.159 DCB	BUCHWALD, R, DUDLEY, R; University of California, Berkeley	Maximum flight performance in bumblebees reared under variable hypobaria
P2.160 DVM	CHENEY, JA, TON, D, RISKIN, DK, SWARTZ, SM; Brown University	Hindlimb movement of *Cynopterus brachyotis* during flight
P2.161 DCB	FOX, JL, MYHRVOLD, CA*, HOWELL, D, DANIEL, TL; University of Washington, Princeton University	Lateral asymmetry in the kinematics of halteres during maneuvering flight of crane flies
P2.162 DVM	HARPER, CJ, AZIZI, E, NOWROOZI, BN, SULLIVAN, AC, SWARTZ, SM; Brown University	Hovering and hoovering: tongue and wing movements in nectar-feeding bats *Glossophaga soricina*

Vertebrate Morphology - Swimming

P2.163 DCB	BOHÓRQUEZ-HERRERA, J, KAWANO, SM*, DOMENICI, P; Centro Interdisciplinario de Ciencias Marinas, Instituto Politécnico Nacional, Clemson University, CNR-IAMC	Effects of prey capture on escape responses of the silverspotted sculpin (*Blepsias cirrhosus*)
P2.164 DCB	FEITL, KE, MCHENRY, MJ; University of California, Irvine	Control of locomotion in the lobate ctenophore, *Mnemiopsis leidyi*
P2.165 DCB	MCGREGOR, AE, FISH, FE, NOWACEK, DP; Duke University Marine Laboratory, West Chester University	Finding the window of energetic opportunity: traveling North Atlantic right whales use dive depths that avoid surface drag
P2.166 DCB	FLAMMANG, BE, LAUDER, GV, TROOLIN, DR, STRAND, T; Harvard University, TSI Incorporated	Instantaneous volumetric wake analysis of locomotion in teleost fishes
P2.167 DVM	GERRY, SP, ELLERBY, DJ; Wellesley College	Regional patterns of muscle blood flow during steady swimming in trout
P2.168 DCB	HIROKAWA, J, ROBERTS, S, FRIAS, C, KRENITSKY, N, DE LEEUW, J, LONG, J, PORTER, M; Vassar College	A self-propelled robotic swimmer as a biomechanical testbed: swimming performance and axial length of the intervertebral joints
P2.169 DCB	MACESIC, LJ, BLEVINS, E; Florida Atlantic University, Harvard University	Pectoral and pelvic fin coupling during augmented punting in the freshwater stingray, *Potamotrygon laticeps*
P2.170	MANDECKI, JL, REID, D, DOMENICI, P; University of Chicago, University of Washington, CNR-IAMC	Synchrony of pectoral fin locomotion and eye movement in shiner perch (Cymatogaster aggregata)
P2.171	SEFATI, S, FORTUNE, ES, COWAN, NJ; Johns Hopkins University	Counter-propogating waves in the ribbon fin of *Eigenmannia virescens* enhance maneuverability
P2.172 DVM	WANG, J, HAYASHI, M, GERRY, SP, ELLERBY, DJ; Wellesley College	Intraspecific morphological differences in bluegill sunfish
P2.173 DVM	WILGA, CD, MAIA, ARMD, NAUWELAERTS, S, LAUDER, GV; University Rhode Island, Michigan State University, Harvard University	Prey capture using whole body fluid dynamics in batoids

Wednesday Schedule of Events

EVENT	TIME	LOCATION
Registration	7:30 AM-2:00 PM	6th Flr East Lobby, Convention Ctr
Exhibit Hall	9:30 AM-5:30 PM	6A/B/C
Poster Session 3 Setup	7:00-8:0 AM	6A/B/C
Poster Session 3 Even Numbers Viewing	3:00-4:00 PM	6A/B/C
Poster Session 3 Odd Numbers Viewing	4:00-5:00 PM	6A/B/C
Poster Session 3 Teardown	5:00-5:30 PM	6A/B/C
Coffee Breaks	9:30-10:30 AM; 3:30-5:00 PM	6A/B/C
SPECIAL LECTURE		
Moore Lecture	6:30-7:30 PM	606/607/608/609
SYMPOSIA ORAL PRESENTATIONS		
S8: Assembling the Cnidarian Tree of Life	8:00 AM-3:00 PM	604
S9: Spiralian Development: Conservation and Innovation	8:00 AM-3:00 PM	606
S10: Marine Ecosystem Engineers in a Changing World...	8:00 AM-3:00 PM	611
S11: Study of the Evolution of Fish Body Plan and Fin Shape	7:45 AM-3:00 PM	612
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 59: Endocrine Regulation of Reproduction	8:00 AM-Noon	602/603
Session 60: Sexual Selection	8:20-10:00 AM	605/610
Session 61: Reproductive Communication - Intersexual Selection	10:20 AM-Noon	605/610
Session 62: Larval Ecology and Recruitment	8:00 AM-Noon	607
Session 63: Evolutionary Ecology	8:00 AM-Noon	608
Session 64: Complementary Session: Integrative Migration Biology	8:00-11:40 AM	609
Session 65: Evo-Devo - Character Development and Evolution I	8:00-9:40 AM	613/614
Session 66: Evo-Devo - Character Development and Evolution II	10:00 AM-Noon	613/614
Session 67: Conservation Biology	8:00 AM-Noon	615
Session 68: Genomics and Immune Defense	8:20-9:40 AM	616
Session 69: Metabolism, Energetics and Reproduction	10:00 AM-Noon	616
Session 70: Flight - Specialized Flight	8:00-10:00 AM	618
Session 71: Flight - BAT-ter UP	10:20 AM-12:20 PM	618
Session 72: Immunology	8:00-11:40 AM	619
Session 73: Reproductive Communication – Function	1:00-2:40 PM	605/610
Session 74: Environmental Stressors	1:00-2:40 PM	607
Session 75:Terrestrial Locomotion - Kinematics: Way to Move	1:00-3:00 PM	608
Session 76: Complementary Session: Integrative Migration Biology	1:00-3:00 PM	609
Session 77: Chemical Ecology	1:00-3:00 PM	613/614
Session 78: Complementary Session: Animal Regeneration II	1:00-3:00 PM	615
Session 79: Education, Policy and History	1:00-3:00 PM	616
Session 80: Flight – Wings	1:00-3:00 PM	618
Session 81: Digestive Physiology and Resource Use	1:00-3:00 PM	619
BUSINESS MEETINGS		
AMS Business Mtg	10:30-11:45 AM	617
SICB Business Meeting	5:15-6:15 PM	607
WORKSHOPS AND PROGRAMS		
Implementation of the Grand Challenges	Noon-3:00pm	602/603
Post Doc/Student Workshop: Careers Outside of Trad Academia	6:15-8:00pm	613/614
Phylogenetics for Dummies, Part 2	7:30-9:00pm	619
SOCIAL EVENTS		
AMS Luncheon	Noon-1:00 PM	601
Society-wide Dessert Social in Honor of Students and Post Docs	8-9:30pm	Grand Ballroom, 2nd level Pike Tower, Sheraton Hotel

8:00 AM-3:00 PM
604

Symposium S8: Assembling the Cnidarian Tree of Life

Supported by: National Science Foundation and DIZ, DSEB (SICB)

Organized by: Paulyn Cartwright, Marymegan Daly

8:00 AM		DALY, M, CARTWRIGHT, P	Introduction, brief remarks
8:10 AM	S8.1	DALY, M, RODRIGUEZ, E; Ohio State University, American Museum of Natural History	Progress and problems in understanding relationships among sea anemones
8:40 AM DSEB	S8.2	MCFADDEN, CS, BRISSON, V, FRANCE, SC; Harvey Mudd College, University of California, Berkeley, University of Louisiana, Lafayette	Molecular phylogenetic insights into octocoral evolution
9:10 AM DSEB	S8.3	SANCHEZ, JA; Universidad de los Andes, Bogotá, Colombia	Intragenomic ITS2 (rDNA) variation in octocorals: ancestral polymorphisms or footprints of reticulate evolution?
9:40 AM	S8.4	FRANCE, SC, PANTE, E, BRUGLER, MR, VAN DER HAM, JL; University of Louisiana at Lafayette	On the evolution of deep-sea octocorals and antipatharians: patterns revealed from molecular phylogenies
10:10 AM	COFFEE BREAK		
10:30 AM	S8.5	BARBEITOS, MS, ROMANO, SL, LASKER, HR; University of Kansas, University of the Virgin Islands, University at Buffalo	Phylogenetics and morphological evolution in Scleractinian corals
11:00 AM	S8.6	BUDD, AF; University of Iowa	Rethinking the phylogeny of scleractinian reef corals: reconciling morphologic and molecular data in the families Faviidae and Mussidae
11:30 AM	S8.7	CUNNINGHAM, CW, MIGLIETTA, MP, BUSS, LW; Duke University, Pennsylvania State University, Yale University	Evolution of ontogeny in the hydractiniidae: losing jellyfish and committing to the colony stage
NOON	LUNCH BREAK		
1:00 PM	S8.8	DAWSON, MN, BAYHA, KM, GOMEZ DAGLIO, LE, COLLINS, AG; University of Califonia, Merced, Smithsonian Institution	Phylogeny and ecology of jellyfish (Scyphozoa) mass occurrences
1:30 PM DSEB	S8.9	COLLINS, AG; National Systematics Lab of NOAA's Fisheries Service	Phylogeny, evolution, and systematics of the stalked jellyfishes (Cnidaria, Staurozoa)
2:00 PM DIZ	S8.10	DUNN, CW; Brown University	A survey of cnidarian transcriptomes- diversity through the lens of next-generation sequencing
2:30 PM DSEB	S8.11	CARTWRIGHT, P, BARBEITOS, MS, COLLINS, AG, DALY, M, FRANCE, SC, MCFADDEN, CS; University of Kansas, National Systematics Lab of NOAA's Fisheries Service, Ohio State University, University of Louisiana at Lafayette, Harvey Mudd College	Investigating cnidarian phylogeny using rDNA secondary structure models

8:00 AM-3:00 PM
606

Symposium 9: Spiralian Development: Conservation and Innovation

Supported by: DDCB and DEDB (SICB), and Society for Developmental Biology
Organized by: David Lambert, Elaine Seaver

8:00 AM DEDB	S9.1	MEYER, NP, BOYLE, MJ, MARTINDALE, MQ, SEAVER, EC*; University of Hawaii	The complete cell lineage of the polychaete annelid *Capitella teleta*
08:30 DEDB	S9.2	HENRY, JJ, PERRY, KJ; University of Illinois	Cell and molecular mechanisms involved in the establishment of the D quadrant in the Gastropod, *Crepidula fornicata*
9:00 AM	S9.3	SHANKLAND, M, SCHMERER, MW, NULL, RW; University of Texas at Austin	Paxβ: a lophotrochozoan gene family implicated in spiral cleavage
9:30 AM DEDB	S9.4	MASLAKOVA, SA; Oregon Institute of Marine Biology, University of Oregon	The invention of the pilidium larva in an otherwise perfectly good spiralian phylum Nemertea
10:00 AM	COFFEE BREAK		
10:30 AM DEDB	S9.5	SCHNEIDER, SQ; Iowa State University	Symmetry makers and symmetry breakers: the transition of a spiral cellular arrangement to bilateral symmetry in early embryos of *Platynereis dumerilii*
11:00 AM DEDB	S9.6	GHARBIAH, M, NAKAMOTO, A, NAGY, L*; University of Arizona	The role of the polar lobe and intracellular signaling in cell fate specification of the mud snail *Ilyanassa*
11:30 AM DEDB	S9.7	MARTINDALE, MQ, LEE, P, HENRY, JQ; Kewalo Marine Lab, University Hawaii	The development of the mesentoblast in the gastropod Crepidula fornicata
NOON	LUNCH BREAK		
1:00 PM DEDB	S9.8	WEISBLAT, DA, CHO, SJ, LYONS, DC, VALLÉS, Y, WANG, JK; University of California, Berkeley, Duke University	D quadrant specification in a leech (*Helobdella*; sp.): comparison with other spiralians
1:30 PM DEDB	S9.9	HEJNOL, A, PASSAMANECK, YQ, MARTINDALE, MQ; Sars International Centre for Marine Molecular Biology, University of Bergen, Norway, Kewalo Marine Laboratory, University of Hawaii	Understanding the non-spiral members of the clade Spiralia: the development of the digestive system of the brachiopod Terebratalia transversa
2:00 PM DEDB	S9.10	GRANDE, C; Centro de Biología Molecular Severo Ochoa	The left-right axis. Generating asymmetries in snail development
2:30 PM	S9.11	LAMBERT, JD; University of Rochester	Cracking the code of the spiralian quartets: RNA segregation in *Ilyanassa*

8:00 AM-3:00 PM
611

Symposium 10: Marine Ecosystem Engineers in a Changing World: Establishing Links across Systems

Supported by: National Science Foundation and DIZ, DEE (SICB), and American Microscopical Society (AMS)
Organized by: Sarah Berke, Linda Walters

8:00 AM		BERKE, S	Introduction
8:05 AM DEE	S10.1	BERKE, SK; Smithsonian Environmental Research Center	Ecosystem engineering in the marine realm
8:30 AM	S10.2	CALLAWAY, R; Swansea University, UK	Tube building polychaetes: from ephemeral bio-engineer to reef builder

9:00 AM	S10.3	THOMSEN, MS; National Environmental Research Institution, Denmark	Habitat cascades - a conceptual overview and estuarine examples
9:30 AM DEE	S10.4	WOODIN, SA, WETHEY, DS, VOLKENBORN, N; University of South Carolina, Columbia	Infaunal hydraulic ecosystem engineers: the cast of characters, biogeography and possible impacts
10:00 AM	COFFEE BREAK		
10:30 AM DEE	S10.5	PADILLA, DK; Stony Brook University	Impacts and consequences of an invasive ecosystem engineer, *Crassostrea gigas*
11:00 AM	S10.6	LUCKENBACH, MW; Virginia Institute of Marine Science, College of William and Mary	Fisheries collapses, restoration challenges, spread of non-natives and the emergence large-scale aquaculture: anthropogenic-driven changes to ecosystem-engineering oyster species
11:30 AM DEE	S10.7	HEIMAN, K, MICHELI, F; Muhlenberg College, Stanford University	Non-native ecosystem engineer alters estuarine communities
NOON	LUNCH BREAK		
1:00 PM	S10.8	COLEMAN, FC, KOENIG, CC; Florida State University	The effects of fishing, climate change, and other anthropogenic disturbances on red grouper and other reef fishes in the Gulf of Mexico
1:30 PM DEE	S10.9	DONNELLY, MJ, WALTERS, LJ; University of Central Florida	Ecosystem engineering in Florida's estuaries: mangrove and oyster ecotones over a gradient of anthropogenic disturbances
2:00 PM	S10.10	BREITBURG, DL; Smithsonian Environmental Research Center	Ecosystem engineers in the plankton - habitat alteration by species from microbes to jellyfish
2:30 PM	S10.11	BELL, S, MEYERS, A, THOMAS, F; University of South Florida, University of Hawaii	Lessons learned about ecosystem function and biogenic structure from experimental work on seagrasses and macroalgae

7:45 AM-3:00 PM
612

Symposium 11: Contemporary Approaches to the Study of the Evolution of Fish Body Plan and Fin Shape

Organized by: Jeff Walker, Rita Mehta

7:45 AM DVM	S11.1	WALKER, JA; University Southern Maine	Introduction to the symposium: contemporary approaches to the study of the evolution of fish body plan and fin shape
8:00 AM	S11.2	PEICHEL, CL; Fred Hutchinson Cancer Research Center	Genetic architecture of body shape divergence in sticklebacks
8:30 AM	S11.3	MCGUIGAN, K, NISHIMURA, N, CURREY, M, HURWIT, D, CRESKO, WA; University Queensland, University Oregon	Environment, additive genetic variance and evolvability of body shape in threespine stickleback (*Gasterosteus aculeatus*)
9:00 AM DVM	S11.4	WARD, AB, MEHTA, RS; Adelphi University, University of California, Davis	Axial elongation in fishes: using morphological approaches to elucidate developmental mechanisms in studying body shape
9:30 AM DVM	S11.5	ROSA-MOLINAR, E, LAUDER, GV; University of Puerto Rico-Rio Piedras, Harvard University	Sexually dimorphic remodelling of *Gambusia's* anal fin, body plan, and spinal neural circuitry which facilitates rapid copulatory behavior
10:00 AM	COFFEE BREAK		
10:30 AM	S11.6	TOKI, G, YUE, KP; Massachusetts Institute of Technology	From optimized swimming performance to optimal body shapes

11:00 AM DCB	S11.7	TYTELL, ED, BORAZJANI, I, LAUDER, GV, SOTIROPOULOS, F; University of Maryland, College Park, St. Anthony Falls Laboratory, University of Minnesota, Harvard University	Separating the effects of swimming mode and body shape in undulatory swimming
11:30 AM DCB	S11.8	LONG, JH, ROOT, RG, PORTER, ME, LIEW, CW; Vassar College, Lafayette College	Go reconfigure: how fish shift shape dynamically and evolutionarily to modulate swim-mediated behaviors
NOON	LUNCH BREAK		
1:00 PM DVM	S11.9	WEBB, PW, COTEL, AJ; University of Michigan, Ann Arbor	Eddies: potential impacts of turbulence on fish-swimming form and function
1:30 PM DVM	S11.10	LANGERHANS, RB; University of Oklahoma	Multifarious selective agents and diverse trait functions: poeciliids shed light on the evolution of fish morphology
2:00 PM DVM	S11.11	BLOB, RW, KAWANO, SM, BRIDGES, WC, MAIE, T, PTACEK, MB, JULIUS, ML, SCHOENFUSS, HL; Clemson University, St. Cloud State University	Morphological selection and tradeoffs between predator escape and climbing in Hawaiian gobies
2:30 PM DVM	S11.12	MEHTA, RS, WARD, AB, ALFARO, ME, WAINWRIGHT, PC; University of California, Davis, Adelphi University, University of California, Los Angeles	Morphological correlates to the evolution of elongation in elopomorph fishes

8:00 AM-Noon
602/603

Session 59: Endocrine Regulation of Reproduction

Co-Chairs: Rosemary Knapp, Nicole Perfito

8:00 AM DCE	59.1	KNAPP, R, MARSH-MATTHEWS, EC, VO, L; University of Oklahoma, Norman	Cortisol masculinizes female mosquitofish morphology and behavior
8:20 AM DCE	59.2	GLEDHILL, MR, TRAN, MC, TSUKIMURA, B; California State University, Fresno	Regulation of methyl farnesoate esterase during development of the tadpole shrimp, *Triops longicaudatus*
8:40 AM DCE	59.3	PARKER, MR, MASON, RT; Oregon State University, Corvallis	Novel mechanisms regulating a sexual signal: testosterone inhibition of pheromone production in red-sided garter snakes
9:00 AM DCE	59.4	VITOUSEK, MN, MITCHELL, MA, ROMERO, LM, AWERMAN, J, WIKELSKI, M; University of Colorado, Boulder, University of Illinois at Urbana-Champaign, Tufts University, Max Planck Institute for Ornithology, Princeton University	To breed or not to breed: stress and reproductive decision-making in Galapagos marine iguanas
9:20 AM DCE	59.5	BRASHEARS, JA, DENARDO, DF; Arizona State University	Hormonal correlates accompanying reproductive behavior in three species of python
9:40 AM DCE	59.6	MOORE, IT, VALIN, M, CASASANTA, M, EIKENAAR, C, HUSAK, JF; Virginia Tech, University of South Dakota	Testosterone and latitude in reptiles and amphibians
10:00 AM	COFFEE BREAK		

10:20 AM DCE	59.7	PERFITO, N, JEONG, S, BENTLEY, GE, SILVERIN, B, HAU, M; Max-Planck Institute for Ornithology, Germany, University of California, Berkeley, University of Gothenburg, Sweden	First day release and Dio2: a test of latitudinal variation in photoperiodic control of reproduction in great tits *Parus major*
10:40 AM DCE	59.8	WILCOXEN, TE, SCHOECH, SJ; University of Memphis	Age-related differences in HPG axis responsiveness to GnRH challenge in Florida scrub-jays
11:00 AM	59.9	DEY, CJ, O'CONNOR, CM, GILMOUR, KM, VAN DER KRAAK, G, COOKE, SJ; McMaster University, Canada, Carleton University, Canada, University of Ottawa, Canada, University of Guelph, Canada	Behavioural and physiological responses of a wild teleost fish to cortisol and androgen manipulations during parental care
11:20 AM DCB	59.10	PATTERSON, SH, BREUNER, CW; University of Montana	Corticosterone as a mediator of reproductive effort
11:40 AM	59.11	DEVRIES, MS, HOLBROOK, AL, WINTERS, CP, JAWOR, JM; The University of Southern Mississippi	Flexibility of the HPG axis of female northern cardinals (*Cardinalis cardinalis*): implications for behavior and reproductive context

8:20-10:00 AM
605/610

Session 60: Sexual Selection

Chair: Sheri Johnson

8:20 AM DAB	60.2	CHRISTY, JH, VARGAS, LE; Smithsonian Tropical Research Institute, Universidad de Costa Rica	Allometry of male fiddler crab genitalia varies with size relationships in mating pairs: a test of the one-size-fits-all hypothesis
8:40 AM	60.3	SCHUTZ, H, KRIEGER, JD, GURALNICK, RP, GARLAND, Jr, T; University of California, Riverside, The Natural History Museum, University of Colorado, Boulder	Pelvic sexual dimorphism in the carnivora: a phylogenetic approach
9:00 AM DEE	60.4	JOHNSON, SL, BROCKMANN, HJ; University of Florida	The role of good genes and genetic compatibility in multiply mating horseshoe crabs
9:20 AM DEE	60.5	LAILVAUX, SP, ZAJITSCHEK, F, BROOKS, R; University of New Orleans, La Station d'Ecologie Experimentale du CNRS à Moulis, University of New South Wales	Sex, death and aging: life history trade-offs between reproductive investment and whole-organism performance in *Teleogryllus commodus* crickets
9:40 AM	60.6	RITTSCHOF, CC; University of Florida	The effect of male group size on female multiple mating and male reproductive success in the golden silk spider

10:00 AM COFFEE BREAK

10:20 AM-Noon
605/610

Session 61: Reproductive Communication - Intersexual Selection

Co-Chairs: Keith Sockman, Marilyn Raminofsky

10:20 AM DEE	61.1	BYWATER, CL, WILSON, RS; The University of Queensland	Costs and benefits of unreliable signalling in males of the two-toned fiddler crab (*Uca vomeris*)
10:40 AM DAB	61.2	HENNINGSEN, JP, IRSCHICK, DJ; University of Massachusetts Amherst	Performance prevails over signal size during staged dominance encounters between male green anole lizards

11:00 AM DAB	61.3	LYONS, SM, MORRIS, MR; Ohio University	Headstands: a sexually selected signal in the swordtail fish *Xiphophorus nezahualcoyotl*
11:20 AM DEE	61.4	BALBAG, BS, WEISS, SL*; University of Puget Sound	Bigger is better: the effect of female ornamentation on male mate choice in the striped plateau lizard, *Sceloporus virgatus*
11:40 AM DEE	61.5	SOCKMAN, KW; University of North Carolina, Chapel Hill	Maternally-induced developmental conditions predict the shape of a songbird's bill, a sexually and naturally selected trait

8:00 AM-Noon
607

Session 62: Larval Ecology and Recruitment

Co-Chairs: Nicolle Phillips, Joshua Idjadi

8:00 AM DIZ	62.1	JOHNSON, CH; Harvard University	Effects of selfing on offspring survival in the marine bryozoan *Bugula stolonifera*
8:20 AM DEE	62.2	ZIMMER, CA, STARCZAK, VR, ZIMMER, RK; University of California, Los Angeles, Woods Hole Oceanographic Institute	Where larval supply fails to forecast settlement
8:40 AM	62.3	CAHILL, AE, CRICKENBERGER, S, CRIM, RN, SELDEN, RL; Stony Brook University, Clemson University, University of British Columbia, University of California, Santa Barbara	Dispersal limitation and post-settlement survival of an introduced ascidian (*Botrylloides violaceus*) in San Juan Islands, WA
9:00 AM DIZ	62.4	PHILLIPS, NE, SHIMA, JS, OSENBERG, CW; Victoria University of Wellington, New Zealand, University of Florida, Gainesville	Reproductive and larval ecology of the tropical Vermetid gastropod, *Dendropoma maximum*
9:20 AM	62.5	RITSON-WILLIAMS, R, PAUL, VJ, ARNOLD, SN, STENECK, RS; Smithsonian Marine Station at Fort Pierce, University of Maine, Darling Marine Center	Do coral larvae choose between species of coralline algae?
9:40 AM	COFFEE BREAK		
10:00 AM DEE	62.6	ZAKAS, C, HALL, D; University of Georgia	Can asymmetric dispersal explain the maintenance of larval dimorphism in the benthic polychaete *Streblospio benedicti*?
10:20 AM	62.7	CHAN, KYK, GRÜNBAUM, D; University of Washington, Seattle	Larvae of sand dollar behaviorally compensate for temperature constraints on swimming
10:40 AM DIZ	62.8	WINSTON, JE, MIGOTTO, AE, VIEIRA, LM; Virginia Museum of Natural History, CEBIMar, University of Sao Paulo, Brazil	The interstitial encrusting fauna of subtidal sand, a significant understudied habitat
11:00 AM DEE	62.9	FRANCIS, JR., AW; Armstrong Atlantic State University	Impact of an elevated sea level anomaly on fish recruitment to a Georgia estuary
11:20 AM DEE	62.10	IDJADI, JA, HARING, RN, PRECHT, WF; Eastern Connecticut State University, The City of San Diego Marine Biology Laboratory, Florida Keys National Marine Sanctuary	Recovery of the sea urchin Diadema antillarum promotes scleractinian coral growth and survivorship on shallow Jamaican reefs
11:40 AM DEE	62.11	PEROTTI, EA; University of Hawai'i, Manoa	The effects of substratum on patellogastropod size, abundance, and recruitment in a geologically complex temperate region

8:00 AM-Noon
608

Session 63: Evolutionary Ecology

Co-Chairs: Michael Angilletta, Lisa Crozier

8:00 AM DEE	63.1	CARMODY, RN, WEINTRAUB, GS, SECOR, SM, WRANGHAM, RW; Harvard University, University of Alabama	Energetic significance of food processing: a test of the cooking hypothesis
8:20 AM DEE	63.2	POSTAVA-DAVIGNON, MA, ROSENGAUS, RB; Northeastern University	The role of nest architecture as a mechanism of disease resistance in termite species with different nesting strategies
8:40 AM DEE	63.3	BOURDEAU, PE; Michigan State University	Mechanism of an inducible morphological defense: active physiological response or behavioral by-product?
9:00 AM DEE	63.4	DES ROCHES, S, ROBERTSON, J, HARMON, L, ROSENBLUM, EB; University of Idaho	Ecological release in a geologically young community
9:20 AM DVM	63.5	IRSCHICK, DJ; University of Massachusetts at Amherst	Correlational selection on sexual signal size and performance in lizards
9:40 AM DEE	63.6	LETTIERI, L, STREELMAN, JT; Georgia Institute of Technology	Evolution of bribery in a diffuse cleaning mutualism
10:00 AM	COFFEE BREAK		
10:20 AM DEE	63.7	VAN UITREGT, VO, HURST, TP, WILSON, RS; The University of Queensland, Australia, Queensland Institute of Medical Research, Australia	The evolution and thermal dependence of inducible defences in mosquito larvae
10:40 AM DEE	63.8	CAMERON, SF, WILSON, RS; The University of Queensland, Australia	Can temperature drive the intensity of male-male competition across a latitudinal cline?
11:00 AM DEE	63.9	CONDON, CH, CHENOWETH, SF, WILSON, RS; The University of Queensland, Australia	Genetic variation in the plasticity of thermal performance in the zebrafish, *Danio rerio*
11:20 AM	63.10	CROZIER, LG; NWFSC, NOAA-Fisheries	Using time-series data to partition evolutionary and plastic responses to climate change in Pacific salmon: a case study of the historical shift in run-timing in Columbia River sockeye salmon
11:40 AM	63.11	DANIKAS, LN, COBB, VA; Middle Tennessee State University	Latitudinal variation in locomotor performance of the northern watersnake, *Nerodia sipedon*

8:00-11:40 AM
609

Session 64: Complementary Session: Integrative Migration Biology

Co-Chairs: Eli Bridge, Ken Lohman

8:00 AM	64.1	FUDICKAR, AM, WIKELSKI, M, PARTECKE, J; Max Planck Institute for Ornithology	Accuracy of light level loggers for tracking forest dwelling short-distant migratory birds
8:20 AM	64.2	FREEMAN, RM, DEAN, B, KIRK, H, PHILLIPS, R, ROBERTS, S, PERRINS, C, GUILFORD, TG; Oxford University, Microsoft Research Cambridge, British Antarctic Survey, Cambridge, Edward Grey Institute	Machine learning approaches to understanding the migratory behaviour of a small seabird, the Manx Shearwater (Puffinus puffinus)

8:40 AM DAB	64.3	BRIDGE, ES, KELLY, JF, BJORNEN, PE, CURRY, CM, CRAWFORD, PHC, PARITTE, JM; University of Oklahoma Center for Spatial Analysis, Oklahoma Biological Survey, University of Oklahoma Department of Zoology	Effects of nutritional condition on migration: do dark-eyed juncos use resource availability to keep pace with a changing world?
9:00 AM	64.4	TØTTRUP, AP, RAINIO, K, COPPACK, T, LEHIKOINEN, E, RAHBEK, C, THORUP, K; Center for Macroecology, University of Copenhagen, University of Turku, Institute of Avian Research, Vogelwarte Helgoland, Germany, Zoological Museum	Evaluating environmental predictors of climate-induced phenological changes in migratory birds
9:20 AM	64.5	KOMISSAROVA, A, TRAVIS, JMJ, REDPATH, SM; University of Aberdeen, Centre for Ecology and Hydrology, UK, University of Aberdeen, UK, University of Aberdeen/Macaulay Institute, UK	Dispersal costs and kin selection have a strong effect on the evolution of migratory strategy
9:40 AM	COFFEE BREAK		
10:00 AM DAB	64.6	LOHMANN, KJ, PUTMAN, NF, LOHMANN, CMF; University North Carolina, Chapel Hill	Geomagnetic imprinting: the key to long-distance natal homing in sea turtles and salmon?
10:20 AM	64.7	FOSSETTE, S, HOBSON, VJ, GIRARD, C, KLAASSEN, R, GASPAR, P, GEORGES, JY, HAYS, GC; Institute of Environmental Sustainability, Swansea University, Collecte Localisation Satellites, Lund University, Institut Pluridiciplinaire Hubert Curien, Université Louis Pasteur, CNRS	Characterizing leatherback's migration pattern from satellite-derived behavioural and oceanographic data: a meta-analysis at the Atlantic Ocean scale
10:40 AM	64.8	PUTMAN, NF, SHAY, TJ, BANE, JM, LOHMANN, KJ; University of North Carolina, Chapel Hill	Using behavioral processes to predict geographic distributions: implications of hatchling sea turtle migration on spatial patterns of nest abundance
11:00 AM DCPB	64.9	WAGNER, KA, SABINS, AM, PHARR, CM, HANCOCK, TV; Eastern Washington University	Swimming ability and morphological traits in coho salmon reintroduced and subjected to greater migration distances in the Columbia Basin
11:20 AM	64.10	CLARK, AD, WANG, G, ADDIS, EA, RAMENOFSKY, M, WINGFIELD, JC; University of Washington	Wing morphology in relation to migration in *Zonotrichia* sparrows

8:00-9:40 AM
613/614

Session 65: Evo-Devo - Character Development and Evolution I

Chair: Tobin Hieronymus

8:00 AM DEDB	65.1	CASS, AN, SERVETNICK, MD, MCCUNE, AR; Cornell University, University of Washington, Bothell	Of mice and fish: expression of lung morphogenesis genes in the actinopterygian swimbladder
8:20 AM DEDB	65.2	OTA, K, FUJIMOTO, S, OISI, Y, KURATANI, S; RIKEN CDB, Kobe	The development and evolution of axial skeleton of the hagfish
8:40 AM DEDB	65.3	HAWKINS, MB, CRUZ, A, STOCK, DW; University of Colorado, Boulder	Have teleost barbels evolved by the co-option of fin developmental mechanisms?

9:00 AM DEDB	65.4	AIGLER, SR, STOCK, DW*; University of Colorado, Boulder	Reversal of dorsal pharyngeal tooth loss in the zebrafish through over-expression of ectodysplasin
9:20 AM DEDB	65.5	HIERONYMUS, TL, THEWISSEN, JGM, GEORGE, JC; Northeastern Ohio Universities College of Medicine, Department of Wildlife Management, North Slope Borough	Lateral inhibition systems in baleen development

9:40 AM COFFEE BREAK

10:00 AM-Noon
613/614

Session 66: Evo-Devo - Character Development and Evolution II

Chair: Ariel Chipman

10:00 AM DEDB	66.1	BEN-DAVID, J, CHIPMAN, AD*; The Hebrew University of Jerusalem	Blastoderm patterning and gap gene interaction in the milkweed bug *Oncopeltus fasciatus*
10:20 AM DEDB	66.2	REITZEL, AM, BEHRENDT, L, TARRANT, AM*; Woods Hole Oceanographic Inst., WHOI	Circadian oscillations in gene expression in the sea anemone *Nematostella vectensis*: the evolution of the animal circadian clock
10:40 AM DEDB	66.3	TRAYLOR-KNOWLES, N, REITZEL, AM, FINNERTY, JR; Boston University, Woods Hole Oceanographic Institute	Identification and expression of genes for sex determination in the starlet sea anemone, *Nematostella vectensis*
11:00 AM	66.4	DUGUID, WD; University of Victoria	Reversed asymmetry in lithodid crabs: an absence of evidence for heritability or induction
11:20 AM	66.5	URTON, JR, BRUNER, AM, MCCANN, SR, BALCELLS, R, PEICHEL, CL; Fred Hutchinson Cancer Research Center	The evolution of sex determination in stickleback fishes
11:40 AM	66.6	GREENWOOD, AK, PEICHEL, CL; Fred Hutchinson Cancer Research Center	How the stickleback gets its stripes

8:00 AM-Noon
615

Session 67: Conservation Biology

Co-Chairs: John Davis, Madhusudan Katti

8:00 AM DEE	67.1	BARBER, AM, DRAKE, KK, NUSSEAR, KE, ESQUE, TC, TRACY, CR, MEDICA, PA; University of Nevada, Reno, US Geological Survey, Western Ecological Research Center	Structural equation modeling as a tool to evaluate translocation stress in the desert tortoise
8:20 AM DEE	67.2	DAVIS, J, JIANG, P, WILLARD, S, KOUBA, A; Rhodes College, Memphis, TN; Memphis Zoo, Mississippi State University	Natural and captive habitat conditions of Chinese giant salamanders
8:40 AM	67.3	DOUGLAS, LE, BEAUPRE, SJ; University of Arkansas, Fayetteville	Large scale habitat manipulation influences body condition in adult timber rattlesnakes (*Crotalus horridus*)
9:00 AM DEE	67.4	DRAKE, KK, NUSSEAR, KE, ESQUE, TC, BARBER, A, MEDICA, PA, TRACY, CR; US Geological Survey, University of Nevada, Reno	Does translocation effect physiological stress levels in desert tortoises?
9:20 AM DEE	67.5	HAZARD, LC, KWASEK, K, VIG, D; Montclair State University	Interspecific variation in behavioral aversion of amphibians to road deicers

9:40 AM COFFEE BREAK

10:00 AM	67.6	ENG, ML, LETCHER, RJ, MACDOUGALL-SHACKLETON, SA, ELLIOTT, JE, WILLIAMS, TD; Simon Fraser University, National Wildlife Research Centre, CWS, University Western Ontario, Pacific Wildlife Research Centre, CWS	Effects of early exposure to a brominated flame retardant (PBDE-99) on physiology and behaviour in zebra finches
10:20 AM	67.7	DORSEY, AE, WILSON, PS; California State University, Northridge	Rarity as a life-history correlate in *Dudleya* (*Plantae: Crassulaceae*)
10:40 AM	67.8	HOLT, JR, WILSON, PS, BRIGHAM, C; California State University, Northridge	Population density effects on pollinator service of the endangered plant Lyon's Pentachaeta (*Pentachaeta lyonii*)
11:00 AM DIZ	67.9	MEYER, E; University of California, Berkeley	Population structure of a snail caught in a matrix of culture, economics, and political geography
11:20 AM DEE	67.10	BRIGHAM, C, BOWMAN-PRIDEAUX, C*, SCHIFFMAN, P; National Park Service, SAMO, CSU, Northridge	Intersite variation in the endangered plant, *Astragalus brauntonii* (Fabaceae)
11:40 AM	67.11	KATTI, M, SCHLEDER, B; California State Univ, Fresno	Resilience in urban socioecological systems: residential water management as a driver of biodiversity

8:20-9:40 AM
616

Session 68: Genomics and Immune Defense

Co-Chairs: Susan Renn, Anne Bronikowski

8:20 AM DEDB	68.1	RYAN, J, PANG, K, HERRERA-GALEANO, E, MORELAND, T, NGUYEN, A-D, MULLIKIN, J, MARTINDALE, M, BAXEVANIS, A; National Human Genome Research Institute, University of Hawaii, National Institutes of Health Sequencing Center	The genome of the lobate ctenophore, *Mnemiopsis leidyi*
8:40 AM DEE	68.2	RAGLAND, GJ, FEDER, JL, BERLOCHER, SH, HAHN, DA; University of Florida, University of Notre Dame, University of Illinois	Waking the beast: identifying candidate genes and pathways for dormancy termination via transcriptome profiling
9:00 AM DCPB	68.3	SPARKMAN, AM, PALACIOS, MG, BRONIKOWSKI, AM; Iowa State University	Life history and immune defense in two garter snake ecotypes I - a field study
9:20 AM DEE	68.4	PALACIOS, MG, SPARKMAN, AM, BRONIKOWSKI, AM; Iowa State University, Ames	Life history and immune defense in two garter snake ecotypes II - a common garden experiment

9:40 AM COFFEE BREAK

10:00 AM-Noon
616

Session 69: Metabolism, Energetics and Reproduction

Chair: Peter Zani

10:00 AM DEE	69.1	WEINER, SA, NOBLE, K, FLYNN, G, WOODS, WA, STARKS, PT; Tufts University, Smith College, University of New Hampshire	A role for the cost of flight in the *Polistes dominulus* invasion
10:20 AM DCPB	69.2	HORNER, AM, HANNA, JB, BIKNEVICIUS, AR; Ohio University, West Virginia School of Osteopathic Medicine, Ohio University College of Osteopathic Medicine	Feeling the squeeze: the energetic cost of tunnel locomotion

10:40 AM DEE	69.3	ZANI, PA; Gonzaga University	Effects of nighttime temperature on reproduction of side-blotched lizards (Uta stansburiana)
11:00 AM	69.4	DIAMANT, AG, RIDGWAY, RL; Seattle Pacific University	Localization of labile zinc in hemocyte lysosomes of the pond snail, *Lymnaea stagnalis*
11:20 AM	69.5	CONNER, SL, BAUER, RT; University of Louisiana at Lafayette	Reproductive biology of a bopyrid isopod, *Probopyrus pandalicola*, and its hyperparasite, *Cabirops* sp., parasitic on the river shrimp, *Macrobrachium ohione*
11:40 AM	69.6	RASCH, JA, BAUER, RT; University of Louisiana, Lafayette	Reproductive biology and population ecology of the sea grass shrimp *Ambidexter symmetricus*

8:00-10:00 AM
618

Session 70: Flight - Specialized Flight

Chair: Bret Tobalske

8:00 AM DCB	70.1	BERG, AM, BIEWENER, AA; Harvard University	Mechanisms of takeoff and landing flight
8:20 AM DCB	70.2	JACKSON, BE; The University of Montana, Missoula	Scaling of escape flight performance, power output, and muscle function in perching birds
8:40 AM DCB	70.3	MILLER, LA, HEDRICK, T, SANTHANAKRISHNAN, A, ROBINSON, A; University of North Carolina, Chapel Hill, California Institute of Technology	Flying and parachuting in the smallest insects
9:00 AM DCB	70.4	TOBALSKE, BW, ROS, IG, HEDRICK, TL, WARRICK, DR, BIEWENER, AA; University of Montana, Harvard University, University of North Carolina, Chapel Hill, Oregon State University	3D skeletal kinematics during hovering in hummingbirds
9:20 AM DCB	70.5	ROS, IG, BIEWENER, AA; Harvard U	Detailed 3D wing kinematics during low speed maneuvering in the pigeon Columba livia
9:40 AM DVM	70.6	DIAL, TR, CARRIER, DR; University of Utah	Precocial hindlimbs and altricial forelimbs of developing Mallard ducks: a study of locomotor performance and morphometrics
10:00 AM	COFFEE BREAK		

10:20 AM-12:20 PM
618

Session 71: Flight - BAT-ter UP

Chair: John Hermanson

10:20 AM DVM	71.1	HERMANSON, JW, ALTENBACH, JS; Cornell University, Ithaca, University of New Mexico, Albuquerque	Primary downstroke muscle activity and shoulder movements in free-tailed bats
10:40 AM DVM	71.2	ADAMS, RA, SNODE, E; University of Northern Colorado, Greeley	Do vespertilionid bats have a third wing?
11:00 AM DVM	71.3	ARMOUR, MT, SIMMONS, NB, SCHUTT, WAJr; Emerson College, American Museum of Natural History, CW Post College of Long Island University	Wing folding in bats: aspects of morphology and phylogenetic interpretation

11:20 AM DCB	71.4	HRISTOV, NI, RISKIN, DK, HUBEL, TY, ALLEN, LC, BREUER, KS, SWARTZ, SM; Brown University, Providence	Kinematics of a fast bat: changes in wing kinematics with flight speed in the migratory bat (*Tadarida brasiliensis*)
11:40 AM DCB	71.5	HUBEL, TY, HRISTOV, NI, RISKIN, DK, SWARTZ, SM, BREUER, KS; Brown University	Bat flight and hierarchies of variability
12:00 PM DVM	71.6	BAHLMAN, JW, SCHUNK, C, SWARTZ, SM, BREUER, KS; Brown University, Hochschule Bremen, University of Applied Sciences	The effect of wingbeat frequency on aerodynamic force and wake structure using a bat-like mechanical flapper

8:00-11:40 AM
619

Session 72: Immunology

Co-Chairs: Kevin Matson, James Adelman

8:00 AM DEE	72.1	MATSON, KD, HORROCKS, NPC, VERSTEEGH, MA, TIELEMAN, BI; University of Groningen	Repeatability and the predictive capacity of acute phase protein concentrations in pigeons
8:20 AM DEE	72.2	HORROCKS, NPC, MATSON, KD, TIELEMAN, BI; University of Groningen, Netherlands	Linking measures of immune function with indices of environmental disease risk: antibacterial proteins in eggs as a marker of pathogen pressure
8:40 AM DEE	72.3	BUTLER, MW, MCGRAW, KJ; Arizona State University	Immunological perturbations during neonatal development reduce immunocompetence and body mass in adult mallards
9:00 AM DCPB	72.4	DURANT, SE, HAWLEY, DM, HEPP, GR, HOPKINS, WA; Virginia Tech, Auburn University	Incubation temperature affects multiple measures of immunocompetence in wood duck (*Aix sponsa*) ducklings
9:20 AM DEE	72.5	ADDISON, B, RICKLEFS, RE, KLASING, KC; University of California, Davis, Deakin University, University of Missouri-St Louis	Testing the maternal immune imprinting hypothesis using direct manipulation of yolk antibodies
9:40 AM	COFFEE BREAK		
10:00 AM DCPB	72.6	MARTIN, LB, LIEBL, AL, ALAM, JL, BUTLER, LK, IMBOMA, T, KUHLMAN, JR, ROMERO, LM, SORCI, G, STEWART, I, WESTNEAT, D, LEE, KA; University of South Florida, Tampa, National Museum of Kenya, Nairobi, Tufts University, Medford, University of Bourgogne, University of Kentucky, Lexington, University of California, Davis	House sparrow immune functions are influenced by introduction history
10:20 AM DCE	72.7	ADELMAN, JS, WIKELSKI, MC, HAU, M; Princeton University, Max Planck Institute for Ornithology	Latitudinal differences in sickness behaviors and fever: from patterns to mechanisms
10:40 AM DCPB	72.8	GRAHAM, SP, FIELMAN, KT, MENDONCA, MT; Auburn University	Thermal ecology of the cottonmouth (*Agkistrodon piscivorus*) immunity complement system
11:00 AM DEE	72.9	BEECHLER, BB, BELL, A, EZENWA, VO, JOLLES, AE; Oregon State University, University of Montana	Innate immunity in free-ranging African buffalo (*Syncerus caffer*): variability with reproductive status and parasite infestation, and a context-dependent trade-off with adaptive immunity

11:20 AM DCPB	72.10	WARD, CK; Auburn University Montgomery	Temperature effects on the Anuran immune system

1:00-2:40 PM
605/610

Session 73: Reproductive Communication - Function

Chair: Abraham Miller

1:00 PM	73.1	ELLIS, WA, FITZGIBBON, SI, ROE, P, BERCOVITCH, FB, WILSON, R; University of Queensland, Australia, Queensland University of Technology, Australia, San Diego Zoo's Institute for Conservation Research, CA	Unraveling the mystery of koala vocalisations: acoustic sensor network and GPS technology reveals males bellow to serenade females
1:20 PM DAB	73.2	MILLER, AL; University of Tampa	Friend or foe; behavioral responses to pheromones of conspecifics in the northern scorpion, *Paruroctonus boreus*
1:40 PM	73.3	KAISER, K, ALLOUSH, M, JONES, RM, MARTINEAU, K, MARCZAK, S, OLIVA, MV, NARINS, PM; University of California, Los Angeles	More than one type of tenure: anthropogenic noise affects individual-level and chorus-level tenure in the frog *Dendropsophus microcephalus*
2:00 PM	73.4	EDWARDS, JR, LAILVAUX, SP; University of New Orleans	Display behavior and habitat use in single and mixed populations of *Anolis carolinensis* and *Anolis sagrei* lizards
2:20 PM DAB	73.5	DOUGLAS, HD; University of Alaska Fairbanks, Kuskokwim	Prenuptial perfume paralyzes ectoparasites - odorant linked to quality in male crested auklets

1:00-2:40 PM
607

Session 74: Environmental Stressors

Chair: Bill Hopkins

1:00 PM DCE	74.1	BOLDEN, AM, VAJDA, AM, BARBER, LB, SCHOENFUSS, H, NORRIS, DO; University of Colorado, Boulder, University of Colorado, Denver, US Geological Survey, St. Cloud St. University	Reproductive disruption of fishes by endocrine-active wastewater effluent
1:20 PM DEE	74.2	SEARLE, CL, BELDEN, LK, BLAUSTEIN, AR; Oregon State University, Virginia Tech	The effects of stress hormones on infection by a fungal pathogen, *Batrachochytrium dendrobatidis*, in larval amphibians
1:40 PM	74.3	YOUNG, RC, HAUSSMANN, MF, BARGER, CP, KITAYSKY, AS; University of Alaska Fairbanks, Bucknell University	Effects of nutritional stress during early development on sexual maturation and life expectancy in long-lived seabirds
2:00 PM DCE	74.4	WADA, H, BERGERON, CM, MCNABB, FMA, TODD, BD, HOPKINS, WA; Virginia Tech	The effects of excessive dietary mercury on thyroid-mediated processes and fitness- related traits in wood frog tadpoles
2:20 PM DIZ	74.6	BOETTGER, SA, TARASKA, NG, LOCK, NC, WALKER, CW; West Chester University, The University of New Hampshire	Development of hemic neoplasia and surveys in different populations of *Mya arenaria*

1:00-3:00 PM
608

Session 75:Terrestrial Locomotion - Kinematics: Way to Move

Chair: Russell Main

1:00 PM DVM	75.1	CLIFFORD, AB; Brown University	Kinematics of the forefoot in minipigs (Artiodactyla: Suidae)
1:20 PM	75.2	FULLER, PO, HIGHAM, TE, CLARK, AJ; Clemson University	Digital enhancement: three-dimensional locomotor kinematics of two species of padless geckos
1:40 PM DCB	75.3	HIGHAM, TE, RUSSELL, AP; Clemson University, University of Calgary	Gecko tails flip out: modulated motor control and variable movement following autotomy
2:00 PM	75.4	KORCHARI, PG, HIGHAM, TE, MCBRAYER, LD; Clemson University, Georgia Southern University	Linking characteristics of stance and swing phase muscles with ecology, morphology and locomotor performance in the lizard, *Sceloporus woodi*
2:20 PM DCB	75.5	LAMMERS, AR, ZURCHER, U; Cleveland State University, Ohio	Dynamic stability during quadrupedal arboreal locomotion in the Siberian chipmunk (*Tamias sibiricus*)
2:40 PM DVM	75.6	DALEY, MA, FISHER, RL, GILES, T, WARNER, S; Royal Veterinary College	Metabolic energy cost of locomotion over uneven terrain in the common pheasant (*Phasianus colchicus*).

1:00-3:00 PM
609

Session 76: Complementary Session: Integrative Migration Biology

Chair: Robert Srygley

1:00 PM DAB	76.1	O'NEAL, DM, SWANGER, L, JAWOR, J, FRENCH, SS, KETTERSON, ED; Indiana University, University of Southern Mississippi, Utah State University	Immune function across latitudinal and urban gradients in a differential migrant
1:20 PM	76.2	LEYRER, J, ROBIN, F, DEKINGA, A, BRUGGE, M, SCHRIMPF, A, BOCHER, P, PIERSMA, T; University of Groningen, University of La Rochelle, Royal Netherlands Institution for Sea Rearch, Den Burg	When skipping a high quality stopover site makes sense
1:40 PM	76.3	HEGEMANN, A, VERSTEEGH, MA, DE GRAAF, M, TIELEMAN, BI, MATSON, KD; University of Groningen, The Netherlands	No seasonal modulation in the acute phase response of a temperate zone bird, the skylark (*Alauda arvensis*)
2:00 PM DEE	76.4	BUEHLER, DM, TIELEMAN, BI, PIERSMA, T; Royal Ontario Museum, University of Groningen	Variation in constitutive immune function in a long distance migrant shorebird during migratory stopover in Delaware Bay
2:20 PM	76.5	SRYGLEY, RB, LORCH, PD; US Department of Agriculture-Agricultural Research Service, Kent State University	Nutritional effects on migration and immunity: Mormon crickets in Nevada contrast sharply with a band in Utah
2:40 PM DCE	76.6	URANO, A; Hokkaido Uiversity, Japan	Neuroendocrine bases of spawning migration in chum salmon

1:00-3:00 PM
613/614

Session 77: Chemical Ecology

Chair: Michael Greene

1:00 PM	77.1	WEISS, SL, FRITZSCHE, AF*; University of Puget Sound	Chemical cues indicate familiarity and body size in striped plateau lizards
1:20 PM DAB	77.2	GREENE, MJ; University of Colorado Denver	Harvester ant foraging decisions are informed by cues present in cuticular hydrocarbons detected during social interactions
1:40 PM DEE	77.3	ZIMMER, R; University of California, Los Angeles	Food falls, feeding attractants, and organization of complex chemical signals
2:00 PM DIZ	77.4	HOCHBERG, R; University of Massachusetts Lowell	The epidermal glands of gastrotrichs: ultrastructural insights and hypotheses of function
2:20 PM DEE	77.5	BARTH, BJ, FITZGIBBON, S, CARTER, AJ, WILSON, RS; University of Queensland	Effects of resource availability on dung beetle abundance and male horn size in Australian urban forest fragments
2:40 PM DIZ	77.6	HANES, SD, KEMPF, SC; Auburn University	Elevated autophagic activity during hyperthermic stress in the common anemone, *Aiptasia pallida*: a novel cellular mechanism during bleaching

1:00-3:00 PM
615

Session 78: Complementary Session: Animal Regeneration II

Chair: Gary Martin

1:00 PM DIZ	78.1	MARTIN, GG, JAMES, DM*, SCHULZ, J; Occidental College, Los Angeles	The proboscis of predatory *Conus*: sensory structures and tissue regeneration
1:20 PM DIZ	78.2	PAGE, JL, LINDSAY, SM; University of Maine, Orono	Effects of repeated injury on the activity and condition of a maldanid polychaete
1:40 PM DCPB	78.3	LAFONTANT, PJ, GRIVAS, JA, GOLDEN, BL, LESCH, MA, FROUNTFELTER, T; DePauw University	Models of cardiac repair and regeneration in teleost fish
2:00 PM DVM	78.4	MCLEAN, KE, VICKARYOUS, MK; University of Guelph, Canada	Reparative regeneration in a novel amniote model
2:20 PM DVM	78.5	VICKARYOUS, MK, ZWEERMAN, CL; University of Guelph	Morphology and histology of the earliest stages of tail regeneration in the leopard gecko, *Eublepharis macularius*
2:40 PM DEDB	78.6	SIKES, JM, BELY, AE; University of Illinois, Urbana-Champaign, University of Maryland, College Park	Evolution of diverse asexual reproduction strategies and reversal of the primary body axis in *Convolutriloba* acoels

1:00-3:00 PM
616

Session 79: Education, Policy and History

Co-Chairs: Jon Harrison, Jory Weintraub

1:00 PM DCPB	79.1	HARRISON, JF, VANDENBROOKS, JM; Arizona State University, Tempe	A proposal for a National Variable Atmosphere Laboratory (VAL) for climate change research
1:20 PM DCPB	79.2	SILVERTHORN, DU; University of Texas, Austin	The “Scientific Foundations for Future Physicians” report: opportunity and challenge

1:40 PM	79.3	COLLINS, JA; Consortium for Ocean Leadership	Species naming contest: a year of science 2009 effort that engaged the public in science
2:00 PM	79.4	WEINTRAUB, JP, JENKINS, KP, SMITH, RA, WIEGMANN, BM; NESCent (National Evolutionary Synthesis Center)	Evolution education resources from the National Evolutionary Synthesis Center
2:20 PM	79.5	BLANK, LM, VALEN, A; University of Montana, Missoula	Advancing interest in graduate research through undergraduate/scientist partnerships: the Tioga learning community
2:40 PM DIZ	79.6	COLLINS, AG, BENTLAGE, B, GILLAN, W, LYNN, TH, MARQUES, AC, MORANDINI, AC; National Systematics Lab of NOAA's Fisheries Service, University of Kansas, Boynton Beach Community High School, Universidade de São Paulo	Naming the Bonaire banded box jelly, the dynamic science side of a public species-naming contest

1:00-3:00 PM
618

Session 80: Flight - Wings

Chair: Stacey Combes

1:00 PM	80.1	NAKATA, T, LIU, H; Chiba University, Japan	Aerodynamic performance enhancement by insect wing flexibility
1:20 PM DCB	80.2	COMBES, SA, CRALL, JD, MUKHERJEE, S; Harvard University	Wing damage and flight performance in dragonflies: effects of area loss on force production and aerial predation
1:40 PM	80.3	CRALL, JD, DONOUGHE, ST, MERZ, RA, COMBES, SA; Concord Field Station, Harvard University, University of Pennsylvania, Swarthmore College	A complex flex: comparative functional morphology of flexible vein-joints in dragonflies and damselflies
2:00 PM DCB	80.4	LENTINK, D, KRUYT, JW, QUICAZAN, EMQR, GUSSEKLOO, SWS, ALTSHULER, DL, VAN LEEUWEN, JL; Wageningen University, The Netherlands, University of California, Riverside	Comparative aerodynamic performance of hummingbird wings from Colombia
2:20 PM DCB	80.5	MUNK, Y; University of California Berkeley	Comparative gliding performance in wingless gliding ants and other arthropods
2:40 PM	80.6	MCCULLOUGH, EL; University of Montana	Horn possession does not appear to limit natural flight performance in the giant rhinoceros beetle *Allomyrina dichotoma*

1:00-3:00 PM
619

Session 81: Digestive Physiology and Resource Use

Chair: Stephen Secor

1:00 PM DCPB	81.1	RUIZ, MA; Indiana University, Bloomington	Resource supplementation reduces trade-offs in male, but not female, sagebrush lizards
1:20 PM DEE	81.2	WARNE, RW, GILMAN, CA, GARCIA, DA, WOLF, BO; Vassar College, University of New Mexico	Dietary quality effects on resource allocation in lizards: a quantitative stable isotope analysis

1:40 PM	81.3	CLISSOLD, FJ, TEDDER, BJ, CONIGRAVE, AD, SIMPSON, SJ; The University of Sydney	The gastrointestinal tract as a nutrient balancing organ
2:00 PM DCPB	81.4	BRZĘK, P, CAVIEDES-VIDAL, E, KARASOV, WH*; University of Białystok, Poland, University of San Luis, Argentina, University of Wisconsin, Madison	House sparrow fledglings leave the nest digestively immature but more flexible than adults
2:20 PM DCPB	81.5	KOHL, KD, BRZEK, P, CAVIEDES-VIDAL, E, KARASOV, WH; University of Wisconsin, Madison, Universidad Nacional de San Luis-CONICET, Argentina	Matching between dietary preferences and digestive capacity in passerine birds
2:40 PM DCPB	81.6	VAN DYKE, JU, BEAUPRE, SJ, PLUMMER, MV; University of Arkansas, Harding University	Examination of residual yolk utilization in hatchling smooth softshell turtles, *Apalone mutica*

6:30-7:30 PM
606/607/608/609

John A. Moore Lecture

	ALBERTS, B; University of California, San Francisco	Science education for all: what scientists must do to fulfill John Moore's legacy

WEDNESDAY - POSTER SESSION P2

Exhibit Hall 6 A/B/C, 3:00 - 5:00 PM

Even # Posters - Authors present from 3:00 - 4:00 pm

Odd # Posters - Authors present from 4:00 - 5:00 pm

Adaptation, Sexual Selection and Population Genetics

P3.1 DVM	CUNNINGHAM, CB, CARRIER, DR; University of Utah	How is the primate brain influenced by physical competition's intensity?
P3.2	THARP II, JM, JERNBERG, I, COOPER, BS, ANGILLETTA JR., MJ; Indiana State University, Indiana University	Turning up the heat: using thermal extremes to test an optimality model of developmental acclimation
P3.3 DEE	EASTERLING, JG, SOTO, W, NISHIGUCHI, MK; New Mexico State University, Las Cruces	Experimentally evolved *Vibrio fischeri* examines responsiveness to temperature adaptation
P3.4	CARRUTH, WC, HUTCHISON, NL, HARRISON, JS, ROSTAL, DC; Georgia Southern University, University of Louisiana at Lafayette	Genetic diversity within and among three different populations of the gopher tortoise (*Gopherus polyphemus*)
P3.5	ROJAS, M, SCHIZAS, NV; University of Puerto Rico, Mayagüez	Genetic population structure of two brittle stars (*Ophiocoma echinata* and *Amphipholis squamata)* with contrasting life histories
P3.6 DEE	DOHM, M; Chaminade University, Honolulu	A comparative method approach to estimation of heritability with inbred strains
P3.7 DEE	CONDON, CH, TRAPPETT, AG, WHITE, CR, WILSON, RS; The University of Queensland, Australia	Costs and benefits of a sexually selected ornament in male threadfin rainbowfish, *Iriatherina werneri*
P3.8 DAB	HUSAK, JF, WORTHINGTON, AM, SWALLOW, JG; University of South Dakota	Do the exaggerated eye stalks of stalk-eyed flies have a predation cost?
P3.9 DIZ	MILLER, AL, FERNANDES, J*; University of Tampa, St. Petersburg College	Sexual dimorphism in the sensory structures of the northern scorpion, Paruroctonus boreus
P3.10 DEE	ARTACHO, P, FIGUEROA, CC, SIMON, J-C, CORTES, P, NESPOLO, RF; University Austral de Chile, INRA, France	Changes in genetic variation of energy metabolism and life history traits between sexual and asexual phases of a clonal organism
P3.11 DCPB	MARLON, AJ, GEFEN, E, RAJPUROHIT, S, GIBBS, AG; University of Nevada, Las Vegas, Haifa University - Oranim	Microarray analyses of larval fat body in desiccation-selected *Drosophila melanogaster*
P3.12 DCPB	ZHANG, ZQ, ARCE, ME, CIUFFO, GM, KARASOV, WH*, CAVIEDES-VIDAL, E; IMIBIO-SL - University Nac. of San Luis, Argentina, University of Wisconsin, Madison	Intestinal morphometrics in flying and non-flying mammals

Behavioral Ecology

P3.13 DEE	SEARS, MW; Bryn Mawr College	Spatial arrangements of thermal habitat mediate competition for space
P3.14 DAB	KROCHMAL, AR, LADUC, TJ, PLACE, AJ; Washington College, The University of Texas at Austin, Northwestern Oklahoma University	Ultimate explanations for differences in learning patterns and decision-making abilities of pitvipers (Viperidae: Crotalinae)
P3.15 DAB	KROCHMAL, AR, LADUC, TJ, PLACE, AJ*; Washington College, The University of Texas at Austin, Northwestern Oklahoma University	Proximate explanations for differences in learning patterns and decision-making abilities of pitvipers (Viperidae: Crotalinae)
P3.16 DAB	PILIKIAN, T, TRACY, CR, BAHLMAN, A; University of Nevada, Reno	Determining patterns of behavioral hydroregulation in three families of amphibians

P3.17	DELAVAN, SK, WEBSTER, DR; Georgia Institute of Technology	Field boundary layer characteristics as modified by clams in habitats of varying survival rates
P3.18	CURTIS, NE, PIERCE, SK, SCHWARTZ, JA, MIDDLEBROOKS, M; University of South Florida	An ultrastructural comparison of cells lining the digestive diverticulum of 4 sacoglossan species of differing kleptoplastic abilities
P3.19	JOHNSON, JC, TRUBL, P, MILES, L; Arizona State University at the West Campus	The urban behavioral ecology of the Western black widow *Latrodectus hesperus*
P3.20 DEE	HAGERTY, BE, TRACY, CR, SANDMEIER, F; University of Nevada, Reno	There's no place like home: dispersal and homing behavior of the chuckwalla in southern Nevada
P3.21 DAB	CORNELIUS, JM, HAHN, TP, HUNT, KE, WIKELSKI, M; Max Planck Institute, University of California, Davis, University of Portland	Energetic expenditure in free-living red crossbills, *Loxia curvirostra*,using heart rate telemetry
P3.22 DAB	CLEMENT, ML, BARTHELL, JF, LIU, L, PRESKY, ME, REDD, JAR, WELLS, Harrington; University of Central Oklahoma, University of North Carolina, Chapel Hill, SUNY College at Oneonta, University of Tulsa	The roles of flower complexity and reward quality in honey bee foraging behavior at artificial flowers
P3.23 DAB	MORTON, ML, PEREYRA, ME; University of Tulsa	Bushy-tailed woodrats: making hay the rodent way
P3.24 DAB	WEAVER, RE, KARDONG, KV; School of Biological Sciences, Washington State University	Prey preference of the desert nightsnake (*Hypsiglena chlorophaea*): invertebrates and prey size
P3.25 DAB	TILLMAN, JL, ZANI, PA; Lafayette College, Gonzaga University	Effects of predator diversity and density on prey behavior: interpopulation differences of side-blotched lizards (*Uta stansburiana*) exposed to snakes, lizards and birds
P3.26 DAB	ANDERSON, RA, HOUSMAN, ML*, GRANT, LJ; Western Washington University	The role of running in predation and antipredation by the leopard lizard, *Gambelia wislizenii*
P3.27	BRYER, PJ, DAVIS, BL, SUTHERLAND, MA, MCGLONE, JJ; Lamar University, Texas Tech University, AgResearch	Emotional states of domestic and feral pigs

Biodiversity and Biogeography

P3.28	COX, CL, ANDERS, MB; University of Texas, Arlington	Global patterns of body size in turtles
P3.29 DEE	BARTHELL, JF, CLEMENT, ML, GIANNONI, MA, LIU, L, PRESKY, ME, REDD, JAR, RICCI, PR, STEVISON, BK, FREEMAN, B, PETANIDOU, T, HRANITZ, JM, WELLS, H; University of Central Oklahoma, University of Puerto Rico, University of North Carolina, Chapel Hill, SUNY College at Oneonta, Bloomsburg University of Pennsylvania, Oklahoma State University, University of the Aegean, University of Tulsa	Differing foraging responses by bees to the invasive thistle species *Centaurea solstitialis* L. in native (Greece) and non-native (USA) island ecosystems
P3.30 DIZ	SCHULZE, A, ODUM, L; Texas A&M University at Galveston	Detection of non-indigenous species in Galveston Bay, TX by DNA barcoding of zooplankton
P3.32 DIZ	PELEP, PO, HADFIELD, MG; University of Hawaii	Understanding intraspecific relationships in the endangered Hawaiian tree snail, *Achatinella mustelina*

P3.33 DIZ	LAUMER, CE; Harvard University Museum of Comparative Zoology	Insights into the Kytorhynchidae ("Typhloplanoida": Platyhelminthes) from the marine sediments of Sardinia
P3.34 DEE	HODGE, A-MC, ARBOGAST, BS, VANDERHOFF, EN, BURGER, JR, KNOWLES, TT; University of North Carolina-Wilmington, Jacksonville University, University of New Mexico, Francis Marion University	Inventory of a mid-elevation assemblage of mammals in Ecuador's eastern Tropical Andes hotspot
P3.35 DEE	HERNANDEZ-GARCIA, PJ; University of Puerto Rico, Rio Piedras Campus	Elevation gradient affect aquatic macroinvertebrate assemblages in tropical island streams
P3.36	GEKREN, S; University of Alaska, Anchorage	The Lampropidae (Crustacea: Cumacea)
P3.37 DEE	COLEMAN, LA, WILSON, PS; California State University, Northridge	Moss floristics in Sequoia National Park

Complementary Session: Assembling the Cnidarian Tree of Life

P3.38	POOLE, AZ, WEIS, VM, FREITAG, M; Oregon State University	The role of DNA methylation in cnidarian-dinoflagellate symbiosis
P3.39	GRAJALES, A, RODRIGUEZ, E; Richard Gilder Graduate School at the American Museum of Natural History	Phylogenetic relationships of the subclass Hexacorallia (Cnidaria; Anthozoa): an update
P3.40 DSEB	TABIMA, JF, GRANADOS, C, MANRIQUE, N, ARDILA, N, SÁNCHEZ, JA; Universidad de los Andes	Adaptive radiation in Eastern Pacific sea fans?
P3.41 DSEB	WOLLSCHLAGER, JM; Ohio State University, Columbus Ohio	Phylogeny and nematocysts of the invasive species *Cordylophora caspia*
P3.42 DSEB	GOMEZ DAGLIO, LE, DAWSON, MN; University of California, Merced	Phylogeny of shallow water jellyfish (Scyphozoa: Discomedusae) from the Gulf of California, Mexico
P3.43	DUEÑAS, LF, SANCHEZ, JA; Universidad de los Andes, Bogotá, Colombia	Are modular characters labile in deep-sea bamboo corals?
P3.44 DSEB	ARDILA, NE, SANCHEZ, JA; Universidad de los Andes, Bogota	Molecular and morphological systematics of the precious corals (Cnidaria: Octocorallia: Coralliidae)
P3.45	KAYAL, E, LAVROV, DV; Iowa State University	Cnidarian tree of life based on mitochondrial genomic data

Complementary Session: Contemporary Approaches to the Study of the Evolution of Fish Body Plan and Fin Shape

P3.46 DEDB	BRZOZOWSKI, FJV, ROSCOE, J, WEINREICH, B, WAGNER, F, ALBERTSON, DRC; Syracuse University	Inheritance of complex color patterns in Lake Malawi cichlid fishes
P3.47 DVM	MOODY, KN, KAWANO, SM, PTACEK, MB, MAIE, T, JULIUS, ML, SCHOENFUSS, HL, BLOB, RW*; Clemson University, St. Cloud University	Morphological divergence between subpopulations of newly recruited juvenile climbing gobies from different Hawaiian islands: implications for local adaptation

Complementary Session: Spiralian Development: Conservation and Innovation

P3.48	CHAN, XY, LAMBERT, JD; University or Rochester	IoTis11 is segregated into ventral third quartet cells of the *Ilyanassa* embryo and is required for their development
P3.49 DEDB	SHUPE, KE, HARRISON, CA, COOLEY, JR, NAGY, LM; University of Arizona	Requirement for GSK-3 signaling in the early *Ilyanassa oboleta* embryo

P3.50 DEDB	KUO, D-H, WEISBLAT, DA; University of California, Berkeley	Dorsoventral patterning by BMP-gremlin interactions in segmental ectoderm of the leech *Helobdella*
P3.51 DEDB	NÖDL, MT, DE COUET, HG; Department of Theoretical Biology, University of Vienna, Austria, Department of Zoology, University of Hawaii at Manoa	A conserved role of the homeobox transcription factor Tinman during heart development of the bobtail squid *Euprymna scolopes*

Physiological and Biochemical Responses to Environmental Stresses

P3.52 DIZ	RIDGWAY, RL, JAMES III, JA, AUDET, EK; Seattle Pacific University	Effects of high extracellular zinc on hemocytes of the pond snail, *Lymnaea stagnalis*
P3.53 DCPB	CRAWFORD, S, SADDLER, C, CATAPANE, EJ, CARROLL, MA; Medgar Evers College, Brooklyn	Toxic effects of manganese on mitochondrial respiration and mitochondrial membrane potential in gill of the bivalve *Crassostrea virginica*
P3.54 DCPB	KELLY, K, BROWN, K, SAINT-DIC, R, CATAPANE, EJ, CARROLL, MA; Medgar Evers College, Brooklyn	Toxic effects of manganese on mitochondrial catalase and cytochrome C oxidase in gills of the bivalve *Crassostrea virginica*
P3.55 DCPB	SOKOLOVA, IM, IVANINA, A, EILERS, S, KUROCHKIN, I, SOKOLOV, EP; University of North Carolina, Charlotte, Carolinas Medical Center	Cadmium affects nitric oxide metabolism during normoxia and intermittent anoxia in eastern oysters *Crassostrea virginica*
P3.56	BAGWE, R, SOKOLOVA, IM; University of North Carolina at Charlotte	Cadmium exposure affects metabolic responses to acute temperature rise in eastern oysters *Crassostrea virginica*
P3.57	KAMMER, AR, O'BRIEN, KM; University of Alaska Fairbanks	Oxidative stress in response to cold acclimation in threespine sticklebacks (*Gasterosteus aculeatus*)
P3.58 DCPB	DHILLON, RS, SCHULTE, PM; University of British Columbia	Variation in mitochondrial properties in the muscle of two subspecies of killifish, Fundulus heteroclitus, during thermal acclimation
P3.59 DCPB	MCCLARY, M, SANTIAGO, O, ARGUEDAS, S, SALEM, H; Fairleigh Dickinson University, North Bergen High School	Effects of dissolved oxygen concentration on the respiration rates of larval and adult *Daphnia pulex*
P3.60 DCPB	SCHOLNICK, DA, HAYNES, VN*, NYERGES, G; Pacific University, Oregon	Influence of hypoxia on *Psychrobacter* levels in the dungeness crab, *Cancer magister*
P3.61 DCPB	ADAMSKI, AV, VILCHECK, JJ, SURMACZ, CA, HRANITZ, JM; Bloomsburg University	Temperature-induced stress responses in the blackworm (*Lumbriculus variegatus*)
P3.62	WITTES, JS, DONOVAN, DA; Swarthmore College, Western Washington University	Broad physiological tolerances of the invasive clam, *Nuttallia obscurata*
P3.63	REYNA, KS, BURGGREN, WW; University of North Texas	Thermal stress during the pre-incubation period alters development, disrupts hatch synchrony, and reduces egg viability in developing northern bobwhites
P3.64 DCPB	YAMASHITA, R, SAITO-REIS, C, TAKAI, J, DOHM, MR; Chaminade University, Honolulu	Ozone-induced gene dysregulation in rat and Tokay gecko lung cells: a comparative approach
P3.65 DCPB	CABLE, AE, DE MIRANDA, MA, KANATOUS, SB; Colorado State University	Unmasking age class-specific differences in the Weddell seal proteome
P3.66	ARNOLD, C, LAMB, B, CROSSLEY II, DA; U N Dakota, University Texas A&M	The impact of incubation environmental stress on the Angiotensin II receptor density in tissues of embryonic American alligators (*Alligator mississippiensis*)

P3.67	WEBB, MW, DEVIAN, M, TOMANEK, L; California Polytechnic State University, San Luis Obispo	Proteomic analysis of the purple sea urchin, *Strongylocentrotus purpuratus*, in response to acute heat stress
P3.67A DCPB	PILOSOF, S, MUNOZ-GARCIA, A*, PINSHOW, B, HERRERA, MLG; Ben Gurion University of the Negev, Universidad Nacional Autonomoa de Mexico	Seasonal variability in urine concentration and fecal water content of free-ranging bats in a tropical deciduous forest

Evolutionary Morphology

P3.68 DIZ	HOCHBERG, R, MALISKA, M, LEASI, F; University of Massachusetts Lowell, University of Washington, University of Milan, Italy	Organization of the musculature in species of *Seison* (Rotifera), ectosymbionts of the marine crustacean *Nebalia pugettensis*
P3.69 DVM	HERNANDEZ, LP, MARTIN, CH, WAINWRIGHT, PC, ADRIAENS, D, MASSCHAELE, B, DIERICK, M; George Washington University, University of California, Davis, Ghent University	Scum sucking, scale snipping or snail scooping: divergence in size and structure of cranial features within incipient species of Bahamian pupfish with different diets
P3.70	BERGE, KA, BERENDZEN, PB, GOLUBTSOV, AS; University of Northern Iowa, A.N. Severtsov Institute of Ecology & Evolution	Genetic connectivity between morphologically distinct populations of the Ethiopian fish *Barbus paludinosis*
P3.71	SOU, E, HERNANDEZ, LP; George Washington University	Origin and development of the hypertrophied cypriniform pharyngeal jaws
P3.72 DVM	CORDERO, GA; Iowa State University	The evolution of turtle shell kinesis: a comparative review
P3.73	HOLLINGSWORTH, PR, HULSEY, CD; University of Tennessee	Do constructional constraints influence cyprinid craniofacial diversification?
P3.74 DVM	SHEARMAN, RM, LEOPOLD, JL, MAGLIA, AM*; Wesleyan University, Missouri University of Science and Technology	Utility of the amphibian anatomical ontology for interdisciplinary research
P3.75 DVM	HIPPE, S, STAUB, NL; Gonzaga University	Male *Taricha granulosa* have submandibular courtship glands
P3.76	LESOWAY, MP, COLLIN, R; McGill University, Montreal, Canada, Smithsonian Tropical Research Institute, Panama	Particle capture and ingestion abilities in larvae of calyptraeid gastropods with different modes of development
P3.77	DUFEAU, DL, WITMER, LM; Ohio University	Acoustic resonance of the middle-ear in *Alligator* implications for behavioral correlations
P3.78	GOODFRIEND, AC, STAYTON, CT; Bucknell University	A mechanical comparison of shell morphology in two subspecies of *Chrysemys picta*
P3.79	VEGA, CM, STAYTON, CT; Bucknell University	Functional implications of shell shape differences between male and female painted turtles (*Chrysemys picta*) and wood turtles (*Glyptemys insculpta*)
P3.80 DVM	HEERS, AM, TOBALSKE, BW, DIAL, KP; University of Montana	The ontogeny of lift and drag production in birds
P3.81 DVM	RADE, CM, WARD, AB; Adelphi University	Evolution of fin size and morphology in otophysan fishes
P3.82 DVM	KUSTER, S; Washington University in Saint Louis	Taxonomic identification of tetrapods using bone microstructure

Reproductive Physiology

P3.83 DCPB	MICHAELSON, J-AB, POWERS, DR, FRIESEN, CR, MASON, RT; George Fox University, Oregon State University	Energy investment during courtship by male vs. female red-sided garter snakes (*Thamnophis sirtalis parietalis*)
P3.84 DCPB	JORDAN, DC, WESSELS, FJ, HAHN, DA; University of Florida	Capitalizing on income: using stable isotopes to understand reproductive allocation in the flesh fly, *Sarcophaga crassipalpis*
P3.85 DCE	HODGE, MG, BENOWITZ-FREDERICKS, M; Bucknell University	Age- and sex-specific uptake and distribution of yolk androstenedione in chicken (*Gallus gallus*) embryos
P3.86	HEAD, JM, REIBER, CL; University of Nevada, Las Vegas	Characterization of the genome of *Triops longicaudatus*
P3.87	HAYES, TN, KALB, HJ; Georgia Southern University	Visual phases of egg development in Malayan box turtle (*Cuora amboinensis*) as observed with ultrasound technology
P3.88 DCE	GREIVES, TJ, LONG, KL, BERGEON BURNS, CM, DEMAS, GE*; Max Planck Institute for Ornithology, Germany, Indiana University	Sex differences in response to differing doses of the neuropeptide kisspeptin
P3.89 DCE	CLEMONS, A, FREESTONE, C, TONETTI, J, O'BRIEN, S, WINGFIELD, JC; Marian University, University of California, Davis	Seasonal influence of kisspeptin on fine-tuning reproduction in the Puget Sound white-crowned sparrow (*Zonotrichia leucophrys pugetensis*)
P3.90 DCE	GRAHAM, AW, KOUBA, AJ, WILLIS, EL; Memphis Zoo, Rhodes College	Development of non-invasive reproductive monitoring techniques for endangered snow leopards and Amur leopards
P3.91	ZALESKI, MAF, TAMONE, SL; University of Alaska Fairbanks, School of Fisheries and Ocean Sciences, University of Alaska Southeast	Relationship between gonadosomatic index and shell condition of male snow crab *Chionoecetes opilio* from the Bering Sea
P3.92 DCE	PINSON, SE, WILSON, J, NAVARA, KJ; The University of Georgia	The effect of injecting varying doses of acute corticosterone on offspring sex in the white leghorn

Immunology

P3.93	MATSON, KD, BLOM, MPK*, LOZNIK, B, TIELEMAN, BI, MAUCK, RA; University of Groningen, Kenyon College	Rearing environment, nest sanitation and chick growth and development
P3.94 DCPB	JONES, AL, THOMSON, AM, KOZAKOWSKI, M, KYPRIANOU, R, VATNICK, I, BRODKIN, M; Widener University	Escherichia coli ATCC # 25922 induces an inflammatory response in adult *Rana pipiens*
P3.95 DCE	BLACK, SJ, CRESPI, EJ; Vassar College	Does nutritional state affect immune function in frogs?
P3.96 DEE	FORSMAN, AM, ANGERT, ER, WINKLER, DW; Cornell University	Experimental addition of nest-dwelling bacteria influences antibody titers in nestling tree swallows, but not as expected
P3.97 DAB	CHESTER, EM, FRENCH, SS, DEMAS, GE; Indiana University, Bloomington, Utah State University, Logan	Effects of timing of KLH exposure during pregnancy on offspring physiology and behavior in the Siberian hamster
P3.98 DCPB	ZIMMERMAN, LM, VOGEL, LA, EDWARDS, KA, BOWDEN, RM; Illinois State University	Phagocytic B cells in a reptile

Neurobiology - Neuroethology

P3.99 DAB	TAN, D, PATTON, P, COOMBS, S; Bowling Green State University	Are the swimming kinematics of blind cavefish (*Astyanax mexicanus*) adapted for active flow-sensing?
P3.100 DNB	RINEHART, MD, BELANGER, JH; West Virginia University	Biologically realistic limb coordination during walking in the absence of central connections between legs

P3.101	REES, SR, BALTZLEY, MJ; St. Mary's College of Maryland	Visualizing electrical connections between sensory neurons in two leech species, *Hirudo verbana* and *Macrobdella decora*
P3.102 DNB	SINGH, G, HUYNH, M, MURRAY, JA; California State University, East Bay	Analysis of crawling activity of *Tritonia diomedea* in light versus dark settings?
P3.103 DNB	SIMPSON, MC, YAGER, DD*; University of Maryland, College Park	CNS processing of auditory signals differs in light and darkness in the praying mantis, *Parasphendale agrionina*
P3.104 DNB	ZAZAY, R, MURRAY, JA; George Washington University, California State University, East Bay, Friday Harbor Labs	Correlation of the activity of novel pedal neurons and body flexion in the sea slug *Tritonia diomedea*
P3.105 DNB	MCPHERSON, DR; SUNY at Geneseo	Modulatory influences of anterior cerebral neurons on fictive swimming in *Melibe leonina*
P3.106	LOPES, PC, BENTLEY, GE; University of California, Berkeley, GABBA, University of Porto, Helen Wills Neuroscience Institute	Neural pathways of sickness behavior in songbirds
P3.107	EDELSTEIN, LW, SCHULZ, JR; Occidental College, Los Angeles, CA	Retrograde labeling of zebrafish spinal interneurons for calcium imaging studies
P3.108 DNB	HEROLD, PB, SPRAYBERRY, JDH; Muhlenberg College	Development of a complex motion stimulus to investigate neural substrates of flower tracking in the hawk moth *Manduca sexta*
P3.109 DNB	DE LEEUW, JR, PORTER, ME, LIVINGSTON, KR, LONG, JH; Vassar College	Evolving intelligence in autonomous, fish-like biorobots: does competition for resources matter?
P3.110	ZONG, J, MAXSON, K, FUH, J, RITTSCHOF, D*; Duke Univeristy Marine Laboratory, Beaufort	Responses of mud snails (*Ilyanassa obsoleta*) to synthetic trails
P3.111 DAB	OLBERDING, JP, RILEY, MA, JAYNE, BC; University of Cincinnati	Snakes that go bump in the night
P3.112 DAB	HADJISOLOMOU, SP, GRASSO, FW; BioMimetic and Cognitive Robotics Lab, Brooklyn College, CUNY, The Graduate Center, CUNY	Evidence for inter-sucker coordination in the Giant Pacific octopus Enteroctopus dofleini
P3.113 DIZ	LIN, C-C, HUANG, H-D, LIU, HC; Providence University, Taiwan, National Museum of Natural Science, Taiwan	Orientation mechanisms of larval release migration by the sesarmid crab, *Metasesarma aubryi*

Stress

P3.115 DIZ	TARASKA, NA, BOETTGER, SA, LOCK, NC, WALKER, CW; West Chester University, The University of New Hampshire	Initiation of hemic neoplasia in the soft-shell clam *Mya arenaria* treatment with bromodeoxyuridine
P3.116 DCE	GALT, N, BILLING, S, BIGA, P; North Dakota State University	Acute stress differentially affects myostatin expression in rainbow trout, *Oncorhynchus mykiss*
P3.117	SHAHBAZI, M, CARRUTH, LL; Neuroscience Institute, Georgia State University	The role of glucocorticoid receptors and stress on the development of the avian song system
P3.118 DCPB	BURMESTER, EM, FIELDS, PA; Franklin and Marshall College	Proteomic analysis of the heat shock response in the Atlantic ribbed mussel *Geukensia demissa*
P3.119 DCPB	FIELDS, PA, GAO, L, WOLFGANG, A; Franklin and Marshall College, Pequea Valley High School	Changes in protein expression in gill tissue of the ribbed marsh mussel *Geukensia demissa* in response to aerial exposure
P3.120 DCPB	WARNE, RW, CRESPI, EJ, BRUNNER, JL; Vassar College, State University of New York, Syracuse	Escape from the pond: stress response to ranavirus infection in wood frogs

P3.121 DCE	NAVARA, KJ, PINSON, SE; University of Georgia	Yolk and albumin corticosterone concentrations in eggs laid by white versus brown laying hens
P3.122 DCE	LUTTERSCHMIDT, DI, MASON, RT; Georgia State University, Atlanta, Oregon State University, Corvallis	Temporally distinct effects of stress and corticosterone on diel melatonin rhythms of red-sided garter snakes (*Thamnophis sirtalis*)
P3.123 DCE	LEMA, SC; University of North Carolina, Wilmington	Differential regulation of mRNAs encoding vasotocin and its receptors in the teleost hypothalamus following acute stress
P3.124	LAWSON, BK, MALISCH, JL, BREUNER, CW; University of Montana	Social stress in Potter traps
P3.125 DCE	LARSON, R, AHMED, N, SHOUKFEH, O, BULIN, S, BERGFELD, N, LUSTGARTEN, J, CARR, JA; Texas Tech University, Lubbock	Intrinsic neurons contribute to CRF innervation of the anuran optic tectum
P3.126 DCE	FOKIDIS, B, SPARR, R, SWEAZEA, K, DEVICHE, P; Arizona State University	Species-specific habitat-associated changes in lipolytic metabolites during the avian stress response
P3.127 DCE	DAVIES, S, SWEAZEA, KL, DEVICHE, P; Arizona State University, Tempe	The influence of acute and chronic stress on plasma glucose of a desert songbird

Vertebrate Morphology - Morphology

P3.128	ARYAFAR, H, DICKSON, KA; California State University Fullerton	Effects of delayed hatching on energy reserves and survival of the California grunion, *Leuresthes tenuis*
P3.129	BRASILI, A, JOHNSON, AS, ELLERS, O; Bowdoin College	Temperature and size-dependent growth in a marine ectotherm: the green sea urchin *Strongylocentrotus droebachiensis*
P3.130 DVM	DESCAMPS, E, BUYTAERT, J, ADRIAENS, D, DIRCKX, J; Ghent University, Belgium, Antwerp University, Belgium	High-resolution and non-invasive 3D-visualisation of soft tissues in vertebrates - the use of OPFOS
P3.131	FIELD, DJ, GOLDBOGEN, JA, CAMPBELL-MALONE, R, BEN-ZVI, M, PINTO, SJ, SHADWICK, RE; University of British Columbia, Brown University	Quantitative computed tomography of rorqual mandibles: mechanical implications for lunge-feeding
P3.132 DVM	GERTH, N, STARCK, JM*; University of Munich (LMU)	Cardiovascular adaptations of Inuit sled dogs in response to seasonal changes in work load, temperature and feeding
P3.133 DVM	GINTER, CC, BÖTTGER, SA, FISH, FE; Texas A&M University, West Chester University	Morphology and microanatomy of harbor porpoise (*Phocoena phocoena*) dorsal fin tubercles
P3.134 DVM	GOLDBOGEN, JA, POTVIN, J, SHADWICK, RE; University of British Columbia, Saint Louis University	Skull and buccal cavity allometry increase mass-specific engulfment capacity in fin whales
P3.135	GOO, BY, DEAN, MN, HUBER, DR, SUMMERS, AP; University of California, Irvine, University of Tampa, Friday Harbor Labs	Jaw morphology and structure in lamniform sharks
P3.136 DVM	IDE, C, BADIOLA AZPEITIA, T, PALSTRA, A, VAN DEN THILLART, G, ADRIAENS, D; Ghent University, Universitat de Barcelona, Leiden University, Leiden	Bone mineralization in European eel (*Anguilla anguilla*) during maturation from the yellow eel stage to the silver eel stage
P3.137	LEE, SM, BIEWENER, AA, DE BOEF, M, FORSMAN, K, WAKELING, JM; Simon Fraser University, Harvard University	Designer wavelets for EMG analysis
P3.138 DIZ	MARTIN, GG, MARTIN, AM, TSAI, W; Occidental College, Los Angeles	Journey through the digestive system of *Megathura crenulata*, the giant keyhole limpet: morphology and enzyme activity

P3.139 DIZ	MARTIN, GG, MARTIN, AM*, WATANABE, K; Occidental College, Los Angeles	Morphology of the heart-kidney complex in *Megathura crenulata*, the giant keyhole limpet: the hunt for hematopoietic tissue and HCN storage sites
P3.140 DVM	PAIG-TRAN, EWM, LOWE, C; University of Washington, California State University Long Beach	Elemental and energy assimilation in the round stingray, *Urobatis halleri*
P3.141 DVM	PAYNE, SL, VICKARYOUS, MK; University of Guelph, Canada	A histological investigation of cranial kinesis in geckos: testing predictors of joint type
P3.142 DVM	PEDERSEN, S, RIEDE, T, NGUYEN, S, LU, H, MA, J, YAN, Z, HE, W, ZHANG, Z, WANG, F, MUELLER, R, PEDERSEN; South Dakota State University, Brookings, University of Utah, Salt Lake City, Institute of Ecology & Biological Resources, Hanoi, Shandong University, Jinan, Virginia Tech	Reconstruction of the rhinolophid vocal tract
P3.143 DVM	YANEGA, GM, MEYERS, RA; National Evolutionary Synthesis Center (NESCent), Weber State University	Pouch morphology and function in brown pelicans, Pelecanus occidentalis
P3.144	SCHUTZ, H, ESCOBAR, RA, III, GARLAND, Jr, T; University of California, Riverside, Loma Linda University	Responses of scapular size and shape to exercise and selective breeding for high-activity in *Mus*
P3.146 DVM	SHERIDAN, TA, ANDERSON, CV, DEBAN, SM; University of South Florida	Scaling relationships of the tongue apparatus in the family Chamaeleonidae
P3.147 DCB	STOVER, KK, WILLIAMS, SH; College of Charleston, Ohio University	Intraspecific scaling of chewing cycle length and jaw-muscle activity in goats, alpacas and horses
P3.148 DVM	TREYBIG, TA, CARRILLO, A, HOESE, WJ, DICKSON, KA; California State University, Fullerton	Effects of delayed hatching on muscle and skeletal development and feeding rates in the California grunion, *Lueresthes tenuis*
P3.149 DCPB	TUN, KM, FRUTIGER, AE, HOLDENER, JA, ITAGAKI, H; Kenyon College	The calculation of the body surface area of *Manduca sexta* larvae using serial sections and computer reconstruction
P3.150 DVM	WALL, CE, GAPEYEV, V, GERMAN, RZ, LIU, X, VINYARD, CJ, WILLIAMS, SH; Duke University, NESCent, Johns Hopkins University, NEOUCOM, Ohio University	The Feeding Experiments End-user Database (FEED)
P3.151	BHANDIWAD, AA, JOHNSEN, S; Northeastern University, Duke University	Now you see it, now you don't - the effects of salinity and temperature on the transparency of the ghost shrimp, *Palaemonetes pugio*

Thursday Schedule of Events

EVENT	TIME	LOCATION
Registration	7:30 AM-Noon	6th Flr East Lobby, Convention Ctr
Coffee Breaks	9:30-10:30 AM	Outside Session Rooms
CONTRIBUTED PAPER ORAL PRESENTATIONS		
Session 82: Sexual Selection	8:00-9:40 AM	602
Session 83: Swimming - Jetting	8:00-10:00 AM	603
Session 84: Mechanics of Defensive Structures	10:20 AM-Noon	603
Session 85: Adaptation - Invertebrates	8:00-9:40 AM	604
Session 86: Adaptation - Vertebrates and Robots	10:00 AM-Noon	604
Session 87: Endocrinology of Fishes	8:00 AM-Noon	605/610
Session 88: Biomechanics - Adhesion	8:00-10:00 AM	606
Session 89: Biomechanics - Gas Exchange	10:20 AM-Noon	606
Session 90: Functional Design of Heads - Biting and Chewing	8:00 AM-Noon	607
Session 91: Complementary Session: Spiralian Development	8:00-11:20 AM	608
Session 92: Predation and Predator Avoidance I	8:00-9:40 AM	609
Session 93: Predation and Predator Avoidance II	10:00 AM-Noon	609
Session 94: Phylogenetics and Speciation II	8:00-10:00 AM	611
Session 95: Evolutionary Morphology III	10:20 AM-Noon	611
Session 96: Evolutionary Morphology II	8:40-9:40 AM	612
Session 97: Complementary Session: Cnidarian Tree of Life	10:00-11:40 AM	612
Session 98: Thermal Biology & Muscle Physiology and Biochem	8:00 AM-Noon	613/614
Session 99: Evo-Devo - Gene Regulation and Patterning	8:20-10:00 AM	615/616
Session 100: Evo-Devo - Modularity and Integration	10:20 AM-Noon	615/616
Session 101: Neural Control	8:20 AM-Noon	617
Session 102: Terrestrial Locomotion - High Speed Locomotion...	8:00-10:00 AM	618
Session 103: Terrestrial Locomotion - Stability	10:20 AM-Noon	618
Session 104: Respiratory Physiology	8:00-9:40 AM	619
Session 105: Cardiovascular Physiology	10:00 AM-Noon	619
COMMITTEE & BOARD MEETINGS		
Executive Committee	7:00-9:00 AM	Cirrus Room, Sheraton

8:00-9:40 AM
602

Session 82: Sexual Selection

Chair: Jerry Husak

8:00 AM DAB	82.1	WESTERMAN, EL, HODGINS-DAVIS, A, MONTEIRO, A; Yale University	Naive mate preference modified by early experience in the butterfly *Bicyclus anynana*
8:20 AM	82.2	BALDWIN, JL, JOHNSEN, S; Duke University	Does this color make my claws look phat? Evaluating claw color preferences in male blue crabs, *Callinectes sapidus*
8:40 AM	82.3	JOHNSON, JC, TRUBL, P, BLACKMORE, V; Arizona State University West Campus	Male mate choice in black widows: chemical and physical cues allow males to avoid sexual cannibalism by poor-condition females
9:00 AM DEE	82.4	ROBINSON, DM, MORRIS, MR; Ohio University	Unraveling the complexities of variation in female mate preference for vertical bars
9:20 AM DAB	82.5	LONGPRE, KM, KATZ, LS; Rutgers University, New Brunswick	Males can not lie: females use honest cues to assess fitness

9:40 AM COFFEE BREAK

8:00-10:00 AM
603

Session 83: Swimming - Jetting

Chair: Arvind Santhanakrishnan

8:00 AM	83.1	LIPINSKI, D, MOHSENI, K; University of Colorado, Boulder	Propulsive and feeding mechanisms of the hydromedusae Aequorea victoria and Sarsia tubulosa
8:20 AM	83.2	NAWROTH, JC, DABIRI, JO; California Institute of Technology	Adaptive phenotypic plasticity in juvenile Scyphomedusae facilitates effective animal-fluid interaction
8:40 AM DCB	83.3	SANTHANAKRISHNAN, A, DOLLINGER, M, MILLER, L; University of North Carolina, Chapel Hill	Characterization of the fluid motion generated by upside-down jellyfish *Cassiopea*
9:00 AM DCB	83.4	SUTHERLAND, KR, MADIN, LP; MIT/WHOI Joint Program in Oceanography, Woods Hole Oceanographic Institution	Form, function and flow in the plankton: jet wake structure and swimming performance of pelagic tunicates
9:20 AM	83.5	FURUYA, W, MOHSENI, K; University of Colorado	A care and testing facility for squid propulsion and flow visualization
9:40 AM	83.6	STAAF, DJ, DENNY, MW, GILLY, WF; Hopkins Marine Station of Stanford University	Aperture size effects in paralarval squid swimming

10:00 AM COFFEE BREAK

10:20 AM-Noon
603

Session 84: Mechanics of Defensive Structures

Chair: C. A. Holiday

10:20 AM	84.1	ANDERSON, SP, GEORGE, M, SWANSON, BO; Gonzaga University	Claw force and cuticle strength: functional morphology of fiddler crab combat
10:40 AM DEDB	84.2	CLAVERIE, T, CHAN, EK, PATEK, SN; University of Massachusetts, Amherst, University of California, Berkeley	Shape, size and performance of a crustacean predatory appendage

11:00 AM	84.3	GEORGE, MN, SWANSON, BO; Gonzaga University	Allometry and correlated evolution in fiddler crab major claw morphology
11:20 AM DCB	84.4	TAYLOR, JRA, PATEK, SN; University of California, Berkeley, University of Massachusetts, Amherst	Biological punching bags: impact analysis of a mantis shrimp telson
11:40 AM DIZ	84.5	VAN DER MEIJDEN, A, SOUSA, P, HARRIS, DJ; CIBIO, University of Porto	A comparative look at the defensive complex of scorpions

8:00-9:40 AM
604

Session 85: Adaptation - Invertebrates

Co-Chairs: Sidney Pierce, Allen Gibbs

8:00 AM DIZ	85.1	PIERCE, SK, CURTIS, NE, SCHWARTZ, JA; University of South Florida	Chlorophyll synthesis by a sea slug (*Elysia chlorotica*)
8:20 AM DEE	85.2	COOPER, BS, CZARNOŁĘSKI, M, ANGILLETTA, MJ; Indiana University, Jagiellonian University, Indiana State University	Acclimation of thermal sensitivity in *Drosophila melanogaster* from high and low latitudes
8:40 AM	85.3	PESPENI, MH, PALUMBI, SR; Stanford University	The purple sea urchin genome suggests local adaptation along a latitudinal gradient despite high gene flow
9:00 AM DEE	85.4	GIBBS, AG, DE OLIVEIRA, CC, RAJPUROHIT, S, ETGES, WJ; University of Nevada, Las Vegas, University of Arkansas	Ecological genomics of host plant adaptation and stress in desert *Drosophila*
9:20 AM DEE	85.5	SUNDAY, JM, CRIM, R, HARLEY, CDG, HART, MW; Simon Fraser University, University of British Columbia	Potential to adapt? Heritability of larval growth in an acidified ocean
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
604

Session 86: Adaptation - Vertebrates and Robots

Co-Chairs: James Cooper, Tonia Hsieh

10:00 AM DEE	86.1	HSIEH, ST, SMITHERS, C; University of Florida, Gainesville, Temple University,	Adaptive divergence in green anole lizards due to species invasions
10:20 AM DEE	86.2	REFSNIDER, J, JANZEN, F; Iowa State University	Can nest-site choice compensate for the effects of climate change on reptiles with temperature-dependent sex determination?
10:40 AM	86.3	COVENY, AH, VICKERS, MH, CUPIDO, CL, GLUCKMAN, PD, RAUBENHEIMER, D; Liggins Institute, University of Auckland, New Zealand, Massey University, New Zealand	Transgenerational adaptation to obesogenic environments in a rodent
11:00 AM DVM	86.4	PADIAN, K, MAZIN, J-M, BILLON-BRUYAT, J-P; University of California, Berkeley, University of Lyon, France, Canton Jura, Switzerland	How pterosaurs landed and why they evolved from bipedal ancestors

11:20 AM DVM	86.5	COOPER, WJ, PARSONS, K, WESTNEAT, MW, ALBERTSON, RC; Syracuse University, The Field Museum	Repeated patterns in the diversification of jaw and head length amongst perciform fishes
11:40 AM DVM	86.6	ROBERTS, S, HIROKAWA, J, GUTIERREZ, A, ROSENBLUM, H, STICKLES, E, SAKHTAH, H, PORTER, ME, LIEW, C, ROOT, R, LONG, J; Vassar College, Lafayette College	Simulating evolutionary processes: □swimming robots in a predator-prey ecology

8:00 AM-Noon
605/610

Session 87: Endocrinology of Fishes

Co-Chairs: Karen Maruska and Jamie Bridgham

8:00 AM DCE	87.1	MARUSKA, KP, LEVAVI-SIVAN, B, FERNALD, RD; Stanford University, Hebrew University	Rapid activation of the reproductive axis during social ascent
8:20 AM DCE	87.2	BRAR, NK, WAGGONER, C, REYES, JA, FAIREY, R, KELLEY, KM; California State University, Long Beach, Pacific Coast Environmental Conservancy, Moss Landing Marine Laboratories	Evidence for thyroid endocrine disruption in wild fish in San Francisco Bay. Relationships to contaminant exposures
8:40 AM DCE	87.3	IWANSKI, E, HAGSTROM, KRE, REYES, JA, PHAM, M, KELLEY, KM; California State University, Long Beach, Pacific Coast Environmental Conservancy	Environment associated differences in male estrogen levels and testicular steroidogenic gene expression in a Southern California flatfish
9:00 AM DCE	87.4	BECKMAN, BR, LUCKENBACH, JA, METZGER, DC, SHIMIZU, M, DICKEY, JT; NWFSC, NOAA Fisheries, School of Fisheries, University of Hokkaido, SAFS, University of Washington	Endocrine control of growth in coho salmon: validation of a multiplex gene expression assay and quantification of relations between messenger RNA levels and proteins during feeding and fasting
9:20 AM DCE	87.5	CARUSO, MA, SHERIDAN, MA; North Dakota State University	Expression of insulin and insulin receptor mRNAs is regulated by growth hormone and somatostatin in rainbow trout
9:40 AM DCE	87.6	UPTON, KR, RILEY, LG; California State University, Fresno	Neuroendocrine regulation of decreased food intake during acute stress in the tilapia, *Oreochromis mossambicus*
10:00 AM	COFFEE BREAK		
10:20 AM DCE	87.7	BRIDGHAM, JT, ORTLUND, EA, THORNTON, JW; University of Oregon, Eugene, Emory University School of Medicine, Howard Hughes Medical Institute, University of Oregon, Eugene	Molecular evolution of mineralocorticoid receptor - hormone interactions
10:40 AM DCE	87.8	BREVES, JP, WATANABE, S, HELMS, R, KANEKO, T, HIRANO, T, GRAU, EG; University of Hawaii, University of Tokyo	Chloride cell differentiation in Mozambique tilapia: roles of prolactin, growth hormone and cortisol
11:00 AM DCE	87.9	GRONE, BP, LEE, M, FERNALD, RD; Stanford University	NPY and GnRH systems respond to food deprivation in a mouthbrooding cichlid
11:20 AM	87.10	FORSGREN, KL, YOUNG, G; University of Washington	The regulatory role of sex steroids during primary growth of ovarian follicles of coho salmon (*Oncorhynchus kisutch*)
11:40 AM DCE	87.11	LUZANIA, RR, UPTON, KR, EARLEY, RL, RILEY, LG; California State University, Fresno, University of Alabama	The effects of fasting and re-feeding on the neuroendocrine control of appetite in tilapia, *Oreochromis mossambicus*

8:00-10:00 AM
606

Session 88: Biomechanics - Adhesion

Co-Chairs: Kellar Autumn and Jake Socha

8:00 AM DCB	88.1	PROWSE, M, WILKINSON, M, MAYER, G, AUTUMN, K*; University of Washington, Seattle, Lewis and Clark College	Effects of humidity on the mechanical properties of gecko setae
8:20 AM DVM	88.2	RUSSELL, AP, HIGHAM, TE; University of Calgary, Clemson University	Modulation and modularity: behavioral insights into secondary reduction and loss of the gekkotan adhesive system
8:40 AM DCB	88.3	HAGEY, T, HARMON, L, AUTUMN, K; University of Idaho, Lewis and Clark College	Predicting adhesive capabilities in Anolis and Phelsuma lizards via the frictional adhesion model and critical detachment angle
9:00 AM DVM	88.4	MAIE, T, SCHOENFUSS, HL, BLOB, RW; Clemson University, St. Cloud State University	Allometry of adhesive capacity in waterfall-climbing gobiid fishes
9:20 AM DCB	88.5	RISKIN, DK, RACEY, PA; Brown University, University of Aberdeen	Why does Madagascar's sucker-footed bat roost head-up?
9:40 AM	88.6	CLEMENTE, CJ, BULLOCK, JMR, BEALE, A, FEDERLE, W; University of Cambridge, University College London	Evidence for self-cleaning in fluid-based smooth and hairy adhesive systems of insects

10:00 AM COFFEE BREAK

10:20 AM-Noon
606

Session 89: Biomechanics - Gas Exchange

Co-Chairs: Kellar Autumn and Jake Socha

10:20 AM DCB	89.1	LIN, H, PAETSCH, CR, SLATE, DJ, DORFMANN, AL, TRIMMER, BA; Tufts University	Ontogenetic scaling of overall body properties in *Manduca* caterpillars and its implications on the use of a hydrostatic skeleton
10:40 AM DCB	89.2	SOCHA, JJ, COX, L, LEE, WK, MEANS, M, TOLLEY, J; Virginia Tech, Argonne National Laboratory, Bucknell University	Under pressure: the biomechanical mechanism of rhythmic tracheal compression in carabid beetles
11:00 AM DCB	89.3	STROTHER, JA, WEGNER, NC, GRAHAM, JB; University of California, Irvine, Scripps Institution of Oceanography	The mechanics of ventilation in a scombrid fish
11:20 AM	89.4	CROLL, RP, STOYEK, MR, SMITH, FM; Dalhousie University	Effects of wall compliance on swimbladder function in zebrafish
11:40 AM	89.5	KIRCHHEFER, AJ, GURKA, R, KOPP, G, GUGLIELMO, C; The University of Western Ontario, Ben-Gurion University	PIV-based study of the near wake of a white-throated sparrow

8:00 AM-Noon
607

Session 90: Functional Design of Heads - Biting and Chewing

Co-Chairs: Callum Ross and Susan Willliams

8:00 AM DCB	90.1	ROSS, CF, HERREL, A, METZGER, KA, REED, DA, SCHAERLAEKEN, V, GEORGI, J, BADEN, AL, WOLFF, MS; University of Chicago, Museum National d'Histoire Naturelle, France, Hofstra University, University of Antwerp, Belgium, Midwestern University, Stony Brook University, New York University	Jaw kinematics in lepidosaurs and mammals and the evolution of amniote chewing
8:20 AM DVM	90.2	WILLIAMS, SH, SIDOTE, J, STOVER, KK, DAVIS, JS; Ohio University, Athens, College of Charleston	The mechanical loading environment of the jaw during ingestive and rumination chewing in goats
8:40 AM DVM	90.3	YEH, KD, POPOWICS, T*, RAFFERTY, K, HERRING, S; University of Washington, Seattle	The effect of occlusion on alveolar bone biomechanics in the miniature pig, *Sus scrofa*
9:00 AM DCB	90.4	IRIARTE-DIAZ, J, ROSS, CF; University of Chicago	Kinematic analysis of chewing in primates: comparison of analytical methods on the analysis of jaw motion
9:20 AM DVM	90.5	VAN VALKENBURGH, B, SAMUELS, JX, BIRD, D, MEACHEN-SAMUELS, J; University of California, Los Angeles	Respiratory and olfactory turbinate dimensions in aquatic and terrestrial carnivorans
9:40 AM	COFFEE BREAK		
10:00 AM DVM	90.6	LA CROIX, S, ZELDITCH, ML, SHIVIK, JA, LUNDRIGAN, BL, HOLEKAMP, KE; Michigan State University, East Lansing, University of Michigan, Ann Arbor, US Department of Agriculture Wildlife Services National Wildlife Research Center, Utah State University, Logan	Skull development, functional integration and feeding performance in a top North American carnivore, *Canis latrans*
10:20 AM DVM	90.7	SANTANA, SE, DUMONT, ER, DAVIS, JL; University of Massachusetts, Amherst	Mechanisms of bite force production and their relationship with diet in Neotropical leaf-nosed bats
10:40 AM DCB	90.8	GIGNAC, PM, ERICKSON, GM; Florida State University	Ontogeny and the biomechanics of feeding in the American alligator (*Alligator mississippiensis*): developmental changes to muscle physiology contributes to niche transitions in a large-bodied vertebrate
11:00 AM DCB	90.9	REED, DA, PORRO, LB, HOLLIDAY, CM, LEMBERG, JB, METZGER, KA, ROSS, CF; The University of Chicago, The University of Missouri, Hofstra University	Multidimensional analysis of mandibular function in *Alligator mississippiensis* using geometric morphometrics and finite element modeling
11:20 AM DVM	90.10	LAPPIN, AK, WILCOX, SC; California State Polytechnic University, Pomona	Scaling of bite-force performance in horned frogs, *Ceratophrys*
11:40 AM DVM	90.11	SELF, CJ; University of Washington, Seattle	Tooth root surface area as an indicator of bite force

8:00-11:20 AM
608

Session 91: Complementary Session: Spiralian Development

Co-Chairs: Scott Santagata and Andreas Hejnol

8:00 AM	91.1	MEYER, NP, SEAVER, EC; Kewalo Marine Lab, PBRC, University of Hawaii, Honolulu	Cellular and molecular mechanisms of brain development in the annelid *Capitella teleta*
8:20 AM DEDB	91.2	SANTAGATA, S, RESH, C, HEJNOL, A, PASSAMANECK, Y, MARTINDALE, MQ; Long Island University, CW Post Campus, Kewalo Marine Laboratory, University of Hawaii, Kewalo Marine Laboratory	Evolutionarily conserved expression of genes involved in the differentiation of anterior neural tissues within the larva of the articulate brachiopod, *Terebratalia transversa*
8:40 AM	91.3	RAWLINSON, KA; Smithsonian Marine Station	Embryonic and post-embryonic development of the polyclad flatworm *Maritigrella crozieri*, and the homology of lophotrochozoan larval characters
9:00 AM	91.4	RABINOWITZ, JS, LAMBERT, JD; University of Rochester	Asymmetric RNA segregation as a patterning mechanism in *Ilyanassa*
9:20 AM	91.5	PASSAMANECK, YJ, HEJNOL, A, MARTINDALE, MQ; University Hawaii, Kewalo Marine Lab	The development of mesoderm in the brachiopod *Terebratalia transversa*
9:40 AM	COFFEE BREAK		
10:00 AM	91.6	NAKAMOTO, A, SHIMIZU, T; University of Arizona, Hokkaido University	A secondary embryonic axis induced by transplanted D-quadrant micromeres in an oligochaete annelid
10:20 AM DEDB	91.7	HIEBERT, LS, MASLAKOVA, SA; Oregon Institute of Marine Biology	Axes and organs in nemertean larvae: development of a hoplonemertean
10:40 AM DEDB	91.8	NÖDL, MT, FARFAN, CB, DE COUET, HG; University of Vienna, Austria, Departmento de Acuicultura, CICESE, Mexico, Department of Zoology, University of Hawaii at Manoa	Wnt signaling and appendage development in the sepiolid squid *Euprymna scolopes*
11:00 AM	91.11	WEVER, JM, HENRY, JJ, NEWMARK, PA; University of Illinois, Urbana	Bringing lophotrochozoa into studies of comparative eye development and eye evolution

8:00-9:40 AM
609

Session 92: Predation and Predator Avoidance I

Chair: Jill Mateo

8:00 AM DAB	92.1	CUNNINGHAM, GB, NEVITT, GA; St. John Fisher College, University of California, Davis	Tuning a nose to forage: evidence for olfactory learning in a procellariiform chick
8:20 AM DEE	92.2	REVELL, LJ, LOVELY, KR, MAHLER, DL; National Evolutionary Synthesis Center, Harvard University	Predation and tail autotomy in *Anolis* lizards
8:40 AM DEE	92.3	HADDOCK, SHD, FIGOSKI, L, WATTS, M, SWEENEY, AM, DUNN, CW; Monterey Bay Aquarium Research Inst, University of California, Santa Barbara, Brown University	Experimental evidence for the role of fluorescent proteins (GFPs) in prey attraction

9:00 AM	92.4	MATEO, JM; University of Chicago	Hormonal responses to calls warning of predators and development of survival behaviors
9:20 AM	92.5	KUHN, CE, TREMBLAY, Y, REAM, RR, GELATT, TS; National Marine Mammal Laboratory, NOAA, Centre de Recherche Halieutique Méditerranéenne et Tropicale	Coupling GPS tracking with dive behavior to examine the relationship between foraging strategy and fine-scale movements
9:40 AM	COFFEE BREAK		

10:00 AM-Noon
609

Session 93: Predation and Predator Avoidance II

Chair: Jordanna Sprayberry

10:00 AM DAB	93.1	WARK, AR, GREENWOOD, AK, PEICHEL, CL; Fred Hutchinson Cancer Research Center, Seattle, University of Washington, Seattle, Fred Hutchinson Cancer Research Center	Genetic analysis of variation in schooling behavior among threespine stickleback populations
10:20 AM DCB	93.2	MURPHY, DW, WEBSTER, DR, KAWAGUCHI, S, KING, R, OSBORN, J, YEN, J; Georgia Institute of Technology, Australian Antarctic Division, Tasmania, University of Tasmania, Tasmania	Krill schooling: defining the structure of Antarctic krill schools and swarms
10:40 AM	93.3	FAUCHER, K, PARMENTIER, E, BECCO, C, VANDEWALLE, N, VANDEWALLE, P; University of Liège, Belgium	Fish lateral system is required for accurate control of shoaling behaviour
11:00 AM DIZ	93.4	GRASON, E, MINER, BG; Western Washington University	Non-consumptive effects in a marine food chain with both native and invasive species
11:20 AM	93.5	FERRIER, GA, ZIMMER, CA, ZIMMER, RK; University of California, Los Angeles	Chemical communication, keystone molecules, and forces structuring natural communities
11:40 AM DNB	93.6	KAMIO, M, NUSNBAUM, M, AGGIO, J, GRIMES, T, DERBY, C*; Georgia State University	How to produce a chemical defense: sea hares manufacture antipredatory chemicals from diet-derived red algal photosynthetic pigments

8:00-10:00 AM
611

Session 94: Phylogenetics and Speciation II

Co-Chairs: Christopher Oufiero and Dennus Lavrov

8:00 AM DEE	94.1	OUFIERO, CE, ADOLPH, SC, GARTNER, GEA, GARLAND, T; University of California, Riverside, Harvey Mudd College	Variation in scale counts and body size in *Sceloporus* lizards in relation to latitude, temperature, and precipitation: a phylogenetic perspective
8:20 AM DSEB	94.2	KLYMUS, K, HUMFELD, S, MARSHALL, V, CANNATELLA, D, GERHARDT, HC; University of Missouri, Columbia	Behavioral and molecular differentiation within a possible cryptic species complex, the canyon treefrog, *Hyla arenicolor*
8:40 AM	94.3	HALEY, WA, WILSON, PS; California State University, Northridge	Hummingbird choices at artificial flowers made to resemble bird- versus bee-pollinated flowers
9:00 AM	94.4	LINDGREN, AR, PANKEY, MS, OAKLEY, TH; University of California, Santa Barbara	The cephalopod cornea: testing for convergent evolution using a supermatrix phylogeny

9:20 AM DEE	94.5	LAVROV, DV, BURLAKOVA, OO, ITSKOVICH, VB, WEINBERG, EV, BELIKOV, SI; Iowa State Unviersity, Limnological Institute, Irkutsk, Russia	Baikalian sponges as a model for the study of endemic speciation
9:40 AM	94.6	REDMOND, NE, COLLINS, AG, DIAZ, MC, THACKER, RW; Smithsonian Institution, National Museum of Natural History, National Systematics Laboratory of NOAA's Fisheries Service and Smithsonian Institution, Museo Marino de Margarita, Venezuela, University of Alabama at Birmingham	Resolving species identities in the Porifera Tree of Life: a comparison of mitochondrial and nuclear barcodes

10:00 AM COFFEE BREAK

10:20 AM-Noon
611

Session 95: Evolutionary Morphology III

Chair: Julia Sigwart

10:20 AM	95.1	MEJIA-ORTIZ, LM, LOPEZ-MEJIA, M; Biospeleology & Carcinology Lab. Universidad de Quintana Roo, Evolutionary Biology & Population Genetics	The progressive adaptation degrees in the lipid storage structure of cave crayfishes
10:40 AM DIZ	95.2	SIGWART, JD; Queen's University Belfast	How do chitons see their world? A new sensory organ in basal molluscs (Polyplacophora: Lepidopleurida)
11:00 AM DEE	95.3	SARANATHAN, V, PRUM, RO; Department of Ecology and Evolutionary Biology, Peabody Museum of Natural History, Center for Research on Interface Structures and Phenomena (CRISP), Yale University	Evolutionary photonics of avian amorphous color-producing nanostructures
11:20 AM	95.4	RYAN, CA, DUDGEON, SR; California State University, Northridge	Measuring the heritability of plasticity in a colonial model hydroid, *Hydractinia symbiolongicarpus*
11:40 AM DEDB	95.5	MULROY, E, ALDENHOVEN, J, OSBORNE, EJ, STRINGHAM, S, SHAPIRO, MD*; University of Utah	The origin of pigeons by means of artificial selection

8:40-9:40 AM
612

Session 96: Evolutionary Morphology II

Chair: Roi Holzman

8:40 AM DIZ	96.1	VENDETTI, JE, FAY, SA; University of California, Berkeley	Predation at a snail's pace: time-lapse photography and analysis of predatory mode in neogastropod whelks
9:00 AM DVM	96.2	HOLZMAN, R, COLLAR, DC, MEHTA, RS, WAINWRIGHT, PC; University of California, Davis, Harvard	Can functional complexity mitigate performance trade-offs? An evolutionary analysis
9:20 AM DVM	96.3	SWIDERSKI, DL, ZELDITCH, ML; Univ of Michigan, Ann Arbor	Isometric scaling of lever arm lengths in squirrel jaws leaves jaw shape free to meet diverse functional demands

9:40 AM COFFEE BREAK

10:00-11:40 AM
612

Session 97: Complementary Session: Cnidarian Tree of Life

Chair: David Plachetzki

10:00 AM DSEB	97.1	GUSMAO, LC, DALY, M; Ohio State University	Genetic diversity within *Calliactis polypus* (Cnidaria: Actiniaria), a widespread species of sea anemone symbiotic with hermit crabs
10:20 AM DIZ	97.2	KHANG, S, BENAYAHU, Y, LASKER, HR*; Hawaii Pacific University, Tel Aviv University, University at Buffalo	Octocoral reproductive strategies: trying to see the forest for the trees?
10:40 AM	97.3	BENTLAGE, B, CARTWRIGHT, P, COLLINS, AG; University of Kansas	Evolution of box jellyfishes (Cnidaria: Cubozoa)
11:00 AM DIZ	97.4	PLACHETZKI, DP, FONG, CR, OAKLEY, TH; University of California, Davis, University of California, Santa Barbara	On the origin and evolution of animal vision: insights from an eyeless cnidarian
11:20 AM	97.5	EVANS, NM, CARTWRIGHT, P; University of Kansas	Phylogenetic placement of myxozoa: an exploration of conflict between phylogenomic and rDNA molecular data

8:00 AM-Noon
613/614

Session 98: Thermal Biology and Muscle Physiology and Biochemistry

Chairs: Kristin Hardy (8-10 AM), Inna Sokolova (10 AM-Noon)

8:00 AM DCB	98.1	DEBAN, SM, LAPPIN, AK; University of South Florida, California State Polytechnic University, Pomona	Temperature effects on the motor control of ballistic prey capture in toads
8:20 AM DCPB	98.2	OLSON, JM, CARAGIULO, A, CZERWINSKI SHIELDS, BV, SOUCIER, D; Villanova University, Fordham University	Prolonged cold exposure in young quail: avUCP, ultrastructure and catabolic capacities in skeletal muscle
8:40 AM DCPB	98.3	HARDY, KM, LEMA, SC, KINSEY, ST; University of North Carolina Wilmington	The metabolic demands of swimming behavior influence the evolution of skeletal muscle fiber design in the brachyuran crab family Portunidae
9:00 AM	98.4	SOUTHWOOD, AL, HARDEN, LA; University of North Carolina Wilmington	Temperature effects on metabolic enzyme activity in diamondback terrapins (*Malaclemys terrapin*)
9:20 AM	98.5	BOLINGER, MT, RODNICK, KJ; Idaho State University	Glucose inhibition and temperature sensitivity of glycogen phosphorylase in rainbow trout
9:40 AM	COFFEE BREAK		
10:00 AM DCPB	98.6	HUEY, RB, DEUTSCH, CA, TEWKSBURY, JJ, VITT, LJ, HERTZ, PE, ALVAREZ PEREZ, HJ, GARLAND, TJ,JR, LISTER, BC, GORMAN, GC; University of Washington, Seattle, University of California, Los Angeles, University of Oklahoma, Norman, Barnard College, University of Puerto Rico, Rio Piedras, University of California, Riverside, Rensselaer Polytechnic Institute, retired	Why tropical forest lizards can't take the heat

10:20 AM DCPB	98.7	LEE, AH, PADIAN, K, TAYLOR, MT, WEDEL, MJ, IRMIS, RB, WERNING, S; Ohio University, University of California, Berkeley, University College London, Western University of Health Science, University of Utah	The universal temperature dependence model fails to predict body temperatures of mammals and dinosaurs
10:40 AM DCPB	98.8	DUNKIN, R, WILLIAMS, T, WILSON, D, JOHNSON, S, JOHNSON, K; University of California, Santa Cruz, Wildlife Safari, Six Flags, Vallejo,	Have trunk will travel. Are elephants obligate evaporative coolers?
11:00 AM	98.9	ROWE, MF, BAKKEN, GS, RATLIFF, J, LANGMAN, V; Indiana State University, Terre Haute, Audubon Zoo, New Orleans, US Department of Agriculture	Thermodynamics of Asian elephant (Elephas maximus) locomotion: the functional significance of heat storage and pinna vasodilatation
11:20 AM DEE	98.10	POTTER, KA, DAVIDOWITZ, G, WOODS, HA; University of Arizona, Tucson, University of Montana, Missoula	Fried eggs: long-term consequences of egg temperature for insects
11:40 AM	98.11	SHELDON, KS, TEWKSBURY, JJ; University of Washington, Seattle	If you can't stand the heat: how CTmax drives thermal breadth in beetles across latitude

8:20-10:00 AM
615/616

Session 99: Evo-Devo - Gene Regulation and Patterning

Co-Chairs: Kathryn Kavanagh and Gunter Wagner

8:20 AM DEDB	99.1	RIVERA, A, CIENIEWICZ, B, DANKA, E, WINTERS, I, RUED, A, WARNER, L, GENTILE, L, HILL, M, HILL, A; University of Richmond	Evolution of gene regulatory networks: pax/six in *Ephydatia muelleri* (Porifera; Demospongiae)
8:40 AM DSEB	99.2	GREENFEST-ALLEN, E, KINGSLEY, P, PALIS, J, STOECKERT, CJ; University of Pennsylvania, Philadelphia, University of Rochester, Rochester	Investigating conservation and differentiation in related developmental gene regulatory networks
9:00 AM DEDB	99.3	KAVANAGH, KD, TABIN, CJ; University of Massachusetts Dartmouth, Harvard Medical School	A developmental model for the evolution of size proportions in fingers and toes
9:20 AM DEDB	99.4	WAGNER, GP, YOUNG-BRIM, R; Yale University	Towards the mechanistic basis of digit identity frame shift in birds
9:40 AM	99.5	FOWLER, DA, DE BAKKER, MAG, RICHARDSON, MK; Institute of Biology Leiden (IBL), Leiden University	Posterior HoxA and HoxD genes in avian limb development

10:00 AM COFFEE BREAK

10:20 AM-Noon
615/616

Session 100: Evo-Devo - Modularity and Integration

Chair: Scott Lidgard

10:20 AM DEDB	100.1	CARTER, MC, LIDGARD, S*, GORDON, DP, GARDNER, JPA; Victoria University of Wellington, New Zealand, Field Museum, Chicago, National Institute of Water and Atmospheric Research, New Zealand	Darwin's avicularia: how an early sense of modularity links vestigiality, functional innovation and the evolution of polymorphism

10:40 AM DEDB	100.2	WEBSTER, M, ZELDITCH, ML; University Chicago, University Michigan	Evolutionary lability of integration in Cambrian ptychoparioid trilobites
11:00 AM DEDB	100.3	SUZUKI, T, KURATANI, S; RIKEN CDB, Japan	Evolutionary reorganization of moth wing patterns towards a “dead leaf” resemblance
11:20 AM DEDB	100.4	ZELDITCH, ML, SWIDERSKI, DL; University of Michigan, Ann Arbor	Integration of squirrel mandibles
11:40 AM DEDB	100.5	JAMNICZKY, HA, BOUGHNER, JC, GONZALEZ, PN, PARSONS, TE, POWELL, CD, ROLIAN, C, SCHMIDT, EJ, BOOKSTEIN, FL, HALLGRIMSSON, B; University of Calgary, Canada, University Nacional de La Plata, Argentina, University of Vienna, Austria, University of Washington	Mapping the epigenetic landscape: rediscovering waddington in the post-genomic age

8:20 AM-Noon
617

Session 101: Neural Control

Co-Chairs: Jennifer Carr and Christopher Anderson

8:20 AM DNB	101.2	ELLIS, IE, KEMPF, SC; Auburn University	Immunohistochemical and histological analyses indicating the presence of SCP-like neuropeptides in larval *Crassostrea virginica* (Bivalvia)
8:40 AM DCB	101.3	WALDROP, LD; University of California, Berkeley	Discrete odor sampling of the Oregon shore crab Hemigrapsus oregonensis during ontogeny
9:00 AM DCB	101.4	MONGEAU, J-M, JAYARAM, K, LEE, J, FULL, RJ, COWAN, N; University of California, Berkeley, Johns Hopkins University	Mechanical feedback of antenna-substrate interaction simplifies cockroach antennal navigation
9:20 AM DVM	101.5	CARR, JA, BIEWENER, AA; Harvard University	Self-reinnervation of the lateral gastrocnemius in guineafowl
9:40 AM	COFFEE BREAK		
10:00 AM DCB	101.6	ANDERSON, CV, DEBAN, SM; University of South Florida	Effects of temperature on the motor control of chameleon feeding
10:20 AM DVM	101.7	GERMAN, RZ, CROMPTON, AW, KONOW, N, THEXTON, AJ; Johns Hopkins University, Harvard University, Brown University, King’s College, London	Sensory stimulus and reflex response in mammalian swallowing
10:40 AM DVM	101.8	YOUNG, BA; University Massachusetts Lowell	Neural control of the snake leg
11:00 AM DCB	101.9	ROTH, ES, ZHUANG, K, STAMPER, SA, FORTUNE, ES, COWAN, NJ; Johns Hopkins University, Baltimore, MD	Linear dynamical models for refuge tracking behaviors of the weakly electric knifefish *Eigenmannia virescens*
11:20 AM	101.10	MITCHELL, TRT; Johns Hopkins University	The role of binocular vision in mammalian locomotion
11:40 AM	101.11	MORE, HL, HUTCHINSON, JR, COLLINS, DF, WEBER, DJ, AUNG, SKH, CHEN, J, BEG, MF, DONELAN, JM; Simon Fraser University, Canada, The Royal Veterinary College, UK, University of Alberta, Canada, University of Pittsburgh	Tradeoffs in responsiveness and resolution in the peripheral nervous system

8:00-10:00 AM
618

Session 102: Terrestrial Locomotion - High Speed Locomotion: Faster than a Speeding Bullet

Co-Chairs: Joshua Proctor and Frank Fish

8:00 AM DCB	102.1	HUDSON, PE, CORR, SA, WILSON, AM; Royal Veterinary College	Galloping at high speed: insights from cheetahs and racing greyhounds
8:20 AM DCB	102.2	JAYARAM, K, MONGEAU, JM, MCRAE, B, FULL, RJ; University of California, Berkeley	High-speed horizontal to vertical transitions in running cockroaches reveals a principle of robustness
8:40 AM DCB	102.3	WILSON, RS, SMITH, MD; University of Queensland, Australia	What makes a great footballer? Trade-offs between athleticism and skill in human performance
9:00 AM	102.4	PROCTOR, JL, HOLMES, P; Princeton University	Chasing the cockroach: how reflexes enhance running
9:20 AM DCB	102.5	GUTMANN, AK, BERTRAM, JEA*; University of Calgary	Explaining the $1/t_C$ relation to locomotion cost in terms of constrained optimization *or* how metabolic cost rate can appear to both increase and decrease with time of force application
9:40 AM DEE	102.6	DAVID, G, ORTIZ-BARRIENTOS, D, SMITH, M, WILSON, R; University of Queensland, Brisbane	I can score more than you! Investigating the importance of skill on whole organism performance in a complex environment
10:00 AM	COFFEE BREAK		

10:20 AM-Noon
618

Session 103: Terrestrial Locomotion - Stability

Chair: David Lee

10:20 AM DCB	103.1	QIAO, M, JINDRICH, DL*; Arizona State University	How do humans stabilize running?
10:40 AM	103.2	MOLL, K, FEDERLE, W; Cambridge University, UK	Biomechanical problems of load transport: how grass-cutting ants avoid falling over
11:00 AM DCB	103.4	MORENO, CA, BIEWENER, AA; Harvard University	A static model predicts the relationship between force and lean angle during dynamic turning in goats
11:20 AM DCB	103.5	LEE, DV; University of Nevada Las Vegas	Effects of CoM position on forelimb and hindlimb mechanics during incline and decline trotting
11:40 AM DCB	103.6	MOORE, T, BURDEN, S, REVZEN, S, FULL, RJ; University of California, Berkeley	Adding inertia and mass to test stability predictions in rapid running insects

8:00-9:40 AM
619

Session 104: Respiratory Physiology

Chair: Charles Booth

8:00 AM DCPB	104.1	NYACK, AC, HENRY, RP, SEIBEL, BA; University of Rhode Island, Auburn University	Carbonic anhydrase activity in gill and mantle tissues from *Doryteuthis pealeii*
8:20 AM DCPB	104.2	WATERS, JS, HARRISON, JF; Arizona State University	Geometric characterization and phenotypic plasticity in the tracheal networks supplying insect flight muscle

8:40 AM DCPB	104.3	O'CONNOR, MP, SUSS, J, SOTHERLAND, PR, SPOTILA, JR; Drexel University, Kalamazoo College	Diffusive and conductive effects of sand on gas exchange in sea turtle nests
9:00 AM DCPB	104.4	JOHNSON, NG, BURNETT, LE, BURNETT, KG; College of Charleston	Characterization of the bacterial properties that impair respiration in the atlantic blue crab, *Callinectes sapidus*
9:20 AM DCPB	104.5	SOKOLOVA, IM, IVANINA, A, LIEB, N, KUROCHKIN, I, BENIASH, E; University of North Carolina, Charlotte, University of Pittsburgh	Elevated atmospheric carbon dioxide levels affect metabolism and shell formation in oysters *Crassostrea virginica* (Gmelin)

9:40 AM COFFEE BREAK

10:00 AM-Noon
619

Session 105: Cardiovascular Physiology

Chair: Shane Kanatous

10:00 AM DCPB	105.1	DE MIRANDA JR., MA, CABLE, AE, KANATOUS, SB; Colorado State University	What does it take to exercise while holding your breath? The underlying secrets of myoglobin regulation in seal muscle cells
10:20 AM	105.2	SHERO, MR, LESTYK, KC, ANDREWS, RD, BURNS, JM; St. Mary's College of Maryland, University of Alaska, Anchorage, Alaska SeaLife Center	Development of oxygen stores and muscle in Northern fur seals (*Callorhinus ursinus*): limits on juvenile foraging ability?
10:40 AM DCPB	105.3	EME, J, HICKS, J, CROSSLEY II, DA*; University of California, Irvine, University of North Dakota	Cardiovascular plasticity during development in the American alligator (*Alligator mississippiensis*)
11:00 AM DCPB	105.4	TATE, K, SWART, J, EME, J, CONLON, JM, CROSSLEY II, DA; University of North Dakota, University of California, Irvine, United Arab Emirates University	Effects of dehydration on cardiovascular development in *Alligator mississippiensis*
11:20 AM DCPB	105.5	NOREN, SR, WILLIAMS, TM, KENDALL, T, CUCCURULLO, V; University of California, Santa Cruz, The Dolphin Experience, Freeport, Bahamas	Bradycardia redefined: a variable cardiovascular dive response in dolphins
11:40 AM DCPB	105.6	WILLIAMS, TM, NOREN, SR, BERRY, PS; University of California, Santa Cruz, Disney Animal Programs-The Seas, Orlando, FL	"Bending" the rules: the role of cardiovascular exercise responses in protecting the brain of diving marine mammals

KEYWORD INDEX

3D-visualisation 4.5, 34.5, P3.130
4-Nonylphenol 1.11
454 transcriptome . . .22.5, 29.4
acceleration .42.6, 70.1, P1.169
acclimation .85.2, 98.2, P3.118, P3.2
acidification .85.5, 104.5, S3.11
acoustics . .21.1, 45.1, P1.102, P2.31, P3.142, P3.77
activity 12.10
acute phase response 72.1
acute stress .38.10, 38.4, 38.7, 38.8, 87.6, P1.108, P2.10, P3.124, P3.151
adaptation 14.5, 22.5, 40.3, 63.10, 63.4, 63.5, 63.9, 85.2, 85.3, 86.1, 86.3, 88.2, 95.1, 103.2, P2.107, P2.110, P2.66, P3.47, P3.69, S3.6, S4.6, S6.7
adaptive radiation . . .9.6, 86.5, P1.79, P3.40, S8.3
adhesion .5.3, 16.2, 88.1, 88.2, 88.3, 88.4, 88.5, P1.160, P1.34
aerobic capacity . . .26.2, P2.78
aerodynamics .40.6, 42.2, 42.4, 55.1, 70.3, 70.5, 80.4, 80.5, 89.5, P2.158, P3.80
African Buffalo 72.9
aggregation 18.5
aggression . .12.10, 46.2, 47.1, 47.3, 47.4, 47.6, 61.3, P1.1, P1.2, P1.3
aging . . .51.3, 51.5, 51.6, 59.8, 60.5, P1.16, P1.18, P1.19, S2.2, S2.5, S2.7, S2.9
algae 9.3, 24.6, S4.5, S7.2
Alligators P2.14
allometry 60.2, 70.2, 84.3, 88.4, 90.10, 96.3, P2.118, S2.8, S5.8
amoebae 74.5
amphibian 2.1, 38.1, 38.5, 49.4, 53.5, 59.6, 67.5, 72.10, 74.4, P2.10, P2.154, P3.125, P3.16, P3.74, P3.94, P3.95
amphibian declines 72.10, 73.3, 74.2, P2.146, P2.41
amphidromous 24.2
AMPK 1.1, P2.93
Anchialine Cave 9.1
androgen 56.2, P2.2, P3.90
androgenic gland 56.3
annelids 29.4, 31.10, 91.1, 91.6, P1.24, P2.109, P2.90, P3.50, S5.6, S9.1, S9.5, S9.8
annual cycle 64.1, 76.3, P2.130
Anolis . . .12.3, 43.6, 61.2, 73.4, 88.3, P1.160, P1.3, P2.125
Antarctica . . .44.2, 92.1, P2.18, P2.19, P2.20, S7.1, S7.10, S7.2, S7.3, S7.4, S7.6, S7.7, S7.8, S7.9
antenna 3.2, 55.2
anthropogenic drivers . . .67.11
anthropogenic stressors . .67.5, 73.3, 74.6, P1.110, P2.42, P2.55
anurans . .3.5, 15.9, 34.6, 35.2, 35.3, 98.1, P1.154, P2.145, P2.155, P3.95
apoptosis P1.73, P2.26
appetite 38.8, 87.11, P1.85
aquaculture P1.20, P1.56
Aquatic Macroinvert P3.35
arachnids . . .73.2, 84.5, P3.19, P3.9
arboreal 5.4, 75.5, P1.159
archosaur .99.5, P2.150, P2.78, P3.77
area-restricted search 92.5
art 35.1
arthropods P1.81
asexual 29.2, 78.6
asexual reproduction 29.3, P1.28
Assessment P2.57
assimilation P3.140
asymmetric cell division .15.10, 91.4, P3.48
asymmetry . . .66.4, 84.1, S9.10
atmospheric modeling S6.8
atresia 56.1
bacteria P3.3, P3.96, S3.11
baleen 65.5
barbels 65.3
bats 9.2, 38.3, 42.6, 51.1, 58.3, 71.1, 71.2, 71.3, 71.4, 71.5, 71.6, 90.7, P1.102, P1.120, P2.160, P3.12, P3.142, P3.67A, S6.7
behavior 12.11, 15.2, 21.4, 25.6, 30.2, 30.3, 38.9, 47.1, 47.4, 47.5, 48.5, 48.6, 51.6, 67.6, 72.7, 73.2, 73.4, 82.5, 93.1, 93.4, P1.100, P1.166, P1.3, P2.126, P2.129, P2.140, P2.73, P3.102, P3.111, P3.22, P3.99, S6.1, S6.2
behavioral ecology . .19.4, 44.1, 47.2, 47.6, 61.1, 82.1, 92.4, 92.5, P2.133, P2.135, P2.3, P2.76, P3.110, P3.23, P3.25, P3.27, P3.7, S10.8, S6.6
benthic 28.2, 62.8, P2.71, S10.4, S7.3
binocular 101.10
bioadvection S10.4
bioballistics P1.144
biodiversity .48.2, 67.11, P3.34, P3.36, P3.37, P3.42, S10.2, S10.8, S10.9, S3.1, S7.7
biogeography .22.3, 35.2, 35.5, 36.1, 36.3, 37.4, 37.5, 37.9, 48.1, 48.2, 64.8, 74.5, 85.4, P2.100, P2.104, P2.116, P2.147, P3.36, S7.10
bioinformatics P2.18, P3.74
bioluminescence 1.6, 28.2, 92.3
biomarkers P2.50
biomaterial P1.136, P1.149

biomechanics .11.1, 11.2, 11.3, 13.4, 14.4, 14.6, 25.1, 25.2, 32.10, 32.3, 42.1, 42.3, 49.1, 49.3, 49.4, 50.2, 50.3, 50.4, 55.1, 55.3, 58.1, 58.4, 70.5, 75.2, 75.3, 75.6, 84.4, 88.6, 89.1, 90.1, 90.2, 90.3, 90.8, 96.2, 101.3, 101.4, 102.1, 102.2, 102.4, 103.1, 103.2, 103.6, P1.136, P1.144, P1.145, P1.146, P1.149, P1.152, P1.156, P1.158, P1.161, P1.164, P1.168, P1.170, P1.172, P1.173, P2.157, P2.159, P2.163, P2.166, P2.171, P2.173, P2.63, P3.112, S11.1, S11.11, S11.8, S11.9, S4.1, S4.2, S4.3, S4.4, S4.6, S4.7, S4.9, S6.3
biomechanics of development P1.32, P3.80
biomimetics .14.1, 45.1, P1.142
biomineralization 4.2, 104.5
birds 10.5, 18.3, 30.2, 40.5, 44.4, 44.5, 46.1, 47.5, 56.6, 58.5, 61.5, 64.2, 70.2, 72.1, 72.4, 72.6, 72.7, 81.5, 95.3, P1.103, P1.119, P1.147, P1.150, P1.165, P1.91, P2.133, P2.134, P2.135, P2.30, P2.35, P2.4, P2.43, P2.68, P2.79, P2.94, P2.96, P3.106, P3.85, P3.93, S6.10, S6.5, S6.6, S6.8, S6.9
bite force . . .90.10, 90.11, 90.7
bivalves 10.2, 74.6, P1.45, P1.5, P2.11, P2.89, P2.95, P3.115, P3.17, P3.54
bleaching 77.6
blood chemistry P1.111, P1.114, P2.149
blood flow P2.167
blue crab 45.8, 82.2, 93.6, P1.106, P1.44
body condition .36.3, 41.3, 67.3
body plan S11.5
body shape S11.6
body size 24.5, 60.6, 77.1, P1.147, P3.149, P3.28, S7.6
bone 12.1, 33.1, 39.4, 53.4, 90.3, P1.139, P1.147, P1.150, P1.164, P1.62, P3.82
Bopyridae 69.5
brachiopod .59.2, 91.5, P2.122, S9.9
brain . .17.5, 32.2, 91.1, 105.6, P1.103, P2.16, P2.92, P3.1, P3.106, S1.8
branchial arches P1.71
branchiopod P3.86
bryophyte P3.37
bryozoan 62.1, 62.8, 100.1, P1.4
bumblebees P1.96
buoyancy 89.4
burrowing 78.2
cadherins 4.5, P1.34
calcification 4.2
calcium . . .15.11, P1.39, P2.85
calcium imaging P3.107
calsequestrin P2.142
canids 90.6
cannibalism 82.3, P3.19
carbonic anhydrase 104.1
cardiac 78.3, P2.27, P2.28, P2.77, P2.78
cardiovascular . . .105.3, 105.4, 105.5, 105.6, P1.11, P1.27, P2.79, P3.132, P3.51, P3.66
care 83.5
Carnivora . .90.5, P2.87, P3.34
carotenoids 72.3
carry-over effect . . .S3.8, S6.10
cartilage P1.63
catfish 65.3
cave 95.1
cDNA library P1.74
cell biology P1.11, P1.30, P2.57, S9.11
cell cycle P1.43
cell lineage S9.5
cell motility 24.6
cells 77.4
cephalochordate 7.1, 54.5
Cephalopod P2.117
cephalopods .91.8, 94.4, P3.51
cetaceans 40.3, 49.2, 65.5, P2.165, P3.131, P3.133
Chamaeleonidae 101.6, P3.146
character evolution .32.7, 65.4, P3.43
chemical defenses . . .9.5, 77.4, 93.6, P2.74
chemical ecology . . .59.3, 73.2, 73.5, 77.2, 77.3, 93.5, P1.55, P2.20, S7.4
chemoreception . .2.2, 7.1, 9.5, 45.8, 45.9, 77.1, P3.24
chemosensation P1.100
chitin 17.1
chondrichthyan 32.1
chordates 32.2, S1.1, S1.2, S1.3, S1.6
chromosomal inversion . . .P1.9
chromosome analysis . .P1.77, P3.86
chytrid P2.39
cichlid 9.6, 46.3, 86.5, 87.9, P1.79, P2.69, P3.46
cidaroid 53.1
ciliary swimming S3.5
circadian 66.2, P3.122
circatidal rhythm 45.2
classification S8.1
climate change .1.3, 24.4, 36.1, 36.2, 36.5, 36.6, 63.10, 64.3, 64.4, 79.1, 83.2, 85.5, 86.2, 98.6, P2.114, P2.131, P2.38, P2.66, S7.1, S7.9
cnidarians 16.2, 26.5, 47.3, 66.2, 66.3, 79.6, 83.1, 97.1, 97.2, 97.3, 97.4, 97.5, P1.26, P1.40, P2.99, P3.38, P3.39, P3.41, P3.45, S3.11, S5.10, S8.1, S8.10, S8.11, S8.2, S8.4, S8.7, S8.9
co-infection P2.75
coevolution P2.110
cold acclimation .P2.143, P2.9, P3.57

Cold tolerance 1.4, 101.6, P2.144
colonization P1.47
color . .7.3, 95.3, P2.103, P2.5
communication .3.5, 12.3, 19.6, 21.1, 21.3, 21.4, 21.5, 73.1, 94.2, P2.2, P2.4, P2.5, P3.8
communication skills P2.58
community ecology . . .9.1, 9.3, 9.6, 36.5, 40.1, P1.47, P1.49, S10.4, S10.5
community outreach P2.60
comparative embryology .99.5, P1.28, P1.63, P3.49, S9.5, S9.6
comparative method .8.4, 52.4, 94.1, P3.6
comparative physiology . . .1.5, 26.1, 74.3, 105.6, P2.128, P2.135, P2.148
competition . .40.1, P3.1, P3.13
complement system 72.8
concept mapping P2.22
condition dependence . . .77.5, 81.1
Cone Snail 78.1
Connectivity P2.33
conservation . . .9.4, 23.2, 35.3, 37.6, 37.8, 38.2, 41.5, 67.10, 67.8, 67.9, P2.41, S6.11
Conserved Regulatory Elements P1.13
constraints 100.2, P3.73
convergence 45.4, 95.5
coral reefs 13.3, 22.1, 39.1, 62.10, 62.5, P1.40, S8.5
Coralliidae P3.44
corals 4.2, 22.2, 22.4, 22.6, P1.57, S8.6
corticosteriods 38.7, 56.2, 59.1, BERN.1, ...P3.126
corticosteroid binding globulin . 38.4
corticosterone 30.4, 36.3, 38.10, 38.1, 38.2, 38.4, 59.10, 59.4, P1.16, P2.46, P3.121, P3.124, P3.127, P3.92, S6.2
courtship P2.130
CPT 44.4
crab .15.1, 61.1, 66.4, P2.140, P2.3, P2.5, P3.113, P3.60
cranial kinesis P3.141
craniofacial 50.1, P1.138, P1.69
crayfish 37.7, 95.1, P2.85
crocodilian 12.1, 90.9
crustacean hormones 15.4, 56.3, P1.125, P2.13, P3.91
crustaceans 1.10, 1.7, 9.1, 13.2, 18.1, 30.5, 48.1, 84.1, 98.3, P1.122, P1.124, P1.136, P1.141, P1.27, P1.39, P1.44, P1.49, P2.111, P2.82, P2.86, P3.100, P3.36
crypsis 100.3, P3.151
ctenophores 68.1, P1.76, P2.29, P2.48
cues P3.110
curriculum reform 79.2
cuticle 5.5, P2.86
deep-sea 7.3, 28.2, 53.1, P3.43, S8.4
Defensive tactics . . .84.5, 93.4
demography 24.4, P2.113
development . .5.5, 15.10, 15.4, 38.6, 48.4, 53.3, 54.3, 57.2, 57.3, 63.3, 65.5, 66.3, 91.11, 91.2, 99.2, 101.2, 105.3, BERN.1, P1.118, P1.127, P1.25, P1.26, P1.35, P1.36, P1.38, P1.4, P1.42, P1.62, P1.66, P1.73, P1.84, P2.24, P2.49, P2.52, P2.6, P2.80, P2.83, P3.2, P3.63, S1.5, S1.8, S11.1, S3.9, S8.7, S9.1, S9.11, S9.2, S9.8
developmental bias 99.3
Diadema antillarum 62.10
Diapause . . .23.1, 68.2, P1.42, P1.64
diel-distribution P2.48
diet 21.3, 76.5, P1.91, P2.116, P3.24
diffusion 98.3, 104.3
digestion 81.3, 81.4, 81.5, P1.87, P1.90, P1.93, P3.138, P3.140
digestive enzymes 5.6
dimorphism .60.3, 62.6, P2.154, P3.136
direct development 53.3
discontinuous gas exchange cycle 26.1
disease 74.2, 74.6, P2.39, P2.41, P3.115, P3.120
disease resistance 63.2
dispersal 48.1, 62.3, 62.6, 64.5, 64.8, P3.20, S3.9
divergence time S3.10
diversity 35.4, 40.3, 95.5, S10.3
diving 27.2, 105.2, P2.165
division of labor 47.3
DNA barcodes 52.1, 94.6, P3.30
docility 12.10
dopamine P2.89, P2.91, P2.94, P2.95
doubly-labeled water 41.2
dragonfly 52.5, 80.2, 80.3
Drosophila . . .55.5, 85.4, P3.11
Drosophila melanogaster .10.3, P1.167, P3.2
durophagy 32.1
ecdysteroids 15.1, P1.129, P1.135, P1.39, P2.13, P2.17
Echinoderm . . .4.4, 37.2, 37.3, P3.129, S5.5
echinoderms .31.7, P2.26, S5.3
echinoid .53.1, P2.104, P2.108, P2.114
ecological immunology . .38.10, 68.3, 68.4, 72.2, 72.3, P2.39, P3.98
ecological physiology .9.2, 19.1, 19.5, 28.5, 36.4, 56.5, 79.1, 79.5, 81.4, P1.75A, P2.132, P2.44
ecological principles S10.1
ecological release 63.4
ecological speciation 47.2

ecology 67.10, 67.11, 77.5, 92.2, 102.6, P2.132, P2.59, S10.1, S10.3, S6.5, S7.3, S8.8
ecomorphology 32.4, 33.5, 40.2, 88.5, P1.166, P3.143
ecosystem S10.11, S7.1
ecosystem engineer P1.5, P2.56, S10.2, S10.5, S10.6
education 79.2, 79.3, 79.4, 79.5, 79.6, P2.57, P2.58, P2.59, P2.60, P2.61
eggs . . .4.1, 31.9, 72.2, 98.10, P1.121, P1.140, P1.31, P1.8, P3.121, P3.87
elasmobranchs .4.1, 14.2, 14.3, 57.1, 57.3, P1.151, P1.31, P2.169, P3.140
electical stimulation 2.3
electromyography 3.3, 3.6, P1.153, P1.154, P1.157, P1.171, P3.137, P3.147, P3.150
elephant 11.5, 98.9
ELISA 17.4
elongation 16.1, S11.12
embiotocid 27.4
embryogenesis . . .P1.15, S9.3
embryos . .105.4, P1.52, P2.79
endangered 67.10, 67.8
endocannabinoids .2.4, P2.124
endocrine-disruptor .17.2, 59.1, 74.1, 87.2, 87.3, P1.121, P2.52, P2.53
endocrinology .15.4, 15.9, 59.2, 59.4, 73.5, 87.3, 87.9, P1.91, P2.119, P2.120, P3.89, S1.6
endoderm S9.9
endomesoderm S9.7
endothermy 12.2
energetic costs 12.3, 41.5, 58.3, 69.1, 75.6, P2.154, P3.10, P3.83
energetics 10.5, 31.9, 44.1, 63.1, 69.2, 80.4, 81.6, P1.22, P1.6, P2.42, P3.11, P3.84
energy balance . .76.3, P2.119, P2.128
enviroment P1.54, P1.70, P2.140, P2.60
environmental biology 27.1, 79.1, P1.77
Environmental physiology .12.6, S7.5
enzymes .1.5, 81.3, 81.5, 98.4, 104.1, P2.129
Epigenetics .100.5, P3.38, S7.5
escape response .13.2, P2.163, P3.26
estrogen 87.3, P3.90
Ethanol P1.108
eusociality 3.1
evaporative water loss 98.8
evo-devo 29.3, 29.6, 53.6, 54.1, 54.2, 65.3, 66.1, 66.5, 91.2, 91.3, 91.6, 91.8, 99.1, 99.3, 100.4, 100.5, P1.103, P1.11, P1.12, P1.13, P1.133, P1.15, P1.66, P1.67, P1.68, P1.69, P1.76, P3.46, P3.50, P3.51, S1.1, S1.4, S1.5, S3.4, S5.10, S5.6, S9.2, S9.7
evolution 12.2, 39.2, 48.6, 49.2, 52.5, 54.4, 66.6, 68.1, 79.4, 94.4, 100.1, 100.2, P1.78, P1.83, P2.111, P2.117, P3.14, P3.15, P3.81, S1.11, S11.3, S4.1, S8.8
evolutionary model .12.8, 64.5, 86.6, P3.109
evolutionary radiation 8.5, 94.5, P2.69, S4.9, S8.4
evolvability 37.10
exercise physiology .2.4, 12.11, 50.5, 105.1, 105.5, P3.65, S6.4
extended incubation P1.41, P3.128, P3.148
eyes 40.2, 45.4, 57.1, 91.11, P1.25, P1.26, P1.68
familial conflict S3.3
fasting 44.3, 87.11, P1.86, P2.152, P2.93
fat 51.1
fatty acids . . .44.4, 51.4, P1.94, S2.4
feathers 89.5
fecundity 32.8, P1.58
feeding .28.1, 31.3, 32.1, 32.11, 32.2, 32.4, 32.5, 32.6, 32.8, 49.3, 49.4, 50.2, 50.3, 77.3, 83.1, 83.3, 90.1, 90.10, 90.2, 90.3, 90.4, 90.8, 101.7, P1.143, P1.145, P1.146, P1.153, P1.20, P2.128, P2.162, P2.173, P3.143, P3.146, P3.147, P3.150, P3.69, P3.76
feeding/oviposition behavior 52.5, 86.2
female aggression . .46.4, 59.11
female ornamentation 61.4, P1.2
fertilization 31.6, 31.7, 31.8
fiddler crabs 19.6, 60.2
field behavior 19.6
fin . . .14.3, P2.169, P2.171, P3.81
finite element analysis 8.1, 33.2, 33.3, 90.9, P1.138, P3.131, P3.78, P3.79
fish, fishes .1.11, 6.3, 7.2, 11.4, 15.5, 21.1, 39.1, 50.3, 52.1, 59.9, 63.10, 63.6, 65.1, 74.1, 82.4, 87.4, 88.4, 89.3, 93.3, 93.6, 96.2, 98.5, P1.130, P1.131, P1.87, P2.129, P2.143, P2.170, P2.19, P2.81, P2.9, P3.128, P3.148, P3.57, P3.70, P3.73, P3.81, S11.10, S11.12, S11.4, S11.9, S7.8
flatworms 78.6, 91.11, 91.3, P1.25, P3.33
flexural stiffness P3.135
flight 3.3, 40.6, 42.2, 42.4, 42.6, 55.2, 55.3, 70.1, 70.4, 71.4, 71.5, 71.6, 80.1, 80.2, 80.6, 86.4, 89.5, P1.150, P2.158, P2.159, P2.160, P2.161, P3.80, S6.4

flight control 3.2, 3.4, 42.3, 42.5, 55.6, 71.1, 71.2
fluid flow 42.5, 55.5, 83.3, 89.3, P2.173, S11.7, S3.7
fluid-structure interaction .14.1, 80.1, 83.2, 89.3
fluorescence 92.3
flying . . .42.1, 55.4, 55.5, 58.3, P2.157
FMRFamide P2.29, P2.88
food choice 12.11
food intake 87.6
food processing . .63.1, P3.138, P3.23
Food-web 9.4, 24.1
foot 11.5
foraging .19.2, 92.1, 92.5, 94.3, P1.48, P3.21, P3.22
foraging ecology . . .24.1, 76.2, P2.38, S7.10
forelimb 25.1
fossil 40.5
frameshifting P1.80
freeze avoidance P2.21
freeze tolerance P2.147
frogs 17.3, 17.4, 43.1, 43.3, 43.4, 43.5, 73.3, P1.116, P2.145, P2.147
fuelling P2.35
functional morphology 8.4, 11.3, 11.5, 14.6, 25.2, 32.10, 32.7, 32.9, 34.3, 43.3, 75.4, 84.2, 86.4, 90.7, 96.2, P1.160, P1.168, P1.169, P1.172, P2.162, P2.172, P3.131, P3.134, P3.136, P3.139, S11.9, S4.2
Gait transition 50.5
gas exchange 19.5, P1.115
Gasterosteus aculeatus . .66.5, S11.2
gastropods 5.3, 23.3, 24.5, 31.2, 31.3, 31.5, 45.5, 48.4, 62.4, 96.1, P1.72, P2.101, P2.103, P3.138, P3.139, P3.76, S9.2
gastrulation P1.32
gecko . . .78.4, 78.5, 88.1, 88.3
gene duplication . . .7.5, P1.79, S1.10, S1.11
gene expression .1.10, 7.2, 7.5, 22.4, 22.6, 26.3, 56.1, 65.1, 85.4, 91.5, P1.106, P1.130, P1.42, P1.57, P1.61, P1.93, P3.11, P3.116, P3.32, P3.64, S9.3
gene regulation 6.5, 15.11, 99.1, 99.2, P3.116, S1.7, S1.8
genetic architecture 37.11, 50.1, S11.2
genetic variation P2.112, P3.10, P3.32
genetics 37.11, 66.6, 93.1, P1.83, P1.84A, P2.107, P3.4, S11.1, S11.3
genome size 6.3
genomics 22.4, 28.5, 41.4, 54.1, 54.4, 68.1, 85.3, P1.53, P1.78, P1.81, S1.1, S1.10, S1.11, S1.4, S1.6, S1.9, S7.5, S8.10
geographic variation .37.1, 63.8
Geukensia P1.107, P3.118, P3.119
ghrelin 15.2, 15.7
gills 87.8, P3.53
glaciation P2.113
global warming 22.5, P3.63
glochidia 15.5
glucagon P2.152
Glucocorticoid Receptor (GR) 18.2, P3.117
Glucose P2.46, P3.127
Glutamate P1.167
glycogen 98.5
GnRH receptor P1.10
Gonadotropin-Releasing Hormone 59.7, 59.8, 76.6, 87.9, P1.10, P1.14, P2.98
gonads 87.1
Gonodotropin-inhibitory Hormone (GnIH) 18.2
grade 103.5
Granular 27.3
green crab P1.129
grooming 30.5
growth .4.3, 4.4, 5.6, 12.1, 38.2, 51.3, 81.6, 87.4, P1.128, P1.130, P2.77, P3.129, P3.71, P3.93
growth hormone .P1.113, P2.53
growth rate . . .12.8, 23.2, 27.1, 98.7, P1.56
guinea pig P1.37
gust response 55.6
gut P2.88, P2.90
habitat corridors . .P2.40, P3.39
habitat restoration 67.3
habitat selection P2.42
habitat structure . .25.6, P3.111, S10.1, S10.7, S10.8, S10.9
habitat use 8.3, 73.4
hagfish 65.2, P1.140
hair cells 57.4
haltere 3.4, P2.161
hammerhead 32.10, 57.1
hantavirus 47.1
hatching cues P1.41, P3.63
head-bobbing P1.165
headstands 61.3
hearing P3.103, P3.77
heat shock 26.3, P3.61
heat shock protein P1.82, P3.61
heavy metals .69.4, 74.4, P3.52
heliotropism S4.3
helminthes 52.3
hemichordates .29.6, 54.3, S1.5
hemocytes 69.4, 104.4, P3.139, P3.52, P3.60
herbivory P2.74
heritability 66.4, 85.5, 95.4, P3.6
hermaphroditism . .23.6, P2.50
Hexactinellida 6.1
hibernation 51.1, P2.148, P2.149, P2.151
hibernator 15.2, P2.93
hidden paralogy S1.10
High-speed video S4.8
histology 78.4, 78.5, P1.40, P3.130, P3.141
homology 99.4, P2.7
homology model P2.142
hopping P1.154

hormone receptors P1.128
hormone-binding proteins .15.3
hormone-sensitive lipase P1.86
hormones 17.3, 46.3, 56.6, 59.3, 59.5, 59.9, P1.122, P1.124, P1.131, P2.11, P2.123, P2.126, P2.127, P2.130, P2.82, S1.2
horseshoe crabs 60.4
house sparrow 5.6
Hovering flight 55.3
hox genes 91.7, 99.4, 99.5, P1.4, P1.60
human evolution 63.1
humans . . .30.2, 102.3, P2.110
humidity P1.54
Hummingbird 80.4, 94.3
hybrid sterility 52.2
hybridization 31.7, P2.138, P2.34, P2.69
hydrodynamics 13.3, 27.6, 49.1, 62.2, 83.4, 93.2, P2.164, P2.165, P3.17, S4.5
Hydroregulation P3.16
hydrostatic skeleton 89.1
hymenoptera 69.1
Hyperoxia 39.4
hypothalamic-pituitary axis 18.3, 30.4, 59.11, S1.9
hypoxia 1.10, 39.4, 95.4, P3.119, P3.60, S10.10
immune response . .12.4, 12.9, 38.3, 38.5, 72.4, 72.6, 72.7, 72.9, 76.1, 76.3, 104.4, P1.110, P3.94, P3.95, P3.97
immunocompetence 72.5, 72.9, 76.5, P2.70
immunohistochemistry 3.5, P2.15, P2.96
immunology .17.1, 72.10, 72.1, 76.4, P3.93, P3.96, P3.98
incubation P1.123, P2.70
Indirect effects S5.1
inducible defense . .63.3, P2.72
Inflammation P2.28, P3.94
injury P2.27, S5.1
insects1.4, 3.3, 18.4, 26.1, 28.3, 39.3, 42.1, 42.2, 42.3, 42.4, 58.1, 58.2, 63.2, 66.1, 70.3, 80.1, 80.5, 88.6, 89.2, 103.2, P1.28, P1.75, P1.75A, P2.157, P2.158, P2.74, P2.92
insulin 87.5, P2.14
Insulin Receptor 87.5
insulin-like peptides 15.11, 15.3, 15.6, 56.3, 76.6, 87.4
integration 96.3, P1.71
interosseus 75.1
interstitial 62.8
intertidal . . .P1.52, P1.54, S4.5
intervertebral joints 27.5
intestine . .P1.33, P1.87, P1.88, P1.89, P1.92, P3.12
introduced species 62.3, P2.43, S10.7
introgression 52.2, 94.2
invasion biology 69.1, 86.1, P1.45, P3.29, S10.5
Invasive species . . .10.2, 26.3, 36.5, 72.6, P1.45, P2.71, P3.29, P3.30, P3.41, P3.62, S10.7
Inverse Method 13.4
invertebrates 1.8, 4.4, 17.1, 23.3, 45.5, 77.3, 77.4, P2.117, P2.18, P3.59, P3.61, S10.11, S7.6
ion transport 87.8, S5.9
Isotopes 9.2
jaws 33.5, 96.3, P3.135, P3.69, P3.73
jellyfish 101.1, S10.10
jet propulsion 83.4
jumping . .25.1, 43.1, 43.2, 43.4
Kangaroo rat 30.3
kelp 9.3
Keystone Molecules 93.5
keystone species 9.5
kinematics . . .14.2, 32.11, 32.3, 32.5, 32.6, 49.3, 55.6, 71.4, 75.1, 90.1, 90.4, P1.163, P2.161, P3.150, S11.7
kisspeptin P3.88
kleptoplasty . . .5.2, 85.1, P3.18
krill 93.2
Kytorhynchidae P3.33
lamprey 54.1, 54.4, P1.10, P1.13, P1.14, S1.9
landing 70.1
larvae . . .31.9, 53.5, 62.5, 62.7, 101.2, S3.5, S3.6, S3.7
larval development 31.10, 53.2, 91.10, 91.3, 91.7, P1.23, P1.8, P2.25, P3.128, P3.130, P3.148, P3.76, S3.2, S3.8, S9.4
larval ecology .31.2, 48.5, 62.2, P1.51, P2.55
larval locomotion . . .27.1, S3.2
larval physiology P1.6
lateral line 27.6, 57.2, 57.3, 57.4, 57.5, 57.6, 93.3, P3.99
leafcutting bee P1.82
Learning 17.5, 82.1, P3.14, P3.15
Leech 45.6, P1.98, P3.101, S9.8
lepidopterans 3.2
leptin . . .15.7, P2.6, P2.7, P2.8, P2.9
Leptopelis 35.3
life history 12.6, 12.9, 23.4, 23.5, 24.6, 28.4, 37.2, 44.2, 53.6, 56.2, 60.5, 62.4, 68.2, 68.3, 68.4, 69.3, 81.1, 81.2, 85.3, 97.2, P1.19, P1.64, P2.70, P2.75, P3.5, S2.10, S2.3, S2.8, S3.10, S3.3, S3.8, S3.9
lifespan 51.4, 74.3, P1.18, P1.19, S2.1, S2.10, S2.3, S2.4, S2.5, S2.9
limbs 99.3, 99.4, 101.8, P1.162, P1.163
lipids 23.1, P1.119, P1.86, P1.94
lizards . . .3.6, 15.6, 19.1, 24.1, 24.4, 25.5, 28.4, 33.5, 37.9, 58.6, 63.4, 69.3, 75.2, 81.2, 92.2, 94.1, 98.6, P1.90, P2.141, P2.8, P3.13, P3.20, P3.25, P3.26

lobster 17.2, 48.5, P1.88, P1.92, P2.17
locomotion . . .3.6, 4.3, 5.1, 5.4, 8.3, 8.4, 11.2, 11.3, 11.4, 13.1, 13.2, 14.3, 20.4, 25.2, 25.3, 25.4, 25.5, 25.6, 27.3, 27.5, 34.2, 34.4, 40.4, 40.5, 43.3, 43.4, 43.5, 43.6, 45.7, 50.5, 57.6, 58.1, 58.2, 58.4, 58.5, 63.11, 69.2, 70.6, 75.1, 75.2, 75.4, 75.5, 75.6, 80.5, 83.4, 86.4, 88.2, 88.6, 89.1, 98.9, 101.10, 101.4, 101.5, 101.8, 101.9, 102.1, 102.2, 102.4, 102.5, 103.1, 103.4, 103.5, P1.139, P1.156, P1.159, P1.161, P1.162, P1.163, P1.164, P1.166, P1.167, P1.170, P1.171, P1.172, P1.173, P2.163, P2.164, P2.166, P2.169, P2.170, P2.171, P3.100, P3.105, P3.111, P3.144, P3.26, S11.10
Lophotrochozoa .P1.24, P1.84, S9.10, S9.3
lung 65.1, P1.37
MAAs 15.8
Macrobrachium 24.2, 30.5
macroecology P3.28
macroevolution 8.5, 39.1, 67.7, 97.4, S3.1, S5.5
magnetoreception P1.97, P2.30
malaria P2.141, P2.43
male-male contests .60.6, 63.8
mammals 21.4, 35.1, 60.3, 69.2, 90.2, 101.11, P1.143, P1.153, P1.162, P1.168, P2.2, P3.34
Manduca sexta 45.7, 55.4, P1.93, P3.108
marine biodiversity S3.1
marine biology P3.67, S8.8
marine ecology .9.4, 37.6, 62.9, 64.7, P1.50, P2.38, S10.10, S10.6, S10.9, S4.4, S7.11, S7.4
marine herbivory . . .5.2, P2.37
marine invertebrates .5.2, 39.2, P1.7, P2.11, P2.71, S5.1, S7.11
marine mammals . .41.5, 105.5, P1.62, P1.94, P2.152, P2.7, S7.9
mate choice .18.4, 45.10, 61.4, 82.1, 82.2, 82.4, P2.138
mate choice and competition . . 61.3, 84.3, P1.2
material properties . .14.4, 33.2, 88.1, P1.140, P1.141
maternal effect 61.5, 72.4, 72.5, P2.125, P2.73, P3.85, P3.96, P3.97
maternal investment 44.2, P1.123
mathematical model 13.4, 70.3, P2.153, P2.72, P3.149, S3.5
mating system 36.6, 60.6, P2.136
mechanical 71.6
mechanosensory . .45.6, P1.98, P3.101
melanization 46.1
melatonin P1.125, P2.120, P3.122
mentoring P2.61
mesoderm 91.5, P1.67
metabolic rate .12.2, 12.8, 12.9, 41.1, 102.5, P1.17, P1.89, P2.120, P3.21, S2.10, S2.2, S2.4, S2.8
metabolism . . .15.1, 41.1, 41.3, 41.4, 44.3, 51.6, 98.5, 104.4, 104.5, P1.118, P1.127, P1.85, P1.90, P2.156, P2.36, P3.126, P3.55, P3.56, S2.3, S2.7, S2.9
metamorphosis 17.2, 17.3, 31.3, 31.4, 31.5, P1.133, P1.23, P1.33, P1.72, P1.73, P1.74, P3.120, S1.3
metazoa 6.2, P1.9
methyl farnesoate P2.122
microarray 46.3
microbial eukaryotes 39.2
microclimates 28.3
microRNA 52.6, P2.109
microsatellites 37.8
microstructure . . .33.1, P3.133, P3.82, S4.2
migration 12.5, 24.2, 31.2, 64.10, 64.1, 64.2, 64.3, 64.4, 64.5, 64.6, 64.7, 76.1, 76.2, 76.4, 76.5, P1.22, P2.31, P2.32, P2.33, P2.34, P2.35, P2.36, P3.113, S6.1, S6.10, S6.11, S6.3, S6.4, S6.5, S6.8, S6.9
mineralization P3.136
mitochondria .6.2, P1.81, P2.143, P2.19, P3.53, P3.54, P3.55, P3.58, S2.2, S7.8
modeling . .67.1, 101.9, P1.148, P1.5, P3.149, S6.9
modularity 100.1, 100.4
modules .6.4, 16.1, 37.11, 50.1, 100.2, 100.3
mole crabs 52.3
molecular ecology P2.112
molecular evolution . . .6.3, 6.4, 87.7, P1.80, P1.82, P1.84A, P1.9, P2.8, S5.7
molecular systematics 6.1, P2.102, P2.105, P3.40, P3.43, P3.44, S8.2, S8.3
molluscs 69.4, 91.4, 95.2, P2.101, P3.105, P3.112, P3.18, P3.48, P3.49, P3.52, S10.6, S9.11, S9.6, S9.7
molting . .30.1, P1.122, P1.124, P2.134, P2.82
monoamine 45.11
morphogenesis 16.1, 16.2, 16.3, 16.4, 16.5, 16.6, P1.104, P1.29, P1.30, P1.32, P1.34, P2.50
morphological integration .90.6
morphology 4.5, 11.4, 14.5, 17.4, 32.8, 53.5, 64.9, 71.3, 78.1, 90.11, 102.6, P2.64, P3.133, P3.143, P3.144, P3.146, P3.32, P3.44, P3.47, P3.70, P3.9, S11.10, S11.11, S11.4, S11.8, S4.6

morphometrics .8.1, 60.3, 84.2, 90.9, 100.3, P1.143, P2.115, P2.172, P3.78, P3.79
motor system . . .101.7, P1.158, P3.104
mtDNA 6.1, P1.80, P2.115, P3.45
mucus 5.3
multidrug resistance 1.8
muscle architecture .20.2, 34.1, 34.2, 34.5, 58.4, 98.3, P1.142, P1.148, P1.152, P1.23, P2.86
muscle physiology . .20.1, 20.2, 20.3, 20.4, 26.2, 34.4, 41.4, 71.1, 75.3, 75.4, 101.5, 101.6, 101.7, 105.1, 105.2, P1.134, P1.146, P2.81, P2.84, P2.85, P3.58
muscle power .34.2, 34.6, 98.1
muscles . .2.3, 20.5, 31.5, 43.5, 55.4, 58.6, 70.5, P1.157, P1.170, P1.171, P1.35, P1.36, P1.38, P2.167, P2.87, P3.137, P3.68
mussel 37.4, 52.1, 52.2
mutualism 63.6
myogenic electric organ 2.3
myosin . . .P2.80, P2.83, P2.84, P2.87
Mytilus 28.5, 36.1
Natural-History 35.1
navigation .64.6, P3.113, P3.20
Nemertea 53.2, 91.7, S9.4
nemertean 91.10
nervous system 29.5, 29.6, 48.6, 101.11, P3.103
nesting . .24.3, P2.133, P2.139
nests 63.2, P2.45
Networks . . .37.10, 99.2, 104.2, S2.7
neural control 101.5, 101.9, 103.1, P1.72, P2.10, P2.91, P3.104
neural crest S1.7
neural networks P3.109
neuroanatomy . . .2.1, 3.1, 95.2, 101.8, P1.104, P1.99, P3.101
neurobiology . .45.1, 45.3, 45.6, 57.6, 101.1, P1.66
neuroethology 2.1, 45.10, 45.11, 45.7, P1.100, P1.102, P1.104, P1.97, P1.99, P2.32, P3.102, P3.104, P3.105, P3.107
neurogenesis .29.5, 91.1, 91.2, P1.126, P2.29
neuronal growth P1.125
neuropeptides . .P2.88, P3.123
neurulation . . .16.3, 16.4, 16.5, 16.6, P1.29, P1.30
nitric oxide 31.4, P3.55
novelty 30.4, S3.4
nuclear receptors .P2.13, P2.17
nuclei distribution P2.81
nucleotide, pyloric caeca, NKA- α 1a, NKCC1 .P1.20
nudibranchs . .18.5, 85.1, P1.99
Nutrional ecology . .86.3, P3.23
nutrition . .15.6, 44.5, 51.4, 81.3
Ocean Acidification .P1.51, P1.53
ocean currents 64.8
octopamine P2.92
Octopus P3.112
olfaction . . .2.2, 7.1, 21.3, 45.9, 90.5, 92.1, 101.3, P1.96
ontogeny .1.7, 58.5, 70.6, 81.4, 84.2, 90.6, 101.3, P1.27, P1.71, P2.153
ontology P3.74
onychophora P1.84A
oocyte 1.8, 87.10, P1.43
oogenesis 4.1, 56.1, P1.31
Ophiurids P1.6, P3.5
opsin gene duplication . .P1.95
opsin gene expression . .P1.95
optimization .50.2, 102.5, S11.6
Organ mass P2.15
organizer 91.6
orthology P1.12
osmoregulation 1.7, 10.1, 87.8, P1.106, P1.112, P1.113, P3.62
outreach 79.3
oxidative stress . .51.3, P1.108, P2.73, P2.76, P3.57, P3.64
oxygen .10.3, 39.3, 48.4, P1.75
oxygen consumption . . .P3.53, P3.54, P3.59
oyster reef P2.56
Pacifigorgia P3.40
pair-bond P2.94
paleontology 35.5, 39.3, 40.4, 40.6, 52.6, P2.108, P2.111, P2.118
paralarvae 83.6
parasites . . .69.5, P1.59, P2.75
parent-offspring conflict . . .S3.3
parental care . . .4.3, 19.3, 21.5, 59.10, 59.9, P1.118
patellogastropod 62.11
pathogen pressure 72.2
pathological hypertrophy .P2.77
pattern formation P3.50
pectoral fin 14.5
performance . .27.4, 43.1, 43.6, 50.4, 60.5, 61.2, 63.5, 70.2, 70.6, 102.3, 102.6, P1.169
pharmacology 2.4
pharyngeal jaw P3.71
pharynx 54.5, P3.142
phenology 64.4
phenotypic plasticity 23.1, 53.6, 63.3, 63.9, 72.3, 83.2, 86.1, P1.60, P3.132
pheromone P2.1, P2.137, P2.98, P3.110, P3.75
photoperiod . . .51.5, 59.7, 66.2, P2.124, P2.68, P3.88
photoreception 7.4
photoreceptor 45.2, 45.3
phylogenetic mapping 71.3, P1.68, S8.6
phylogenetic signal . .94.6, 97.5
phylogenomic data . .6.2, 97.5, S8.10
phylogenomics P3.45
phylogeny 7.4, 37.7, 94.2, 96.1, P1.12, P2.100, P2.102, P2.103, P2.104, P2.106, P2.108, P2.109, P2.99, P3.16, P3.39, P3.6, S8.11, S8.2, S8.5, S8.7, S8.9

phylogeography 35.5, 37.3, 37.5, 37.9, 52.3, P2.112, P2.115, P3.42, S3.10, S7.7
physics P2.63
physiological ecology 10.4, 22.2, 28.3, 28.4, 41.2, 94.1, 98.11, 98.8, P1.114, P1.116, P2.131, P2.156, P2.21, P3.132, P3.7, S6.1
physiology 10.3, 67.6, P2.141, P3.116, P3.67, S6.3
pigmentation 66.6, P3.46
pilidium S9.4
Pinnipeds . .44.3, 105.1, 105.2, P1.48, P3.65
Pituitary 15.9, 54.2, 87.1
placode P1.15
plankton 13.3, P3.30, S3.2
plants 5.5, 98.10, S10.11, S4.1, S4.3
plasma metabolites S6.2
plasticity 3.1, 24.5, 63.7, 93.4, 95.4, P2.72, S11.3, S3.4, S5.8
plastral kinesis P3.72
plethodontidae 25.4
pollination . . .67.8, 94.3, P3.22, P3.29, S4.8, S4.9, S7.11
pollution 74.5, 87.2, P1.96, P3.56
Polyandry 60.4
polychaetes .31.10, 62.2, 62.6, 78.2, P1.74, P2.22, P2.24, S10.2, S9.1
polyphenism P1.75A
polyplacophora 95.2
population density P2.48
population genetics .37.1, 37.2, 37.4, 37.5, 37.6, 97.1, P2.116, P2.31, P3.4, P3.5, P3.70
population structure 37.3, 67.9, P1.49
Porcelain Crab 1.5
Porifera . .52.6, P2.105, P2.106
Power amplification 43.2
predation 35.4, 40.4, 90.8, 92.2, 92.3, 96.1, P3.8, S3.6
predation risk 45.8, 63.6
predator-prey interactions .21.5, 36.2, 63.7, 92.4, P1.7, P2.56, P3.103, P3.17, P3.19, P3.25
prediction 64.2
premaxillary protrusion . . .32.6
primates . . .90.4, P1.173, P3.1
protein evolution 6.4, 6.5, P2.142, P2.21
proteomics . .1.11, 1.2, 1.3, 1.9, P1.77, P3.119, P3.65, P3.67
pteropod 13.1
qRT-PCR 10.1, 87.5, P3.64
quadrupedal 103.4, 103.5
Radio Telemetry P2.155
rarity 67.7
rate of evolution 8.3
rDNA intragenomic variation S8.3
receptor 87.7, P2.95, P3.66
reciprocal transplant 22.6
recruitment 62.11, 62.9
regeneration . .29.1, 29.2, 29.3, 29.4, 29.5, 78.2, 78.3, 78.4, 78.5, 78.6, P1.135, P1.60, P2.22, P2.23, P2.24, P2.25, P2.26, P2.27, P2.28, S5.10, S5.2, S5.3, S5.4, S5.5, S5.6, S5.9
relatedness 37.8
reproduction . .12.5, 18.5, 23.6, 25.5, 51.5, 56.5, 56.6, 59.2, 59.5, 59.7, 62.1, 67.2, 69.6, 82.5, 87.1, 87.10, P1.14, P1.18, P1.44, P2.1, P2.122, P2.123, P2.127, P2.137, P2.139, P2.151, P2.68, P2.96, P2.99, P3.83, P3.84, P3.88, P3.89, P3.90, P3.91
reproductive ecology 12.6, 18.1, 18.4, 23.2, 23.5, 24.3, 59.4, 61.5, 62.4, 73.1, 81.2, P1.41, P1.57, P1.7, P1.8, P2.131, P2.132, P3.21
reproductive mode 97.2, P3.10, P3.86
reptiles . .10.1, 59.5, 59.6, 64.7, 77.1, 86.2, 105.3, 105.4, P2.15, P3.141, P3.66, P3.98
resilin 80.3
resource availability .35.4, 64.3, 77.5, 81.1
resource partitioning P1.48
respiration 32.3, 34.3, 41.1, 89.2, 90.5, 104.2, 104.3, P3.59
retinoic acid 54.5
rhinoceros beetles 80.6
Rhizocephala P1.59
Rib P1.63
RNAinterference P1.135
robotics 11.1, 34.6, 86.6, P1.142, P2.168, P3.109
rocky intertidal 62.11, 93.5, P2.121, S4.4
rodents 40.1, P1.161
running speed 11.1
salamanders . .53.3, 53.4, 67.2, P3.75
salinity 1.9, 10.2, 67.5, P1.107, P1.112, P1.113, P3.62
salmon migration 2.2, 64.9, 76.6
sarcomere mechanics . . .P2.84
satellite cells P1.134
scaling 25.4, 98.7, 101.11, P2.153, P3.147
scallop 26.4
schooling 93.1, 93.2, 93.3
Scleractinia S8.5
Scyphozoa 83.3, P3.42
sea ice S7.2
sea turtles 11.2, 19.2, 45.9, 64.6, 104.3, P1.123, P2.30, P2.45
sea urchin 15.8, 31.6, 31.8, P1.53, P2.49
seasonality 15.7, 98.11, P2.119, P2.40, P3.67A
seed dispersal . .P1.144, P2.40
segmentation 66.1
selection 63.5, 95.5, P1.78, P3.144, S11.11

selfing 62.1
Sensory biomechanics . . .55.2, 101.4, P2.164
sensory physiology . .3.4, 57.4, 78.1, P1.101, P2.97
sensory-motor . . .55.1, 101.10, 102.4, P2.170, P3.99
serotonin (5-HT) .P2.89, P2.90, P2.91, P2.97
settlement 62.5, S3.7
sex allocation 23.3, 23.6
sex determination . .66.3, 66.5, P2.67
Sex differences . .P1.83, P3.75, S11.5
sex manipulation P3.92
sex ratio . . .P1.1, P2.67, P3.92
sexual conflict 82.3
sexual dimorphism .37.10, 59.1, P3.68, P3.9, S11.2
sexual morphology . .69.6, 84.3
sexual selection 46.4, 47.2, 60.2, 60.4, 61.4, 73.5, 80.6, 82.3, 82.5, 84.1, 95.3, P1.1, P2.136, P2.138, P3.7, P3.8
sexual signals 59.3
shark P3.135
shell P3.72
shrimp 69.5, 69.6, P3.151
sickness behavior P3.106
signaling 15.10, 54.3, 61.1, 61.2, P2.3, P2.76, P3.49, S9.6
simulation 16.5, 27.3
size 67.9
skill 102.3
skin P1.120
skulls 33.3, 86.5, P3.134
Small Cardioactive Neuropeptides 101.2
snails 36.2, 45.3, S9.10
snakes . .5.4, 19.4, 41.2, 63.11, 67.3, 68.3, 68.4, 72.8, P1.101, P1.159, P1.55, P1.89, P2.1, P2.100, P2.107, P2.113, P2.137, P3.14, P3.15, P3.24, P3.83
social buffering 38.9
social interactions . .36.6, 47.4, 47.5, 77.2, P2.134, P2.97, P3.124
song production 45.11
songbird 24.3, 38.6, 45.10, 59.10, P2.16, P3.117
spatial ecology P1.126
spatial memory P2.32
spatial variation . .P1.59, P3.35
specialization 28.1, P2.172
speciation 31.6, 31.8, 94.5, P2.114, P3.47
species coexistence P3.37
Species complex P2.105
species distribution P2.59
specific dynamic action . . .10.4
spectral sensitivity 26.4
Spectrophotometry 22.2
sperm competition P2.136
spiders 10.4, P1.145
spiralian P1.24, S9.9
sponges 45.4, 94.5, 94.6, 99.1, P2.102, P2.106, S5.2
Spore dispersal S4.8
spotted ratfish 14.6
Squamata 34.3
squids . .7.3, 83.5, 83.6, 104.1, P3.3
squirrels 100.4
stability 42.5, 75.5, P1.158
stable isotopes 23.5, 28.1, 44.5, P2.156, P2.34, P2.36, P3.84, S2.5
Stauromedusae S8.9
stem cells 29.1, S5.8
steroids P1.126, P1.127, P1.35, P1.36, P1.37, P1.38, P2.16, P2.80, P2.83, P3.85, S1.2
Stomatopod .20.2, 84.4, P1.149
stopover 76.2, 76.4
strain . . .33.1, P1.138, P1.139, P1.151
stress 1.1, 15.5, 17.5, 18.2, 30.3, 38.11, 38.3, 45.5, 67.1, 67.4, 74.2, 92.4, BERN.1, P1.107, P1.111, P2.126, P2.127, P3.117, P3.120, P3.122, P3.123, P3.125, P3.126, P3.127
stress responsiveness . . .38.1, 38.5, 38.6, 38.7, 38.9, 47.6, P1.109, P1.110
stridulation 21.2
succession P1.47
suction feeding 32.9, 49.2
surface complexity P3.12
survival 23.4, P1.56
swimming 14.1, 14.2, 26.2, 27.2, 27.4, 27.6, 34.4, 50.4, 62.7, 64.9, 83.1, 83.6, 89.4, 101.1, P2.166, P2.167, P2.168, S11.6, S11.7, S11.8
Symbiodinium 22.1, 22.3, P2.37
symbiosis 22.1, 77.6, 85.1, P3.18, P3.3, P3.38, P3.68
sympathetic nervous system S1.7
syngnathidae 32.9
systematics . . .48.2, 53.4, 79.6, 97.3, S8.1, S8.6
tadpole S5.9
tail autotomy 75.3
Tarantula 41.3
task allocation 77.2
taxonomy .79.3, P2.101, P3.33
teaching . .P2.63, P2.64, P2.65
teeth 33.2, 65.4, 90.11, P1.61
teleost fishes . .32.4, 32.5, 38.8, 57.2, 78.3, 87.10, 87.11, 87.6, P1.112, P1.128, P1.134, P1.85, P2.12, P3.71, S11.5
telomeres 74.3

temperature 1.1, 1.2, 18.1, 19.1, 20.5, 37.1, 63.11, 63.7, 63.8, 63.9, 69.3, 72.8, 85.2, 98.1, 98.10, 98.4, P1.55, P1.70, P2.121, P2.146, P2.23, P2.44, P2.45, P3.129, P3.56, P3.58
temperature-dependent sex determination . .P2.67
tendon . . .20.1, 20.4, 34.1, 43.2
terrestrial locomotion 34.1, 102.2, 103.6, P1.165
testosterone . .18.3, 46.1, 46.2, 46.4, 58.6, 59.11, 59.6, 59.8
thermal tolerance 1.3, 77.6, 98.11, P1.109, P1.17, P2.144, P2.145, P2.66, P3.118
thermal vision P1.101
thermoregulation . . .10.5, 19.3, 36.4, 62.7, 98.2, 98.7, 98.8, 98.9, P2.150, P3.13, S6.7
theropoda P2.118
threespine stickleback 32.7
thyroid hormone 31.4, 74.4, 87.2, P1.131, P1.33, P2.12, S1.3
thyroid hormone receptors P1.133
thyrotropin P2.12
tide 62.9
tissue density 57.5
titin 20.1, 20.3
toad 35.2
Tooth replacement P1.61
Torpor P2.148
tortoises . . .67.4, P2.44, P2.46
toxicology 67.6, P2.49
tracheae 104.2
Trade-off 12.4, 12.5, 23.4, 30.1, 46.2, 56.5, 67.7, P1.17
transcription factor evolution 6.5
transcription factors P1.109
Transepithelial . . .P1.88, P1.92
transgenerational 86.3
translocation 67.1, 67.4
transmitter expulsion . . .P2.155
treatment P3.115
Tridacna 22.3
triploblasty P1.67
Tritonia diomedea P1.97
tropical 98.6, P3.35
tropical storm 19.4
tunicates . .1.2, 1.9, 16.3, 16.4, 16.6, 29.1, 62.3, P1.29, P2.20, P2.23, S1.4
turning 103.4
turtles . .8.1, 27.2, 98.4, P1.111, P1.114, P1.121, P2.123, P2.139, P3.28, P3.4, P3.72, P3.78, P3.79, P3.87
Ultrasound 34.5, P1.152, P3.87
ultraviolet radiation 15.8, P1.52, P2.146
uncoupling protein 98.2
urchins P1.50
urochordate 54.2
variation 82.4, 100.5
vasculature P2.150
vasotocin P2.98, P3.123
vertebral column 8.5, 14.4, 27.5, P1.151, P1.70, P2.168, S11.4
vertebrates 33.3, 86.6, P2.64, P3.82
vision 7.2, 7.5, 12.4, 40.2, 45.2, 82.2, 94.4, 97.4, P1.95, P3.108, P3.125
visual ecology 7.4, 26.4, P3.102
visualization 83.5
vocalization 73.1
wake structure 13.1, 71.5
water balance 19.3, 36.4, P1.115, P1.22
water loss 19.5, P1.115, P1.119, P1.120, P3.67A
water potential P1.116
water quality 67.2, 74.1
wavelet P1.157, P3.137
wet adhesion 88.5
whale 49.1, P3.134
wings . .64.10, 70.4, 80.2, 80.3
winter physiology 1.4
Wnt 29.2, P1.76, P1.84
wnt pathway 91.8
woodchuck P2.149
x-ray 70.4, 89.2, P2.25
Y-organ P1.129
yolk 81.6, P2.125, P3.121
zebrafish 15.3, 57.5, 65.4, 89.4, P1.43, P1.69, P2.52, P2.6, P3.107
zonotrichia 64.10
Zoochorous dispersal . . .P2.37

AUTHOR INDEX

-A-
AARESTRUP, K.....61
ABBOTT, EM 58
ABEDIAN KENARI, AM 39
ABRAMSON, CI 44
ACOSTA, W.....29
ADAMS, N 30
ADAMS, RA.....87
ADAMS, T.....71
ADAMSKI, AV 97
ADDIS, EA.....84
ADDISON, B.....88
ADDISON, JA 55
ADELMAN, JS 88
ADOLPH, SC 35, 70, 110
ADRIAENS, D.....25, 52, 53, 98, 101
AERTS, P 61
AFLALO, ED.....64
AGGIO, J 110
AGYAMOVA, G.....34
AHEARN, GA 43
AHMED, N 101
AHN, A.....47
AIGLER, SR 85
AKELLA, T 46
ÅKESSON, S.....50, 68
ALAM, JL 88
ALAMARU, A 34
ALAMILLO, H 72
ALBERTS, B.....93
ALBERTSON, RC....61, 96, 106
ALDENHOVEN, J.....111
ALDREDGE, RA.....59, 71
ALDWORTH, Z.....74
ALFARO, ME 56, 57, 61, 80
ALLEN, JD.....23, 38
ALLEN, LC.....88
ALLISON, WT 26, 27
ALLOUSH, M.....89
ALMEIDA, S 36
ALTENBACH, JS 87
ALTSHULER, DL 92
ALVAREZ PEREZ, HJ.....112
AMEMIYA, CT.....63
AMIEL, A.....42
AMSLER, CD.....50, 67
AN, Y 70
ANADOR, S 71
ANDERS, MB 95
ANDERSEN, DE.....34
ANDERSON, CV.....102, 114
ANDERSON, EJ 30
ANDERSON, GL 27
ANDERSON, PSL 53
ANDERSON, RA 32, 36, 95
ANDERSON, SP 104
ANDERSON, SV 41
ANDRADE, FC 28, 56
ANDREWS, RD 40, 43, 116
ANDRIEUX, SJ 73
ANDRILENAS, KK.....67
ANGELL, C.....62
ANGER, K 24
ANGERT, ER 99
ANGILLETTA JR, MJ.....94
ANGILLETTA, MJ 105
ANIAG, JP 69
ANSON, JA.....69
APPEL, AG 28
AQUILINA-BECK, A.....21, 38
ARBOGAST, BS 96
ARCE, ME 94
ARCH, VS.....25
ARCHAMBEAULT, J 68
ARCHIE, JW 55, 72
ARDILA, NE.....96
ARELLANO, L 71
ARENA, A 52
ARGUEDAS, S 97
ARMFIELD, BA.....41
ARMOUR, MT 87
ARNOLD, C 97
ARNOLD, SN.....82
ARONOWICZ, J 21
ARRIGO, KR 50
ARTACHO, P 94
ARYAFAR, H.....101
ASHLEY-ROSS, MA 46
ASTLEY, HC 58
ATKINSON, S 30, 56
AUCOIN, L 68
AUDET, EK 97
AUNG, SKH 114
AUSTAD, SN 21, 22, 50
AUTUMN, K.....46, 107
AVISSAR, R.....50
AVONDET, JL 25
AWERMAN, J 80
AZIZI, E 33, 45, 53, 58, 75

-B-
BAATZ, JE 40
BABONIS, LS 28
BACLASKI, B.....31
BADEN, AL 108
BADER, BD 70
BADGER, M 70
BADIOLA AZPEITIA, T 101
BAGWE, R.....97
BAHLMAN, A 94
BAHLMAN, JW 88
BAKER, BJ 50, 67
BAKER, TV 30
BAKKEN, GS 43, 113
BALBAG, BS 82
BALCELLS, R 85
BALDWIN, JL 104
BALTZLEY, MJ.....43, 59, 100
BALZ, E 38
BANE, JM 84
BANGALORE, P 72
BARBEITOS, MS.....77
BARBER, A.....85
BARBER, AM.....68, 85
BARBER, LB 89
BARGER, CP 89
BARNARD, ME.....66
BARNES, BM 74
BARTH, BJ 91
BARTHEL, BL.....63
BARTHELL, JF 42, 95
BASIL, J.....72
BASS, AH 33
BASTEA, L 39
BATAVIA, MP 28
BATEMAN, JL.....71
BATTELLE, B-A 59
BAUCHINGER, U 28, 39
BAUER, RT.....34, 87
BAUMILLER, TK.....49
BAUR, A 47
BAXEVANIS, A 42, 86
BAYHA, KM 77

BEALE, A.....107
BEAUCHESNE, S 68
BEAUPRE, SJ 57, 85, 93
BECCO, C.....110
BECK, M.....54
BECKMAN, BR.....45, 106
BEECHLER, BB 88
BEG, MF 114
BEGEMANN, G 38
BEHRENDT, L 66, 85
BELANGER, JH.....99
BELDEN, LK.....89
BELIKOV, SI.....111
BELL, A.....88
BELL, P 38
BELL, S 79
BELL, SS 26
BELLETIER, N.....39
BELY, A 36, 37, 49, 49, 91
BEN-DAVID, J.....85
BEN-HAMO, M 28, 39
BEN-ZVI, M 101
BENAYAHU, Y 112
BENGTSSON, BC 37
BENIASH, E.....116
BENNETT, KC 62
BENNETT, VA.....24
BENOWITZ-FREDERICKS, M .. 43, 99
BENSCH, S 68
BENTLAGE, B 92, 112
BENTLEY, GE....32, 64, 81, 100
BENTLEY, SE 70
BERCOVITCH, FB 89
BERENDZEN, PB.....26, 98
BERG, AM 87
BERGAM, BA 45
BERGE, KA 98
BERGEON BURNS, CM .32, 99
BERGERON, CM 89
BERGFELD, N.....101
BERGMANN, PJ.....27
BERGOU, AJ 57, 58, 63
BERKE, SK.....78
BERKENKAMP, K.....59
BERLOCHER, SH 86
BERRY, N 71
BERRY, PS 116
BERTINO, S 71
BERTRAM, JEA.....115
BHANDIWAD, AA 102
BHATTACHARYA, A 22
BICER, S 70
BICKEL, R 39
BIERMANN, CH 52
BIEWENER, AA35, 53, 87, 101, 114, 115
BIGA, PR 45, 100
BIKNEVICIUS, AR 46, 47, 86
BILLING, S 100
BILLON-BRUYAT, J-P.....105
BIRD, D 108
BISHOP, CD 53
BISSON, I-A 49
BJORNEN, PE.....84
BLACK, MP 38
BLACK, SJ.....99
BLACKMORE, V.....104
BLAKE, OM 46
BLANK, JM 28, 70
BLANK, LM.....92
BLANVILLAIN, G 44
BLAUSTEIN, AR.....68, 89
BLEVINS, E 75
BLOB, RW ...45, 47, 80, 96, 107
BLOM, MPK.....99
BLUNDELL, G 56
BOBBITT, J.....31
BOCHER, P 90
BOEFF, KA 47
BOETTGER, SA 89, 100
BOHNHOFF, JC 23
BOHÓRQUEZ-HERRERA, J ...75
BOLDEN, AM.....89
BOLINGER, MT 112
BOLKER, J 69
BOLLER, ML 23
BOMPHREY, RJ 63
BOOKSTEIN, FL.....114
BOORSE, GC 66
BORAZJANI, I 80
BORCHERT, JD.....69
BOSSART, C 25
BOSSUS, M.....44
BOSTRÖM, J.....68
BÖTTGER, SA 101
BOUGHNER, JC.....114
BOURDEAU, PE 83
BOUTEN, W 50
BOUTIN, S.....58
BOWDEN, RM.....44, 45, 99
BOWLIN, MS 49
BOWMAN-PRIDEAUX, C.....86
BOYER, SL.....62
BOYLE, MJ.....78
BRADLEY, TJ 35
BRAINERD, EL.....36, 53
BRANDLEY, NC.....66
BRANDT, Y 60
BRANHAM, MA 62
BRANN, K.....31
BRANNOCK, PM.....62
BRAR, NK.....106
BRASHEARS, JA 80
BRASILI, A.....101
BRAY, A 40
BRAYER, KJ 26
BRAZEAL, KR 73
BREDEN, F 27
BREITBURG, DL 79
BREUER, KS.....58, 64, 88
BREUNER, CB 56, 73
BREUNER, CW 56, 81, 101
BREVES, JP 106
BREWINGTON, AK 40
BRIDGE, ES 84
BRIDGES, WC 80
BRIDGHAM, JT 106
BRIGGS, DEG 72
BRIGHAM, C 86
BRIGHT, JA 45
BRISETTE, M 69
BRISSON, V 77
BRIX, KV 39
BROCKES, JP 49
BROCKMANN, HJ.....81
BRODKIN, M 99
BRODSKI, A 71
BRONIKOWSKI, AM.....22, 86
BRONNER-FRASER, M.....38
BROOKS, R.....81
BROWN, B 46
BROWN, C 66, 71
BROWN, FD 36
BROWN, K 97
BROWNING, JA 74
BRTKO, J.....21
BRUBAKER, KD.....42, 44
BRUGGE, M 90
BRUGLER, MR.....77

BRUNER, AM 85
BRUNET, F 21
BRUNNER, JL 100
BRUNSKILL, J 69
BRYER, PJ 56, 95
BRZĘK, P 93
BRZOZOWSKI, FJV 96
BUCHANAN, KJ 43
BUCHHOLZ, DR 31, 45
BUCHWALD, R 75
BUCK, CL 74
BUCKLEY, D 62
BUDD, AF 77
BUDGE, S 68
BUDKE, JM 26
BUEHLER, DM 90
BUFFENSTEIN, R 22
BÜHRIG-POLACZEK, A 23
BULIN, S 101
BULLOCK, JMR 64, 107
BURDEN, S 115
BURDETT, KA 74
BURDICK, SL 74
BURGER, JR 96
BURGERT, I 23
BURGGREN, WW 97
BURKANOV, VN 40
BURKE, AC 41
BURLAKOVA, OO 111
BURMESTER, EM 100
BURNAFORD, JL 27, 40
BURNETT, KG 24, 116
BURNETT, LE 24, 116
BURNETTE, MF 52
BURNS, JM 116
BURTON, PM 36
BUSCH, DS 54
BUSKEY, EJ 29
BUSS, LW 77
BUTCHER, MT 45, 47
BUTLER, LK 56, 88
BUTLER, MA 35
BUTLER, MW 29, 88
BUYTAERT, J 101
BYBEE, SM 62
BYRNE, M 52, 55
BYRNES, G 46
BYSTRIANSKY, JS 44
BYWATER, CL 66, 81

-C-

CABLE, AE 97, 116
CAHILL, AE 82
CAIN, KE 59
CAIN, SD 43
CALAMBOKIDIS, J 61
CALDWELL, RL 27
CALEDE, JM 56
CALISI, RM 32
CALLAWAY, R 78
CALSBEEK, R 34
CAMERON, CB 52
CAMERON, RA 42
CAMERON, SF 83
CAMPANALE, J 30
CAMPBELL-MALONE, R 101
CAMPBELL, BR 67
CAMPOS, EO 29
CANNATELLA, D 110
CAO, Y 47
CAO, Z 67
CARAGIULO, A 112
CARDINAL, MD 46
CAREAU, V 29
CARIA, PHF 46
CARLETON, J 60
CARLTON, ED 70
CARMODY, RN 83
CARO, SP 59
CARPENTER, RO 70
CARR, JA 66, 101, 114
CARRIER, DR 87, 94
CARRILLO, A 102
CARRINGTON, EC 41, 72
CARROLL, AM 35
CARROLL, MA 66, 71, 97
CARRUTH, LL 100
CARRUTH, WC 94
CARTER IV, RP 44
CARTER, AJ 91
CARTER, MC 113
CARTWRIGHT, P 77, 112
CARUSO, MA 106
CARVAJAL, D 39
CASASANTA, M 80
CASEY, JP 32
CASS, AN 84
CASTRO, C 68
CATAPANE, EJ 66, 71, 97
CATTOLICO, RA 35
CAVIEDES-VIDAL, E 93, 94
CEASE, A 42
CHAMPAGNE, CD 58, 74
CHAN, EK 104
CHAN, KYK 82
CHAN, XY 96
CHANG, ES 44, 45, 70
CHANG, KH 33
CHANG, SA 44, 45
CHANG, Y 29
CHAPONIS, S 71
CHARMANTIER-DAURES, M 24, 44
CHARMANTIER, G 24, 44
CHEN, HY 40
CHEN, J 114
CHEN, M 31
CHEN, Q 31, 70
CHEN, Y 66
CHENEY, JA 75
CHENG, B 57
CHENOWETH, SF 83
CHERR, GN 24
CHESTER, EM 73, 99
CHEVERUD, JM 55
CHIEL, HJ 43
CHIPMAN, AD 85
CHO, I-G 70
CHO, SJ 78
CHOUDHURY, S 47
CHOW, J 70
CHRISTIAN, KA 74
CHRISTIE, AE 30
CHRISTOPHERSON, Z 66
CHRISTY, J 32
CHRISTY, JH 81
CHUGHTAI, A 40
CHURCHER, AM 26, 27
CIENIEWICZ, B 113
CIESIELSKI, F 21
CILLI, N 71
CIUFFO, GM 94
CLAES, JM 52
CLAIRARDIN, SG 44
CLARK, AD 84
CLARK, AJ 45, 90
CLARK, M 43
CLARK, PR 70
CLARK, RN 60
CLARKE, C 44

CLASS, AM.....37
CLAUSEN, RC 44
CLAVERIE, T 104
CLEMENT, ML.....95
CLEMENTE, CJ.....64, 107
CLEMMENSEN, SF.....34
CLEMONS, A.....99
CLEVELAND, H.....39
CLEVER, TN.....42
CLIFFORD, AB 90
CLISSOLD, FJ.....93
CLUCAS, B.....37
COATES, JC.....27
COATES, MM 24
COBB, A 67
COBB, V 41, 83
COCROFT, RB 33
COHEN, CS.....23, 67
COHEN, I.....57, 58, 63
COHEN, S 62
COHICK, WS.....30
COLAYORI, SE.....43
COLEMAN, AT.....34
COLEMAN, FC 79
COLEMAN, LA 96
COLLAR, DC.....27, 111
COLLIN, R 32, 34, 98
COLLINS, AG....72, 77, 92, 111, 112
COLLINS, DF.....114
COLLINS, JA 92
COLVARD, NB.....33
COMBES, SA 92
CONDON, CH 83, 94
CONIGRAVE, AD.....93
CONLON, JM.....116
CONNER, SL.....87
CONTRERAS, HL 35
COOKE, SJ 63, 81
COOLEY, J 31, 96
COOMBS, S 64, 99
COOPER, BS 94, 105
COOPER, JM 68
COOPER, WJ.....61, 106
COPELAND, D 66
COPPACK, T 84
CORDERO, GA 98
CORNELIUS, JM.....95
CORR, SA.....115
CORSTORPHINE, E 60
CORTES, P 94
COSTA, DP.....51, 58
COTEL, AJ.....80
COVENY, AH 105
COVI, JA.....45, 70
COVI, JS.....44
COWAN, NJ.....75, 114
COX, CL 95
COX, L.....107
COX, LN 55, 72
COX, RM 34
CRALL, JD.....92
CRANDELL, KE.....46
CRAVEDI, JP.....21
CRAWFORD, EA.....70
CRAWFORD, PHC 84
CRAWFORD, S 97
CRESKO, WA.....79
CRESPI, EJ 55, 99, 100
CRICKENBERGER, S 82
CRIM, R.....105
CRIM, RN 82
CRINO, OL 56, 73
CROCKER, DE.....51, 58, 74
CROFTS, SB 45
CROLL, RP.....51, 107
CROMPTON, AW.....114
CROOK, R.....72
CROSSIN, GT 29
CROSSLEY II, DA ...70, 97, 116
CROWL, TA 40
CROZIER, LG.....83
CRUICKSHANK, J.....62
CRUZ, A 84
CRYNES, GL.....45
CSIKAR, EJ 37
CUCCHI-MOUILLOT, P 44
CUCCURULLO, V.....116
CUNMING, D.....30
CUNNING, JR 34
CUNNINGHAM, CB.....94
CUNNINGHAM, CW.....77
CUNNINGHAM, GB.....109
CUPIDO, CL 105
CUPP, JR, PV 74
CURREY, M.....79
CURRY, CM.....84
CURTIS, NE 95, 105
CZARNOŁĘSKI, M 105
CZERWINSKI SHIELDS, BV..112
CZIKO, PA 67

-D-
D'ORAZIO, AE.....60
DABIRI, JO 104
DAI, W 31
DALEY, MA.....90
DALY, M 31, 60, 77, 112
DALZIEL, AC 35
DANAHER, B.....31, 39
DANIEL, TL.....25, 33, 57, 63, 74, 75
DANIKAS, LN 83
DANKA, E 113
DAPPER, AL.....59
DARDA, DM 69
DARRAS, S 21
DAS, S 30, 45
DAVENPORT, IR 25, 39
DAVID, G 115
DAVIDOWITZ, G.....113
DAVIDSON, B.....31, 38, 47
DAVIDSON, LA.....39
DAVIES, S 101
DAVIS-BERG, EC.....68
DAVIS, AR 35
DAVIS, BL.....56, 95
DAVIS, EB 54, 57
DAVIS, G 39
DAVIS, J 85
DAVIS, JL 108
DAVIS, JR.....68
DAVIS, JS 108
DAWSON, MM.....53, 77, 96
DAWSON, TE 36, 46
DAY, R 42
DE BAKKER, MAG 113
DE BELLE, JS 32
DE BOEF, M 53, 101
DE COUET, HG 97, 109
DE GRAAF, M.....90
DE LEEUW, J 75, 100
DE MIRANDA JR., MA.....116
DE MIRANDA, MA.....97
DE OLIVEIRA, CC.....105
DEAN, B 83
DEAN, M.....52
DEAN, MN 101
DEARING, MD.....60

DEAROLF, JL 40, 70
DEBAN, SM 102, 112, 114
DECASTRO, DM 73
DECHARON, AV.....67
DEGNAN, BM.....59
DEKINGA, A 90
DELAVAN, SK.....95
DELOVIO, ML.....66
DEMAINTENON, MJ 71
DEMARAIS, A.....40
DEMAS, GE.....44, 72, 73, 99
DEMASTER, DJ 50
DENARDO, DF 32, 44, 45, 80
DENG, W.....39
DENG, X.....57
DENNY, MW 23, 104
DERBY, C 110
DES ROCHES, S 83
DESCAMPS, E 25, 101
DESCHET, K 63
DEUTSCH, CA.....112
DEVIAN, M 98
DEVICHE, P 73, 101
DEVLIN, RH 44
DEVRIES, MS 36, 81
DEY, CJ 81
DHILLON, RS 97
DI POI, C 56
DIAL, KP 64, 98
DIAL, TR 87
DIAMANT, AG.....87
DIAMOND, S 62
DIAZ, MC 72, 111
DICKERSON, BH 63
DICKEY, JT.....45, 106
DICKSON, JM 64
DICKSON, KA 101, 102
DIEHL, JM 24
DIERICK, M 98
DIJKSTRA, JA 69
DILLAMAN, RM 70
DINDO, J 34
DING, Y 25, 36
DING, Z 70
DIRCKX, J 101
DITTMAN, AH.....24
DIXON, E.....38
DIXON, JM 38
DIZNEY, L.....60
DLUGOSZ, EM.....29
DOHERTY, ARH 74
DOHM, MR 94, 97
DOLLINGER, M.....104
DOMENICI, P 61, 75
DONELAN, JM.....114
DONEY, SC 50
DONNELLY, MJ 79
DONOUGHE, ST 92
DONOVAN, DA.....28, 97
DONOVAN, ER.....29, 57
DORES, RM 31
DORFMANN, AL.....107
DORSEY, AE 86
DOUGLAS, HD 68, 89
DOUGLAS, LE.....85
DOUGLASS, JK 72
DOUTHITT, M 53
DOWNS, CJ 29
DRAKE, KK 85
DREWES, RC.....71
DREWRY, M 22
DREWRY, MD.....39
DUAN, C.....31
DUBIN, ME 38
DUBOC, T.....63
DUCKLOW, HW 50
DUDGEON, SR.....111
DUDLEY, R.....75
DUEÑAS, LF 96
DUFEAU, DL 98
DUGUID, WD 85
DUKE, JT.....43
DUMAIS, J.....23
DUMONT, ER 108
DUNCAN, CA 30
DUNCAN, K.....64
DUNKIN, R.....113
DUNKIN, RC.....57
DUNN, CW 77, 109
DUONG, T 43
DURANT, SE 88
DUREAU, J.....43
DURICA, DS.....30, 45, 66
DUTRA, E.....46
DYKE, G 57

-E-

EARLEY, RL 106
EASTERLING, JG 94
EASTLACK, DT 68
EDELSTEIN, LW.....100
EDMUNDS, PJ 33
EDWARDS, DD 42
EDWARDS, J.....23
EDWARDS, JR 89
EDWARDS, KA.....99
EDWARDS, TM 66, 69
EERNISSE, DJ 60
EGGE, AR 60
EGGLESTON, EE.....74
EIKENAAR, C 80
EILERS, S 97
EKKER, M 38
ELAHI, R.....35, 54
ELEKONICH, MM 62
ELINSON, R 31
ELLERBY, DJ.....46, 75
ELLERS, O 25, 35, 47, 101
ELLIOTT, JE 86
ELLIOTT, KH 38
ELLIS, IE.....114
ELLIS, WA 89
ELSASSER, PA 28
ELSER, J 42
ELSEY, RM 56
EME, J 28, 70, 116
EMLET, RB 22
EMLET, RE 62
EMME, SA 55, 72
ENDRES, C 59
ENG, ML.....86
ERICKSON, GM 108
ERNSTING, BR 42
ESCOBAR, DA 71
ESCOBAR, RA, III 102
ESCRIVA, H.....21
ESQUE, TC 85
ESSNER, RL 58, 70
ESTEVA-SANDERS, A 41
ETGES, WJ 105
EVANS, DH.....28
EVANS, DM 68
EVANS, NM 112
EWOLDT, RH 30
EZENWA, VO 88
EZEOKE, CB 38

-F-
FAHEY, B 59
FAIREY, R 106
FARFAN, CB 109
FARZIN, M 28
FAUCHER, K 110
FAY, SA 34, 111
FEDAK, MA 51
FEDER, JL 86
FEDERLE, W 64, 107, 115
FEDEROWITZ, M 35
FEINER, N 38
FEITL, KE 75
FELBINGER, K 28
FERKIN, MH 33
FERNALD, RD 106
FERNANDES, DAO 60
FERNANDES, J 94
FERRER, EA 72
FERRER, RP 27
FERRIER, GA 110
FERRY-GRAHAM, LA 52
FIELD, DJ 101
FIELDS, PA 44, 100
FIELMAN, KT 88
FIERST, JL 55
FIGOSKI, L 109
FIGUEROA, A 26
FIGUEROA, CC 94
FINELLI, CM 29
FINKLER, MS 74
FINNERTY, JR 85
FISH, FE 30, 75, 101
FISHER, R 54
FISHER, RL 90
FITZGIBBON, SI 89, 91
FITZHARRIS, NT 67
FLAMMANG, BE 53, 75
FLANAGAN, JP 46
FLECK, C 23
FLEMING, R 71
FLETCHER, QE 58
FLORANT, GL 30, 71, 74
FLY, EK 55
FLYNN, G 86
FOBBS JR., AJ 43
FOKIDIS, B 101
FONG, CR 112
FORISTER, M 54
FORSGREN, KL 106
FORSMAN, AM 99
FORSMAN, K 46, 101
FORSMAN, ZH 42
FORTUNE, ES 75, 114
FOSSETTE, S 84
FOSTER, KL 30
FOSTER, RL 25
FOWLER, DA 113
FOWLER, MA 58, 74
FOX, A 55
FOX, JL 25, 75
FOX, RA 60
FRANCE, SC 77
FRANCIS, JR, AW 82
FRANCIS, L 71
FRANK, CL 61
FRANKLIN, CE 74
FRANSSON, T 68
FRASER, WR 50, 51
FRATZL, P 23
FREAMAT, M 21
FREDERICH, M 24
FREEMAN, B 95
FREEMAN, RM 83
FREESTONE, C 99
FREITAG, M 96
FRENCH, SS 44, 90, 99
FREYMILLER, HJ 66
FRIAS, C 75
FRICK, MG 45
FRIEDMAN, A 45
FRIESEN, CR 73, 99
FRITZSCHE, AF 91
FROEHLICH, JM 45
FRONSTIN, RB 64
FROUNTFELTER, T 67, 91
FRUTIGER, AE 102
FUDICKAR, AM 83
FUH, J 100
FUJIMOTO, S 84
FULL, RJ 114, 115
FULLER, PO 90
FULOP, D 23
FULTON, CJ 61
FURUYA, W 104
FUSE, M 67
-G-
GAHN, FJ 49
GALT, N 100
GAO, L 100
GAO, S 72
GAO, Y 70
GAPEYEV, V 102
GARCIA-ARRARAS, JE 37, 67
GARCIA, DA 92
GARDNER, JPA 113
GARDNER, N 53
GARLAND JR, T 25, 27, 29, 81, 102, 112
GARLAND, T 110
GARNER, SA 32
GARTNER, GE 27, 110
GASPAR, P 84
GASTON, AJ 38
GAY, DM 70
GEARHART, CN 30
GEBCZYNSKI, AK 29
GEERINCKX, T 52
GEFEN, E 44, 94
GEKREN, S 96
GELATT, TS 110
GENTILE, L 113
GEORGE, A 66
GEORGE, C 41
GEORGE, JC 85
GEORGE, MN 104, 105
GEORGE, NT 33
GEORGES, JY 84
GEORGI, J 108
GERDEMAN, GL 25
GERHARDT, HC 110
GERMAN, RZ 102, 114
GERRY, SP 46, 75
GERSTNER, GE 46
GERTH, N 101
GERVASI, SS 68
GHALAMBOR, CK 25
GHARBIAH, M 78
GIANI, VC 67
GIANNONI, MA 95
GIBB, AC 28, 52
GIBBONS, KR 43
GIBBS, AG 94, 105
GIGNAC, PM 108
GILES, T 90
GILLAN, W 92

GILLEN, CM 43, 70
GILLIS, GB 46
GILLY, WF.....104
GILMAN, CA.....92
GILMAN, S 54
GILMAN, SE 72
GILMORE, LA.....33
GILMOUR, KM 63, 81
GINTER, CC.....101
GIRARD, C 84
GLEASON, D.....42
GLEDHILL, MR.....80
GLUCKMAN, PD 105
GOEBEL, ME 51, 58
GOETZ, FW.....63
GOLDBOGEN, JA 61, 101
GOLDEN, BL 67, 91
GOLDMAN, D 25, 28, 36
GOLUBTSOV, AS 98
GOMEZ DAGLIO, LE 77, 96
GONZALES, R 59
GONZALEZ, P 52, 114
GOO, BY 101
GOODALL, S 60
GOODARZI, A 47
GOODFRIEND, AC 98
GOODSON, JL 71
GORDON, DP.....113
GORDON, VK.....40
GORMAN, GC 112
GOSLINER, TM.....71
GOSNELL, WC.....45, 47
GOTO, JJ.....47
GOTTSCHLING, DE.....22
GOULDING, T 62
GRAFE, TU.....25
GRAHAM, AW 99
GRAHAM, JB.....107
GRAHAM, SP 88
GRAJALES, A.....96
GRANADOS, C 96
GRANDE, C.....78
GRANT, LJ.....95
GRASON, E 110
GRASSA, C 42
GRASSO, F 72
GRASSO, FW.....43, 73, 100
GRAU, EG 106
GRAVEM, S 30
GRAVISH, N 28
GREEN, D 68
GREENBAUM, EB.....54
GREENE, MJ.....91
GREENFEST-ALLEN, E 113
GREENWOOD, AK.....85, 110
GREIG, EI.....66
GREIVES, TJ.....44, 99
GRIMES, T.....110
GRIVAS, JA 67, 91
GROBER, MS.....42, 73
GRONE, BP.....106
GRÖNING, F 45
GROSBERG, RK.....22, 55
GROSELL, M.....43
GROVE, TJ.....74
GRUNBAUM, D 22, 35, 82
GUCKENHEIMER, J .57, 58, 63
GUERIN, A 21
GUGLIELMO, C.....49, 107
GUGLIELMO, CG.....49, 58
GUICHARD, F 32
GUIDA, S.....51
GUILFORD, TG 83
GUILLETTE, JR, LJ.....66
GUILLETTE, LJ 66, 69
GUNDERSON, JL 45
GURALNICK, RP.....81
GURKA, R 107
GUSMAO, LC 112
GUSSEKLOO, SWS.....92
GÜTH, R.....24
GUTIERREZ, A.....106
GUTMANN, AK 115
GUTZWILLER, S 46
GWALTHNEY, J 28, 70

-H-

HACISKI, SI 64
HADDOCK, SHD 24, 36, 109
HADFIELD, MG ...23, 42, 51, 95
HADJISOLOMOU, SP 100
HADZHIEV, Y 38
HAEN, KM 26, 42
HAEUSSLER, M.....63
HAGERTY, BE 54, 95
HAGEY, T 107
HAGSTROM, KRE 106
HAHN, DA 22, 34, 39, 41, 74, 86, 99
HAHN, TP 69, 73, 95
HALANYCH, KM.....51
HALE, JA 42
HALEY, WA 110
HALL, DJ 42, 82
HALL, IC 71
HALLGRIMSSON, B 72, 114
HALME, A 67
HAMANN, M 36
HAMARNEH, G 53
HAMEL, JA 33
HAMILTON, MA 41
HAMLIN, HJ.....66
HAMMERSTROM, K 51
HAMMOCK, J 67
HAMMOND, JI.....68
HANCOCK, JA 47
HANCOCK, TV 84
HANDA, RJ.....71
HANES, SD 91
HANNA, J 47
HANNA, JB.....86
HANNAFORD, SJ.....25
HANNON, RM 29
HANSEN, TF 55
HANSON, AM 68
HAO, S 42
HARASEWYCH, MG 67
HARDEN, LA 44, 112
HARDY, KM 60, 112
HARING, RN 82
HARLEY, CDG.....105
HARMON, L.....83
HARMON, LJ.....62, 107
HARMON, S 36
HARPER, CJ 75
HARRIS, DJ.....105
HARRIS, LG 69
HARRISON, CA.....96
HARRISON, JF ...28, 42, 56, 91, 115
HARRISON, JS 94
HART, MW.....23, 55, 105
HARTKE, TR 32
HARTLAUB, BA.....43
HARTY, JH.....66
HARTY, JJ 66
HARVELL, CD 23
HARVEY, MB 72
HATLE, JD 22, 39
HAU, M 81, 88

HAUSSMANN, MF 61, 70, 89
HAUZE, AE 70
HAVEY, MA 24
HAWKINS, MB 84
HAWLEY, DM 88
HAYASHI, M 46, 75
HAYDEN, TJ 56
HAYES, CJ 74
HAYES, JP 29, 57
HAYES, TN 99
HAYNES, VN 97
HAYS, GC 84
HAZARD, LC 85
HE, W 102
HEAD, JM 99
HEALY, JE 30, 71
HEATH-HECKMAN, EAC 31
HEDENSTRÖM, A 49
HEDRICK, T 87
HEDRICK, TL 57, 63, 87
HEERS, AM 98
HEGEMANN, A 90
HEIMAN, K 79
HEINRICH, EC 28
HEINZELLER, T 37
HEJNOL, A 78, 109
HELMS, R 106
HENDERSON, SY 40
HENNINGSEN, JP 81
HENRY, JJ 39, 78, 109
HENRY, JQ 78
HENRY, RP 115
HENSHAW, I 68
HEPP, GR 88
HERMANSON, JC 28, 29
HERMANSON, JW 87
HERNANDES, A 71
HERNANDEZ-GARCIA, PJ ...96
HERNANDEZ, LP 41, 52, 98
HEROLD, PB 100
HERREL, A 46, 52, 108
HERRERA-GALEANO, E 86
HERRERA, MLG 98
HERRING, S 108
HERRING, SW 46
HERRMANN, MH 35
HERTZ, PE 112
HESS, CM 68
HEULIN, B 44
HEWSON, I 23
HEYDARI, M 68
HEYLAND, A 51, 53, 60
HICKS, A 61
HICKS, JW 28, 56, 70, 116
HIEBERT, LS 109
HIERONYMUS, TL 85
HIGGINS, BM 46
HIGHAM, TE 30, 64, 90, 107
HILBISH, TJ 55, 62
HILL, A 72, 113
HILL, M 113
HINIC-FRLOG, S 57
HINTERWIRTH, AJ 25
HIPPE, S 98
HIRANO, T 106
HIROKAWA, J 75, 106
HO, JM 72
HOADLEY, KD 41
HOBBS, NJ 33
HOBSON, VJ 84
HOCH, JM 34
HOCHBERG, A 39
HOCHBERG, R 39, 91, 98
HODGE, A-MC 96
HODGE, MG 99
HODGINS-DAVIS, A 104
HODIN, J 53
HOEKSTRA, LA 39
HOESE, WJ 102
HOFFMAN, JM 55
HOFMANN, GE 40
HOLBROOK, AL 81
HOLDENER, JA 102
HOLEKAMP, KE 108
HOLLAND, BS 41
HOLLAND, LZ 21, 63
HOLLAND, ND 21
HOLLAR, AR 45
HOLLIDAY, CM 53, 108
HOLLINGSWORTH, PR 98
HOLMES, P 115
HOLNESS, L 25
HOLT, AL 27
HOLT, JR 86
HOLZMAN, R 111
HOOVER-MILLER, A 56
HOPKINS, JM 42
HOPKINS, PM 30, 45, 66
HOPKINS, SB 56
HOPKINS, WA 88, 89
HORNER, AM 86
HORNUNG, KL 73
HORROCKS, NPC 88
HORSTMANN, JT 59
HOSKINS, TD 68
HOUSER, DS 58, 74
HOUSMAN, ML 95
HOVE, MC 62
HOWE, AA 62
HOWELL, D 75
HOWEY, CAF 68
HRANITZ, J 69
HRANITZ, JM 42, 44, 95, 97
HRISTOV, NI 88
HSIEH, ST 105
HSIEH, T 42
HU, DL 26, 35, 59
HUA, J 68
HUANG, H-D 32, 100
HUANG, Y 42
HUANG, Y-h 34
HUBEL, TY 88
HUBER, DR 52, 101
HUCKSTADT, LA 51
HUDSON, PE 115
HUDZIK, NB 45
HUEY, RB 112
HULBERT, AJ 22
HULSEY, CD 61, 98
HUMBERT, JS 63
HUMFELD, S 110
HUMPHRIES, AT 69
HUMPHRIES, MM 29, 58
HUNT, KE 95
HUNTER, CL 42
HUNTER, K 29
HURLEY, LL 73
HURLEY, LM 71
HURST, TP 83
HURWIT, D 79
HUSAK, JF 80, 94
HUTCHINSON, JR 28, 114
HUTCHISON, NL 94
HUYNH, M 43, 100
HWANG, PP 31
HYDE, TC 27

-I-

IDE, C 101
IDJADI, JA 82

ILIFFE, TM.....27
IMBOMA, T.....88
INGLEY, SJ.....62
IRIARTE-DIAZ, J 58, 108
IRMIS, RB.....113
IRSCHICK, DJ 27, 36, 58, 81, 83
IRWIN, DE 67
ITAGAKI, H 69, 74, 102
ITSKOVICH, VB 111
IVANINA, A.....97, 116
IWANSKI, E 106

-J-
JACKSON, BE.....87
JACOBS, MW.....23, 31, 60
JACOBSON, E 69
JAKOBSSON, S 68
JAMES III, JA 97
JAMES, DM 91
JAMIN, E 21
JAMNICZKY, HA 114
JANZEN, F 105
JANZEN, WJ 56
JAQUES, JT 66
JARAMILLO, CA.....72
JAWOR, J 90
JAWOR, JM 59, 81
JAYARAM, K 114, 115
JAYNE, BC ..27, 35, 46, 47, 100
JENKINS, KP.....92
JENSEN, BH 68
JEONG, S.....81
JERNBERG, I 94
JERNIGAN, AL 22
JIANFENG, Z.....30
JIANG, P.....85
JIAO, S 30
JIN, L 41
JINDRICH, DL.....46, 47, 115
JOHN-ALDER, HB.....30
JOHNSEN, S ...35, 36, 102, 104
JOHNSON, A.....35
JOHNSON, AS ..25, 35, 47, 101
JOHNSON, CH.....82
JOHNSON, JA.....29
JOHNSON, JC.....95, 104
JOHNSON, JI 43
JOHNSON, K.....113
JOHNSON, KM.....45, 60
JOHNSON, M 31
JOHNSON, NG.....116
JOHNSON, RF 71
JOHNSON, S 113
JOHNSON, SE 24
JOHNSON, SL.....81
JOLLES, AE.....88
JOLY-LOPEZ, Z 32
JOLY, JS 63
JONES, AL 99
JONES, RM 89
JONES, SJ 54
JONES, ZM 47
JOPLIN, KH 40
JORDAN, AD 61
JORDAN, DC.....99
JORGENSEN, ME.....58, 70
JOSHI, S.....39
JOST, JA.....24
JOYCE, D 42
JUDD, ET 22
JULIANO, SA.....40
JULIUS, ML 80, 96

-K-
KAATZ, IM 33
KABELIK, D 71
KAHL, A 51
KAISER, K 89
KAJIURA, SM 64
KALB, HJ 99
KAMIO, M 110
KAMMER, AR 97
KAMOR, A 36
KANATOUS, SB.....97, 116
KANE, EA 46, 61
KANEKO, T.....106
KANG, J.....47
KANG, L 42
KANGAS, K 64
KANO, S 21, 38, 63
KAPUSTA, K.....66
KARASOV, WH.....26, 93, 94
KARDONG, KV.....95
KARKI, P 40
KATO, DF 43
KATTI, C 59
KATTI, M.....86
KATZ, LS 104
KAUFER, MJ 44
KAVANAGH, KD 113
KAVANAUGH, SI 38
KAWA-GUCHI, S 110
KAWANO, SM.....75, 80, 96
KAYAL, E 26, 96
KEELING, EL.....36
KEENEY, BK.....25, 29
KEEVER, CC.....55
KELLER, C 50
KELLEY, KM 106
KELLY, D.....43
KELLY, JF 84
KELLY, K.....97
KELSEY, TJ 46
KEMPF, SC.....33, 91, 114
KEMPLER, K 59
KENAGY, J 54
KENDALL, L 51
KENDALL, T 116
KENKEL, CD 34
KEOGH, M.....30
KERKHOFF, AJ 70, 74
KERNEY, R.....62
KERR, K 32
KETTERSON, ED.....32, 59, 90
KHAMBADAKONE, D.....30, 45
KHANG, S.....112
KHODABANDEH, S 39
KILBOURNE, BM 47
KILLPACK, T.....26
KIM, HT 47
KIM, S 51
KIM, S-A 22
KIM, T 54
KIMOKEO, BK 42
KING, R.....110
KINGSLEY, P 113
KINGSOLVER, J.....62
KINSEY, ST.....70, 112
KIRCHHEFER, AJ 107
KIRK, H.....83
KITAYSKY, AS 43, 89
KITTILSON, JD.....42
KLAASSEN VAN OORSCHOT, B ..56, 73
KLAASSEN, R 84
KLASING, KC 88
KLATT, JD.....71
KLEIN, TA 45
KLEINTEICH, T 61

KLJUNO, E 46
KLOHMANN, KJ 67
KLOK, CJ....28
KLYMUS, K....110
KM, LEMA, SC 45
KNAPP, R 80
KNOWLES, TT 96
KOBEY, RL 74
KOEHL, M 23
KOENIG, CC 79
KOH, S 47
KOHL, F....74
KOHL, KD 93
KOHN, A 22
KOMAN, JS 24
KOMISSAROVA, A 84
KONARZEWSKI, M 29
KONOW, N....33, 114
KOOP, D 63
KOPLOVITZ, G....67
KOPP, G 107
KORCHARI, PG 90
KOSUGI, T....21
KOUBA, AJ 68, 85, 99
KOZAK, K 60
KOZAKOWSKI, M 99
KRAJNIAK, KG....70, 71
KRAMER, EM....23
KRAUT, G 69
KREND, KL....68
KRENITSKY, N 75
KRIEGER, JD 81
KRISTAN, DM....70
KROCHMAL, AR 94
KROUSE, S 68
KRUYT, JW....92
KUBOKAWA, K....21
KUEHL, K 34
KUHLMAN, JR....88
KUHN, CE....110
KULATHINAL, R 42
KULKARNI, S 31
KULLBERG, C....68
KUMAR, A 66
KUNZ, TH 44, 50
KUO, CY....58
KUO, D-H 97
KURAKU, S 21, 38
KURATANI, S....84, 114
KUROCHKIN, I 97, 116
KUSEMA, E 45
KUSTER, S....98
KWASEK, K 85
KYPRIANOU, R....99

-L-
LA CROIX, S....108
LA PEYRE, MK....69
LACY, EL 73
LADAGE, LD 60
LADUC, TJ....94
LAFONTANT, PJ....67, 91
LAILVAUX, S....26
LAILVAUX, SP 26, 81, 89
LAMB, B 97
LAMBERT, JD....78, 96, 109
LAMMERS, AR 90
LAND, BR 33
LANDBERG, T....62
LANG, J 74
LANGDON, Q 38
LANGERHANS, RB....80
LANGMAN, V....113
LANGTON, R....45
LANK, DB 67
LAPPIN, AK....108, 112
LARHAMMAR, D 21
LARSON, KW 68
LARSON, PG....71
LARSON, R 66, 101
LASKER, HR....77, 112
LATTANZIO, MS 34
LAU, FO....40
LAUDER, GV 30, 75, 79, 80
LAUDET, V 21
LAUFER, H....31
LAUMER, CE....96
LAVER, CRJL 27, 43
LAVROV, DV ...26, 42, 72, 96, 111
LAWRENCE, JM....49
LAWSON, BK 101
LAYTON, JE 69
LE, AD 36
LEANDER, BS....56
LEASER, AE....70
LEASI, F 98
LEE, AH 113
LEE, CE....28
LEE, DV 115
LEE, J 114
LEE, KA 88
LEE, M....106
LEE, P 78
LEE, SM 101
LEE, SSM 64
LEE, WK 107
LEGG, A 59
LEHIKOINEN, E 84
LEHMAN, HK....71
LEINWAND, LA 70
LEMA, SC 60, 101, 112
LEMAITRE, R 67
LEMASTER, MP....66, 73
LEMBERG, JB....108
LEMELIN, P 47
LEMENAGER, LA....44
LENTINK, D 92
LEOPOLD, JL....98
LESCH, MA 67, 91
LESOWAY, MP 98
LESSIOS, HA 52
LESTYK, KC 116
LETCHER, RJ 86
LETTIERI, L....83
LEVAVI-SIVAN, B 106
LEVERING, D....57
LEVIN, M 49
LEVINTON, JS....34, 60
LEWIS, EL 41
LEWIS, K....22
LEYRER, J 90
LEYS, SP....59, 60
LEYSEN, H....53
LI, C....28
LI, WW....43
LIAO, JC 64
LIBBON, JV 66
LICORISH, R 71
LIDGARD, S....113
LIEB, N....116
LIEBERMAN, D 72
LIEBL, AL....37, 88
LIEW, CW 80, 106
LIGHTON, JRB....57
LILLYWHITE, HB....32
LIM, JL....30
LIMONCELLI, KA 70
LIN, C-C....100
LIN, H 107
LINDBERG, DR 27

LINDGREN, AR.....110
LINDSAY, S.....49
LINDSAY, SM.....49, 67, 91
LINIAL, A 64
LIPINSKI, D 104
LIPPS, JH 34
LISTER, BC 112
LIU, HC.....92, 100
LIU, L 95
LIU, Q 66
LIU, X.....102
LIU, Y-L.....32
LIU, YH 22
LIVINGSTON, KR.....100
LOBEL, PS 33
LOCK, NC.....89, 100
LOCKEY, J.....74
LOCKWOOD, BL.....35
LOEFFLER, J 41
LOEW, ER 35
LOH, T-L 71
LOHMANN, CMF.....84
LOHMANN, KJ 59, 84
LONDRAVILLE, RL.....66
LONG, J.....30, 46, 75, 80, 100, 106
LONG, KL 99
LONG, RA 43
LONGPRE, KM.....104
LOPES, PC.....100
LOPEZ-LEGENTIL, S.....71
LOPEZ-MEJIA, M.....55, 111
LOPEZ, AI.....71
LOPEZ, J 72
LORCH, PD 90
LOSOS, JB 46
LOUDON, C.....64
LOVELY, KR 109
LOVERN, MB 73
LOVETT, DL 44
LOWE, CJ.....21, 102
LOZNIK, B 99
LU, H 102
LU, L 30
LU, S.....36
LU, TM 38
LUCKENBACH, JA 45, 63, 106
LUCKENBACH, MW.....79
LUNDRIGAN, BL 108
LUNT, D 42
LUO, Y 67
LUQUE, J 32, 72
LUSTGARTEN, J.....101
LUTTERSCHMIDT, DI ...72, 101
LUTTERSCHMIDT, WI 72
LUTTRELL, S 37
LUZANIA, RR 106
LYNCH, VJ.....26
LYNN, TH.....92
LYONS, DC.....39, 78
LYONS, SM 82

-M-
MA, J 102
MACAYEAL, LC.....64
MACDONALD, C 38
MACDOUGALL-SHACKLETON, SA 59, 86
MACESIC, LJ 75
MACH, KJ.....23
MACHADO, H.....42
MACIEL, RC 29
MACKENZIE, D 66
MACKIE, J 60
MACLEA, KS 45
MADIN, LP.....104
MAGIE, CR.....31
MAGINNIS, TL.....49
MAGLIA, AM 98
MAHLER, DL 109
MAHMOUD, H 34
MAIA, A.....30
MAIA, ARMD 75
MAIE, T.....47, 80, 96, 107
MALADEN, RD 25, 36
MALISCH, JL.....56, 101
MALISKA, ME.....51, 98
MALLEFET, J.....52
MALLICOAT, A.....30
MALLONEE, M 30
MALONEY, N.....44
MANDECKI, JL.....75
MANIVANH, RV 74
MANKIN, D 59
MANOR, R.....64
MANOUSAKI, T 38
MANRIQUE, N.....96
MANSHAD, AS 24
MARA, KR 53
MARCHETTO, NM 70
MARCZAK, S.....89
MARGOTTA, JW 42
MARION, K.....34
MARKO, PB.....23, 55, 72
MARKOWSKI, DE 44
MARKS, JA.....52
MARLON, AJ 94
MARQUES, AC.....92
MARQUEZ, E 61
MARRA, PP 50
MARSH-MATTHEWS, EC 80
MARSH, A 51
MARSH, RL 58
MARSHALL, CD 46, 61
MARSHALL, SL.....40
MARSHALL, V 110
MARTIN, AM.....101, 102
MARTIN, CH.....98
MARTIN, GG 91, 101, 102
MARTIN, KLM.....40
MARTIN, LB.....37, 88
MARTIN, P.....63
MARTIN, VJ.....39
MARTINDALE, M.....86
MARTINDALE, MQ...31, 41, 42, 63, 78, 109
MARTINEAU, K 89
MARTíNEZ DEL RIO, C 36
MARTINSON, DG.....50, 51
MARTONE, PT 23
MARUSKA, KP 106
MARZLUFF, JM 37
MASHANOV, VS.....37, 67
MASLAKOVA, SA 78, 109
MASON, E 27
MASON, RT.....66, 73, 80, 99, 101
MASSCHAELE, B.....98
MASSEY, D.....41
MATEO, JM.....110
MATLACK, CL 70
MATSON, KD.....88, 90, 99
MATSON, PG 40
MATZ, M 34
MATZ, MV.....34
MAUCK, RA.....61, 70, 99
MAXSON, K.....100
MAY, D 24
MAYER, G 107
MAZIN, J-M 105

MAZLOOMI, F 47
MAZOUCHOVA, N.....28
MAZZILLO, M 33
MCADAM, AG.....58
MCALISTER, JS.....38, 52
MCARTHUR, LJ 74
MCBRAYER, LD.....47, 64, 90
MCCANN, SR.....85
MCCLARY, M.....97
MCCLINTOCK, JB.....50, 67
MCCOMB, DM.....64
MCCONAUGHA, JR.....40
MCCORMICK, MM 70
MCCOY, E 55
MCCUE, MD.....58
MCCULLOUGH, EL.....92
MCCUNE, AR 84
MCDERMOTT, CG 56
MCDONALD, BI.....51, 58
MCDONALD, KA 22
MCELROY, EJ 47
MCFADDEN, CS 77
MCFALL-NGAI, MJ.....31
MCGEE, MD.....52
MCGINN, NA 24
MCGLONE, JJ.....95
MCGOVERN, TM 55
MCGOWAN, L 43
MCGRAW, KJ 29, 88
MCGREGOR, AE 75
MCGUIGAN, K 79
MCGUIRE, JL.....54
MCGUIRE, NL 64
MCHENRY, MJ 36, 64, 75
MCHUGH, D.....52
MCKECHNIE, AE 54
MCKINLEY, B 28
MCLEAN, KE.....91
MCNABB, FMA.....89
MCNERNEY, CA.....73
MCPHERSON, DR 100
MCRAE, B.....115
MCRAE, MG.....37
MCWILLIAMS, SR.....28, 58
MEACHEN-SAMUELS, J 108
MEANS, M.....107
MEDICA, PA 85
MEDINA-RUILOBA, H 24
MEEK, TH.....25, 29
MEHTA, RS.....79, 80, 111
MEJIA-ORTIZ, LM.....55, 111
MEKDARA, NT 47
MELE, J 22
MENDONCA, MT 56, 88
MENDOZA BLANCO, MA.....33
MENGES, M 26
MEREDITH, D 69
MÉROT, C 34
MERRILL, L 56
MERZ, RA 66, 92
MESSERMAN, AF 74
METZGER, DC.....45, 106
METZGER, KA 108
MEYER, A.....38
MEYER, E 34, 86
MEYER, NP 78, 109
MEYERS, A 79
MEYERS, RA 102
MICHAELSON, J-AB 99
MICHEL, KB 36
MICHELI, F.....54, 79
MIDDLEBROOKS, ML.....26, 95
MIDDLETON, KM 25, 58
MIGLIETTA, MP.....77
MIGOTTO, AE 82
MILES, DB.....34, 54
MILES, L.....95
MILLER, AL 89, 94
MILLER, B 39
MILLER, CE.....28
MILLER, L.....104
MILLER, LA 74, 87
MILLER, TC 66
MILLER, TM.....70
MINER, BG 110
MINTER, JL 43
MITCHELL, MA 80
MITCHELL, TRT 114
MIZRAHY, O 39
MLOT, N 26
MOFFAT, J 49
MOHSENI, K 104
MOLL, K.....115
MONGEAU, JM.....114, 115
MONROY, JA.....33
MONTEIRO, A 104
MONTES-HUGO, M 50
MONTGOMERY, MS 31, 31
MONTOOTH, KL 39, 74
MOODY, KN.....96
MOOI, R 71, 72
MOORE, FR 67
MOORE, IT.....37, 80
MOORE, T 115
MORAN, AL 38, 51, 52
MORAN, MM 41
MORANDINI, AC 92
MORAVEK, CL 40
MORE, HL.....114
MORELAND, T 86
MORENO, CA.....115
MORGAN, S 25, 39
MOROZ, L 60, 67
MORRIS, JA 43
MORRIS, MR.....82, 104
MORRISON, D 47
MORSE, DE 27
MORTON, LC 70
MORTON, ML.....95
MOSS, AL.....73
MOTANI, R 57
MOTOKAWA, T 35
MOTTA, PJ 53
MOUNTCASTLE, AM 57
MOY, VM.....72
MUELLER, I.....51, 67
MUELLER, R 102
MUKHERJEE, S 92
MULCAHEY, TI 59
MÜLLER, N 68
MÜLLER, R 43
MULLER, UK 36, 47
MULLIKIN, JC.....42, 86
MULROY, E 111
MULVANY, SL.....53
MUNCH, SB 38
MUNK, Y.....92
MUNOZ-GARCIA, A 44, 98
MUNOZ, EE.....42
MUNRO, E.....31, 39
MUNSON, DA.....37
MURPHY, DW.....110
MURRAY, JA.....43, 100
MURRAY, S 71
MURRELL, EG 40
MUSHINSKY, H 55
MYERS, EA 72
MYERS, J 45
MYERS, MJ 47

MYHRVOLD, CA 75
MYKLES, DL 44, 45, 70
MYRTHIL, M 66

-N-
NAGY, LM 78, 96
NAKAMOTO, A 78, 109
NAKATA, T 92
NANCE, HA 55
NARINS, PM 24, 25, 89
NATHAN, R 50
NAUWELAERTS, S 75
NAVARA, KJ 99, 101
NAWROTH, JC 104
NEAL, MW 71
NELSON, M 71
NELSON, WN 74
NEMETH, Z 67
NESPOLO, RF 37, 94
NEUENHOFF, RD 46
NEVITT, GA 109
NEWMARK, PA 39, 109
NGUYEN, A-D 86
NGUYEN, C 47
NGUYEN, M 25, 39
NGUYEN, S 102
NIDA, BA 67
NIENOW, TE 74
NIGAM, N 46
NIMITKUL, S 45
NISHIGUCHI, MK 94
NISHIKAWA, KC 33
NISHIMURA, N 79
NOBLE, K 86
NÖDL, MT 97, 109
NOLES, P 54
NORBECK, LA 45
NOREN, DP 57
NOREN, SR 116
NORENBURG, JL 62
NORRIS, DO 89
NORTON, E 47
NOWACEK, DP 75
NOWROOZI, BN 36, 75
NULL, RW 78
NUSNBAUM, M 110
NUSSEAR, KE 85
NYACK, AC 115
NYBERG, KG 37
NYERGES, G 97

-O-
O'BRIEN, KM 51, 67, 74, 97
O'BRIEN, S 68, 99
O'CONNOR, CM 63, 81
O'CONNOR, JL 64
O'CONNOR, MP 116
O'DONNELL, MJ 41
O'LOGHLEN, AL 56
O'NEAL, DM 90
O'NEILL, M 47
OAKLEY, TH 41, 59, 110, 112
OBI, IE 43
OCHS, G 41
OCONNOR, P 46
ODUM, L 95
OISI, Y 84
OLBERDING, JP 100
OLESON, EM 61
OLIVA, MV 89
OLIVIER, TJ 34
OLSON, JM 112
OLSON, KE 39
OLSON, WM 32
OMONDI, C 67
ONOURA, C 25, 39
ORCUTT, JD 54, 57
ORCZEWSKA, JI 74
ORR, TJ 27
ORTIZ-BARRIENTOS, D 115
ORTLUND, EA 106
OSBORN, J 110
OSBORNE, EJ 111
OSENBERG, CW 82
OSORIO, J 21, 38
OSTROM, CE 30
OTA, K 84
OTTEN, D 74
OUFIERO, CE 110
OULAD, S 39
OWEN, JC 67
OWENS, GL 26, 27
OWERKOWICZ, T 28, 56, 70
OWUSU-ANTWI, Y 24
OYARZUN, FX 22
OZTURK, N 59

-P-
PACE, CM 28
PADIAN, K 105, 113
PADILLA, DK 23, 38, 79
PAESANI, S 53
PAETSCH, CR 107
PAGE, JL 91
PAGE, LR 51
PAIG-TRAN, EWM 102
PAITZ, RT 44, 45
PAKES, MJ 27
PALACIOS, MG 86
PALIS, J 113
PALMER, AR 22
PALMER, CV 34, 57
PALSTRA, A 101
PALUMBI, SR 52, 105
PANG, K 42, 86
PANI, A 21
PANKEY, MS 59, 110
PANTE, E 77
PANTILE, R 34
PARGA, ML 44
PARIS, M 21
PARISH, ER 40
PARITTE, JM 84
PARKER, MR 73, 80
PARMENTIER, E 110
PARNELL, NF 27, 69
PARRIS, M 61
PARRISH, JHA 45
PARSONS, KJ 61, 106
PARSONS, TE 114
PARTECKE, J 83
PASCH, B 33, 66
PASCUA, MT 41
PASSAMANECK, YJ 109
PASSAMANECK, YQ 78
PATEK, SN 33, 46, 104, 105
PATEL, R 70
PATTERSON-FRASER, DL 51
PATTERSON, SH 81
PATTERSON, ST 56
PATTON, P 99
PAUL, VJ 82
PAVLICEV, M 55
PAWLIK, JR 71
PAXTON, K 67
PAYNE, SL 102
PEDERSEN, S 102
PEICHEL, CL 79, 85, 110
PELEP, PO 95
PEREYRA, ME 73, 95
PEREZ-REYES, O 40

PERFITO, MN.....32
PERFITO, N.....81
PERINO, LL.....38
PERLMAN, BM.....36
PERNET, B.....41, 52
PEROTTI, EA.....42, 82
PERRIN, GE.....43
PERRINS, C.....83
PERRY, KJ.....78
PESPENI, MH.....105
PETANIDOU, T.....95
PETERSEN, CL.....73
PETERSEN, J.....35
PETERSON, KJ.....62, 72
PETT, W.....26
PEYER, SM.....28, 29
PFAU, DR.....45
PHAM, M.....106
PHANPAKTRA, A.....31
PHARR, CM.....84
PHELPS, SM.....66
PHILIPP, DP.....63
PHILLIPS, B.....66
PHILLIPS, NE.....40, 82
PHILLIPS, RA.....29, 83
PIAZZA, SJ.....64
PIERCE, SK.....26, 95, 105
PIERSMA, T.....90
PILIKIAN, T.....94
PILOSOF, S.....98
PINNICK, GL.....67
PINSHOW, B.....28, 39, 58
PINSON, SE.....99, 101
PINTO, SJ.....101
PIRES, A.....41
PISANI, D.....62
PLACE, AJ.....94
PLACE, NJ.....62
PLACE, SP.....36
PLACHETZKI, DC.....59
PLACHETZKI, DP.....112
PLUMMER, MV.....93
PODOLSKY, RD.....23, 24, 60
POMPONI, S.....72
POOLE, AZ.....96
POPE, D.....73
POPE, DS.....33
POPOWICS, T.....108
PORRO, LB.....108
PORTER, ME.....30, 46, 75, 80, 100, 106
PORTER, WR.....74
POSTAVA-DAVIGNON, MA.....83
POTTER, KA.....36, 113
POTTER, SY.....45
POTVIN, J.....61, 101
POWELL, CD.....114
POWERS, DR.....99
POWERS, KA.....33
POWERS, KL.....33
POWERS, ML.....24
POWERS, SD.....36
PRADHAN, DS.....73
PRAJAPATI, SI.....50
PRAVOSUDOV, VV.....60
PRECHT, WF.....82
PREHODA-WYERS, MM.....40, 70
PRESKY, ME.....95
PRESSLEY, TA.....72
PRICE, ER.....58
PRICE, RM.....35
PRICE, SA.....57
PRIESTER, C.....70
PROCTOR, JL.....115
PROMISLOW, D.....22
PROWSE, M.....107
PRUM, RO.....111
PRYCE, K.....66
PTACEK, MB.....80, 96
PURITZ, JB.....55
PUTMAN, NF.....59, 84
PUTNAM, NH.....38
PYOTT, SJ.....41

-Q-

QIAO, M.....115
QUAN, N.....70
QUICAZAN, EMQR.....92
QUIJANO, MO.....55
QUINN, SM.....43

-R-

RABINOWITZ, JS.....109
RACEY, PA.....107
RADE, CM.....98
RADOJCIC, BE.....29
RAFF, EC.....52
RAFF, RA.....52
RAFFERTY, KL.....46, 108
RAGLAND, GJ.....41, 86
RAHBEK, C.....84
RAHEMI, H.....46
RAICHLEN, DA.....25
RAINIO, K.....84
RAJPUROHIT, S.....94, 105
RAMENOFSKY, M.....49, 84
RAMIREZ III, DR.....69
RAMOS, L.....67
RANA, M.....53
RASCH, JA.....87
RATHBURN, CK.....24
RATLIFF, J.....53, 113
RAUBENHEIMER, D.....105
RAWLINSON, KA.....109
RAYFIELD, EJ.....53
REA, LD.....66
REALE, D.....29
REAM, RR.....110
REAVES PIERCE, H.....70
RECCIA, L.....71
REDD, JAR.....95
REDMOND, NE.....72, 111
REDPATH, SM.....84
REED, DA.....108
REED, WL.....70
REEDER, D.....61
REES, SR.....100
REFSNIDER, J.....105
REFT, AJ.....35
REGELSON, KW.....44
REIBER, CL.....39, 99
REICHARD, JD.....44, 50
REID, D.....75
REILLY, SM.....46, 58, 70
REINDL, KM.....42
REISER, PJ.....70
REITZEL, AM.....85
RELYEA, RA.....68
REN, L.....28
RENAUD, JP.....21
RENN, S.....38, 42
RENN, SCP.....60
RENSEL, MA.....55
RESH, C.....109
RETAUX, S.....21, 38
REVELL, LJ.....109
REVZEN, S.....115
REYES, JA.....106

REYNA, KS 97
RICCI, PR 95
RICE, AN 33
RICH, CA 41
RICH, MS 59
RICHARDS, CT 53
RICHARDSON, MK 113
RICHARDSON, T 39
RICHMOND, JP 30, 66
RICHTER, MM 74
RICKLEFS, RE 88
RIDGWAY, RL 87, 97
RIEDE, T 102
RILEY, LG 42, 56, 106
RILEY, MA 100
RINEHART, MD 99
RIQUELME, CA 70
RISKIN, DK .. 58, 64, 75, 88, 107
RISTROPH, L 57, 58, 63
RITSON-WILLIAMS, R 82
RITTER, DA 53
RITTSCHOF, CC 81
RITTSCHOF, D 100
RIVERA, A 113
RIVERA, AS 59
RIVERA, E 59
RO, J 44
ROBERTS, S 75, 83, 106
ROBERTS, SP 32, 62
ROBERTS, TJ 33, 45, 53, 58
ROBERTSON, J 83
ROBERTSON, JM 60
ROBIN, FB 31, 39, 90
ROBINSON, A 87
ROBINSON, AK 57
ROBINSON, DM 104
ROBINSON, HE 29
ROBINSON, JM 62
ROBINSON, TR 54
ROBINSON, WD 54
ROBL, NJ 74
ROCH, GJ 21
ROCK, MO 68
RODGERS, B 60
RODNICK, KJ 112
RODRIGUEZ, E 77, 96
ROE, P 89
ROELKE, CE 54
ROGERS-LOWERY, CL 25
ROGNSTAD, RL 55
ROHRBACK, SE 70
ROJAS-CARTAGENA, C 67
ROJAS, M 94
ROLIAN, C 72, 114
ROMANO, SL 77
ROMERO, LM 56, 80, 88
ROMNEY, AL 39
ROOS, G 53, 61
ROOSENBURG, W 68
ROOT, R 106
ROOT, RG 70, 80
RORICK, MM 26
ROS, IG 87
ROS, IG 87
ROSA-MOLINAR, E 40, 79
ROSARIO, MV 46
ROSCOE, J 96
ROSEN, O 64
ROSENBLUM, EB 60, 83
ROSENBLUM, H 106
ROSENGAUS, RB 32, 83
ROSENTHAL, GG 73
ROSS, CF 108
ROSTAL, DC 45, 64, 68, 73, 94
ROSVALL, KA 60
ROTH, ES 114
ROTH, TC 60
ROTHSTEIN, SI 56
RÖTTINGER, E 63
ROWE, MF 113
ROWE, NP 23
RUDD, R 61
RUED, A 113
RUEGGEBERG, M 23
RUF, T 62
RUHR, IM 66
RUIZ, MA 92
RUIZ, ME 73
RUNDELL, RJ 56
RUSSELL, AP 90, 107
RYAN, CA 111
RYAN, JF 42, 86
RYAN, MJ 73
RYERSON, WG 35

-S-

SABINS, AM 84
SABRA, K 59
SABULA, MJ 38
SADDLER, C 97
SADOWSKA, J 29
SAGI, A 64
SAHA, NR 63
SAINT-DIC, R 97
SAITO-REIS, C 97
SAITO, C 47
SAKAKIBARA, M 59
SAKHA, T 47
SAKHTAH, H 106
SALAZAR, EE 24
SALEM, H 97
SALEM, SJ 38
SALMON, M 36
SALVANTE, KG 59, 71
SAMUEL, D 66
SAMUELS, JX 108
SANCAR, A 59
SANCHEZ ALVARADO, A 49
SANCHEZ, JA 68, 71, 77, 96
SANCHEZ, L 28
SANDERS, E 25
SANDERS, JG 35
SANDMEIER, F 54, 95
SANTAGATA, S 109
SANTANA, SE 108
SANTHANAKRISHNAN, A ...74, 87, 104
SANTIAGO, O 97
SANTINI, F 56, 57
SANTIS, TD 27
SANTONI, AM 38
SAPIR, N 50
SARANATHAN, V 111
SARGENT, ML 73
SATOU, Y 63
SATTERLIE, RA 24
SAUKA-SPENGLER, T 21
SAVU, A 28
SAWICKI, GS 53
SCALES, JA 35
SCANLAN, TS 21
SCHAERLAEKEN, V 108
SCHIFFMAN, P 86
SCHIZAS, NV 94
SCHLEDER, B 86
SCHMERER, MW 78
SCHMIDT, EJ 37, 114
SCHMIDT, KL 66
SCHMITT, C 23
SCHMITZ, L 57

SCHNEIDER, SQ 78
SCHOECH, SJ 55, 81
SCHOENFUSS, HL ..80, 89, 96, 107
SCHOFIELD, OME 50, 51
SCHOLNICK, DA.....74, 97
SCHORR, G 61
SCHRANDT, MN 60
SCHRECK, CB 65
SCHREIBER, AM 39
SCHREY, A 55
SCHRIMPF, A 90
SCHROEDER, JR 70
SCHUBERT, M 21
SCHULTE, PM.....35, 44, 97
SCHULZ, J 91
SCHULZ, JR 100
SCHULZE, A.....95
SCHUMER, M 38
SCHUNK, C 88
SCHUTT, Jr, WA 87
SCHUTZ, H 29, 81, 102
SCHWARTZ, JA 95, 105
SCHWARTZ, ML 62
SCHWARZ, B 67
SEARLE, CL.....68, 89
SEARS, KE.....74
SEARS, MW 94
SEAVER, EC 42, 67, 78, 109
SEBENS, KP 27, 54
SECOR, SM 42, 43, 70, 83
SEFATI, S 75
SEGOVIA, R 42
SEIBEL, BA.....115
SEIDEL, R 23
SEIER, E 40
SELDEN, RL.....82
SELF, CJ.....108
SELL, GL 71
SEMON, M 72
SEMON, S 39
SEMON, SN 31
SERAFINI, L 24
SERRANO-VELEZ, J 40
SERVETNICK, MD 84
SEWALL, KB 59, 71
SEYFABADI, J 68
SHADWICK, RE 61, 101
SHAH, S 66
SHAHBAZI, M.....100
SHAMOUN-BARANES, J 50
SHANKLAND, M.....78
SHAPIRO, MD 111
SHARMA, A 41
SHARP, NJ 24
SHASHANK, K 34
SHAY, TJ.....84
SHEARMAN, RM.....98
SHELDON, KS.....69, 113
SHERARD, KM.....31
SHERIDAN, MA.42, 45, 68, 106
SHERIDAN, TA.....102
SHERO, MR.....116
SHERRARD, K 31, 39
SHERWOOD, NM.....21
SHI, Y 22
SHILLINGTON, C 28, 57
SHIMA, JS 82
SHIMIZU, M 106
SHIMIZU, T 109
SHISHIDO, CM.....40
SHIVIK, JA.....108
SHORT, S 21
SHOUKFEH, O 101
SHUBERT, C 69
SHUPE, KE 96
SHUTTARI, N 60
SIDOTE, J 108
SIGWART, JD.....111
SIKES, JM 91
SILLETT, TS 25
SILVERIN, B 81
SILVERSTEIN, RN 34
SILVERTHORN, DU 91
SIMANDLE, E 54
SIMMONS, DD 25
SIMMONS, NB 87
SIMON, J-C 94
SIMONS, ELR 46
SIMPSON, MC 100
SIMPSON, SJ 93
SINGAMSETTY, S 31
SINGH, G 43, 100
SINGH, N.....26
SIVAN, O 58
SLATE, DJ 107
SLATER, GJ 57
SLOAN, LM 41
SMITH, AM 26
SMITH, CR 50
SMITH, EN 72
SMITH, FM 107
SMITH, J.....40, 63
SMITH, LC.....56
SMITH, M.....62, 115
SMITH, ME 43
SMITH, RA 92
SMITH, VL 42
SMITHERS, C 105
SNODDY, J 44
SNODE, E 87
SNYDER, SJ 68
SOCHA, JJ 107
SOCKMAN, KW.....59, 71, 82
SOFAER, HR 25
SOHN, D.....60
SOKOLOV, EP.....97
SOKOLOVA, IM 97, 116
SOLTANI, M 47
SOMA, KK 66
SOMERO, GN 35
SONG, BK 71
SORCI, G 88
SOTHERLAND, PR 116
SOTIROPOULOS, F.....80
SOTO, W 94
SOU, E 98
SOUCIER, D 112
SOUSA, P.....105
SOUTHWOOD, AL...32, 44, 112
SOWER, SA 21, 38
SPAIN, DD 69
SPARKMAN, AM.....86
SPARR, R 101
SPARROW, JD 68
SPEAKMAN, JR 22, 58
SPECK, T 23
SPEISER, DI 35
SPENDEL, K 66
SPERLING, EA.....62, 72
SPONBERG, S 63
SPOTILA, JR 116
SPRAGUE, JC.....33
SPRAYBERRY, DH.....43, 100
SPRINGER, AM.....68
SRYGLEY, RB 90
STAAB, KL.....52
STAAF, AV 23
STAAF, DJ 104
STAHL, AL 32

STAHLSCHMIDT, ZR.....32, 44
STAMMERJOHN, SE 50
STAMPER, SA 114
STANHOPE, BA 26
STAPPUT, K 67
STARCK, JM.....101
STARCZAK, VR.....82
STARKS, PT 86
STAROBINSKA, EI 38
STAUB, NL 98
STAYTON, CT 27, 98
STEELE, R 49
STEFANI, AC 73
STEFFEN, JE 28
STEFFENSEN, JF 61
STEGEMAN, JJ 66
STEINBERG, DK 50
STEINMETZ, SM 25
STENECK, RS.....82
STERN, DL 39
STEVISON, BK.....95
STEWART, DJ 33
STEWART, I.....88
STEWART, J 31
STEWART, W 36, 64
STICKLES, E 106
STILLMAN, JH.....24
STOCK, DW 84, 85
STOECKERT, CJ 113
STOLTEY, T 57
STOVER, KK 102, 108
STOYEK, MR.....107
STRAND, CR.....44, 45, 73
STRAND, T.....75
STRANDBURG-PESHKIN, AR .66
STRATHMANN, MF.....60
STREBY, HM 34
STREELMAN, JT.....27, 41, 61, 69, 83
STREICHER, JW.....72
STRIEDTER, G 43
STRINGHAM, S 111
STROTHER, JA.....107
STURM, JJ 46
SUCHARD, MA 41
SUCRE, E.....44
SUFFIAN, DJ 58
SULLIVAN, A 53
SULLIVAN, AC.....75
SUMMERS, A 45, 101
SUNADA, H 59
SUNDAY, JM.....105
SURMACZ, CA 97
SUSS, J 116
SUTHERLAND, KR 104
SUTHERLAND, MA 56, 95
SUZUKI, T.....114
SUZUKI, Y 41
SVENDSEN, JC 61
SWALLA, BJ 36, 37, 51
SWALLOW, JG 60, 94
SWANGER, L 90
SWANSON, BO 45, 104, 105
SWANSON, DL.....74
SWANSON, P 45, 63
SWART, J.....116
SWART, JC 70
SWARTZ, SM 64, 58, 75, 88
SWEAZEA, KL.....101
SWEENEY, AM 27, 109
SWEENEY, S 31, 38
SWIDERSKI, DL.....41, 111, 114
SWIMMER, Y.....44
SYLVESTER, JB.....41
SZMANT, AM 41

-T-

TABIMA, JF.....96
TABIN, CJ 113
TAFT, NK 30
TAKAI, J.....97
TALLEY, JL 43
TAMONE, SL 99
TAN, D 99
TANDO, T 21
TANG, PC 34
TARASKA, NA 100
TARASKA, NG.....89
TARRANT, AM 66, 85
TATE, KB 70, 116
TAVES, MD.....66
TAYLOR, EN.....45, 73
TAYLOR, GK.....63
TAYLOR, JRA 43, 46, 105
TAYLOR, JS.....26, 27
TAYLOR, JT 26
TAYLOR, KN.....40
TAYLOR, MT 113
TAYLOR, S 43
TEARE, AR.....73
TEDDER, BJ.....93
TELLO, JA 21
TEMKIN, MH 38
TEPLER, SK.....23
TEWKSBURY, JJ ...69, 112, 113
THACKER, RW 72, 111
THAKKAR, M.....66
THARP II, JM.....94
THEWISSEN, JGM.....41, 85
THEXTON, AJ 114
THIELEN, M 23
THOMAS, ALR 63
THOMAS, CJ 50
THOMAS, DW 29
THOMAS, F 79
THOMPSON, M 72
THOMSEN, MS 79
THOMSON, AM 99
THORNTON, JW 106
THORUP, K.....50, 84
THRASH, JC 27
THURBER, A 51
TIAN, H 25
TIELEMAN, BI 88, 90, 99
TILDEN, A.....45
TILLMAN, JL.....95
TKINT, T.....52
TOBALSKE, BW.....87, 98
TOBIN, ED.....35
TODD, BD.....89
TOKI, G.....79
TOLEDO-HERNANDEZ, C....40
TOLLEY, J.....107
TOM, N 64
TOMANEK, L 24, 98
TON, D.....75
TONETTI, J.....99
TOOMEY, MB 29
TOONEN, RJ 41, 42, 55
TORRES-VAZQUEZ, I.....40
TØTTRUP, AP 84
TRACY, CR.....44, 54, 68, 74, 85, 94, 95
TRAN, C 42
TRAN, HT 25, 39
TRAN, MC 73, 80
TRAPPETT, AG 94
TRATHAN, PN 29
TRAVIS, JMJ 84
TRAYLOR-KNOWLES, N 85

TREMBLAY, Y 110
TREWICK, S.....42
TREYBIG, TA.....102
TRIMMER, BA 59, 107
TROOLIN, DR 75
TROUTMAN, AR 44
TRUBL, P 95, 104
TRUMBLE, SJ 43
TSAI, HP.....28
TSAI, W 101
TSENG, A 49
TSUKIMURA, B 73, 80
TU, M-C 32
TUDORACHE, C 61
TUN, KM.....102
TURNER, KR.....27
TURNER, T.....40
TWEETEN, KA 42
TYTELL, ED 80

-U-
UBHI, S.....47
UHRIG, EJ.....66
UMBANHOWAR, PB 28
UNGUEZ, GA 24
UPTON, KR 106
URANO, A 90
URTON, JR.....85
USENKO, S 43
UYENO, TA.....33

-V-
VAJDA, AM 89
VALEN, A.....92
VALENCAK, TG.....62
VALENTINO, RJ 37
VALIN, M.....80
VALLÉS, Y 78
VALLEY, JR 39
VAN DEN THILLART, G.....101
VAN DER HAM, JL 77
VAN DER KRAAK, G.....63, 81
VAN DER MEIJDEN, A.....105
VAN DYKE, JU 93
VAN GRIETHUIJSEN, LI 59
VAN HENGEL, J.....25
VAN LEEUWEN, JL.....92
VAN LOON, E.....50
VAN MAURIK, LN.....37
VAN REMMEN, H.....22
VAN ROY, F 25
VAN TRUMP, WJ 64
VAN UITREGT, VO 74, 83
VAN VALKENBURGH, B 108
VAN VOORHIES, WA.....22
VAN WASSENBERGH, S 28, 53, 61
VANCE, CK.....68
VANCE, JT.....63
VANDENBROOKS, JM...42, 56, 91
VANDERHOFF, EN.....96
VANDEWALLE, N 110
VANDEWALLE, P 110
VARGAS, LE.....81
VARNER, J 60
VATNICK, I.....99
VAUGHN, D 23
VEGA, CM 98
VELASQUEZ-CARVAJAL, D ...31
VENDETTI, JE 111
VENESKY, M 61
VENN, C 69
VERHEYEN, E 52
VERMEIJ, G 22
VERSLYCKE, T 66
VERSTEEGH, MA 88, 90
VESENKA, J 69
VICKARYOUS, MK.....91, 102
VICKERS, MH 105
VIEIRA, LM.....82
VIG, DK 70, 85
VILCHECK, JJ 97
VINTHER, J 72
VINYARD, CJ.....41, 74, 102
VIRGILIO, A 39
VIRTA, VC 31
VITOUSEK, MN 80
VITT, LJ.....112
VO, L 80
VOGEL, LA.....99
VOLDMAN, J 74
VOLKENBORN, N 79
VOLLRATH, K.....72
VON DASSOW, M 39

-W-
WACK, CL 71
WADA, H 89
WADA, RH.....39
WAGGONER, C 106
WAGNER, DN 68
WAGNER, F 96
WAGNER, GP.....26, 113
WAGNER, KA.....84
WAINWRIGHT, PC ...52, 80, 98, 111
WAITE, JN 40, 43
WAKE, DB 62
WAKE, MH.....62
WAKELING, JM 46, 53, 101
WAKELING, SR.....68
WALDROP, LD.....114
WALKER, CW.....90, 100
WALKER, JA 61, 79
WALKER, L.....39
WALKER, P 42
WALKER, SM 63
WALL-SCHEFFLER, CM.....47
WALL, CE 102
WALSBERG, GE 37
WALTERS, LJ 79
WANG, F 43, 102
WANG, G.....84
WANG, J.....46, 75
WANG, JK 78
WANG, S 34
WANG, X 32
WANG, ZJ.....57, 58, 63
WARD, AB 41, 79, 80, 98
WARD, CK.....89
WARD, MN 27
WARK, AR 110
WARNE, RW 55, 92, 100
WARNER, L 113
WARNER, S 90
WARRICK, DR.....87
WARSINSKE, HC 40
WASSERSUG, R.....61
WATANABE, K.....102
WATANABE, S.....106
WATANABE, WO 70
WATERS, JS.....115
WATSON, RD 40
WATTS, HE 59, 73
WATTS, M 109
WEAVER, RE 72, 95
WEBB, JF 64
WEBB, MW.....98
WEBB, PW 80

WEBER, DJ 114
WEBER, MX 34
WEBSTER, DR 95, 110
WEBSTER, M 114
WEDEL, MJ 113
WEGNER, NC 107
WEIL, S 64
WEINBERG, EV 111
WEINER, SA 86
WEINREICH, B 96
WEINTRAUB, GS 83
WEINTRAUB, JP 92
WEIS, VM 96
WEISBLAT, DA 39, 78, 97
WEISS, SL 38, 82, 91
WEISSBURG, MJ 59
WELLS, H 95
WELLS, S 40
WERNEIWSKI, M 30
WERNING, S 113
WESSELS, FJ 22, 34, 39, 74, 99
WEST, DM 35
WESTERMAN, EL 69, 104
WESTNEAT, D 88
WESTNEAT, MW 106
WETHEY, DS 54, 79
WEVER, JM 39, 109
WHARTON, WL 40
WHEATLY, MG 70
WHEELER, BM 72
WHITAKER, DL 23
WHITAKER, SE 31
WHITE, AJ 70
WHITE, BJ 45
WHITE, CR 94
WHITE, D 39
WHITE, EB 43
WHITE, TA 52
WHITEHILL, EAG 38
WHITING, MF 62
WHITTINGTON, AC 74
WIBBELS, T 34, 69
WIEGMANN, BM 92
WIENS, DJ 39
WIKELSKI, MC ...49, 50, 80, 83, 88, 93, 95
WILCOVE, DS 50
WILCOX, SC 108
WILCOXEN, TE 81
WILCZYNSKI, W 38
WILGA, CD 30
WILKINSON, M 107
WILLARD, K 24
WILLARD, S 85
WILLIAMS, J 44
WILLIAMS, JB 22, 44
WILLIAMS, JM 39
WILLIAMS, KL 45
WILLIAMS, SH 102, 108
WILLIAMS, TD 29, 64, 68, 86, 113
WILLIAMS, TM 57, 116
WILLIS, EL 99
WILLIS, MA 30, 43
WILLIS, PM 73
WILLIS, RE 72
WILSON, AM 115
WILSON, BA 69
WILSON, CH 30
WILSON, D 113
WILSON, J 99
WILSON, MA 43
WILSON, PS 86, 96, 110
WILSON, R ...66, 74, 81, 83, 89, 91, 94, 115
WINDSOR, DJ 26, 27
WINGFIELD, JC 32, 54, 56, 84, 99
WINKLER, DW 99
WINSLOW, BB 41
WINSTON, JE 82
WINTERS, CP 59, 81
WINTERS, I 113
WITMER, LM 74, 98
WITTES, JS 97
WITTES, JW 28
WOJNARWSKY, PKL 43
WOLF, BO 27, 54, 92
WOLFF, LM 45
WOLFF, MS 108
WOLFGANG, A 100
WOLLSCHLAGER, JM 96
WONE, B 29, 57
WONG, I 46
WOOD, K 38
WOOD, MJ 40
WOODIN, SA 79
WOODLEY, SK 69, 71, 73
WOODS, HA 33, 36, 51, 113
WOODS, WA 86
WORTHAM, JL 37
WORTHINGTON, AM 94
WRANGHAM, RW 83
WRIGHT, K 22
WRIGHTON, KC 27
WULFF, J 49
WYNEKEN, J 36

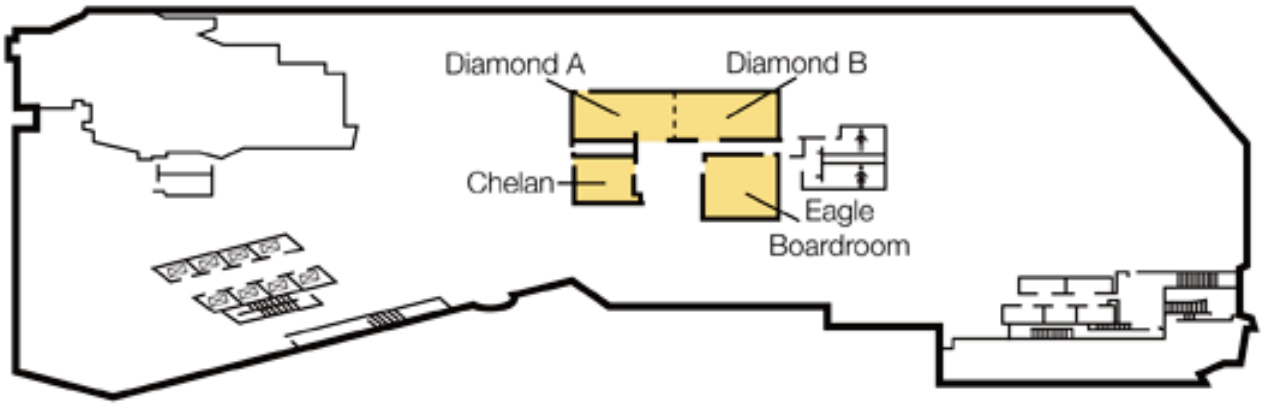
-X-
XIAO, J 38
XIAO, JH 21

-Y-
YAGER, DD 100
YAMAGUCHI, E 42
YAMAMOTO, Y 63
YAMASHITA, R 97
YAN, Z 102
YANEGA, GM 102
YARETT, IR 66
YEH, KD 108
YEN, J 29, 110
YEOH, AJ 43
YEUNG, NW 72
YOO, EH 35
YOSHIMURA, K 35
YOUNG-BRIM, R 113
YOUNG, BA 114
YOUNG, CM 62
YOUNG, G 63, 106
YOUNG, KE 43
YOUNG, RC 89
YU, JKS 38
YUE, KP 79
YUN, L 30

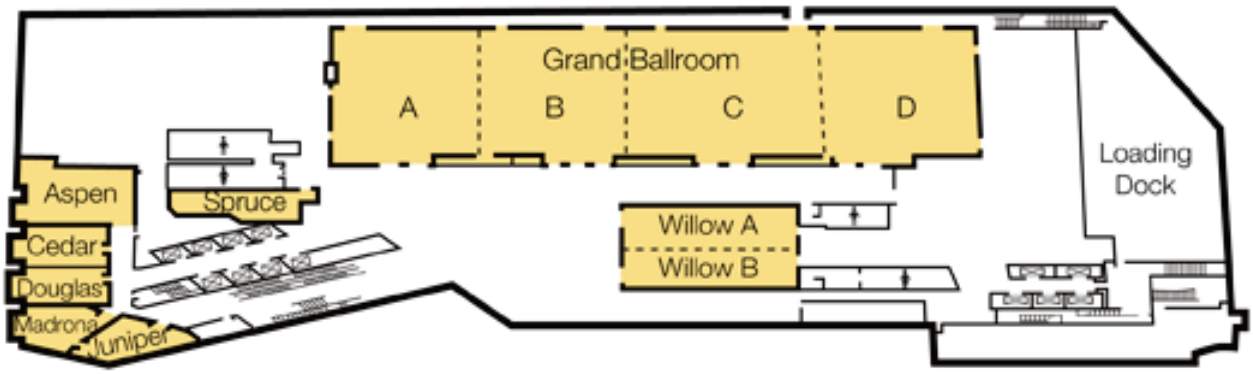
-Z-
ZAJITSCHEK, F 81
ZAKAS, C 82
ZALESKI, MAF 99
ZANI, PA 87, 95
ZASLAVSKAYA, NI 72
ZATTARA, EE 36
ZAZAY, R 100
ZELDITCH, ML 46, 108, 111, 114
ZELLER, RW 21, 40
ZENEL, AM 72
ZHANG, Z 102

ZHANG, ZQ 94
ZHU, Z 31
ZHUANG, K 114
ZIGLER, KS 52
ZIMMER, CA 82, 110
ZIMMER, RK 27, 82, 91, 110
ZIMMERMAN, LM 99
ZINN, SA 30, 66
ZIPPAY, ML 40
ZONG, J 100
ZUEVA, OR 37, 67
ZUO, Y 31
ZURCHER, U 90
ZUZOW, M 24
ZWEERMAN, CL 91

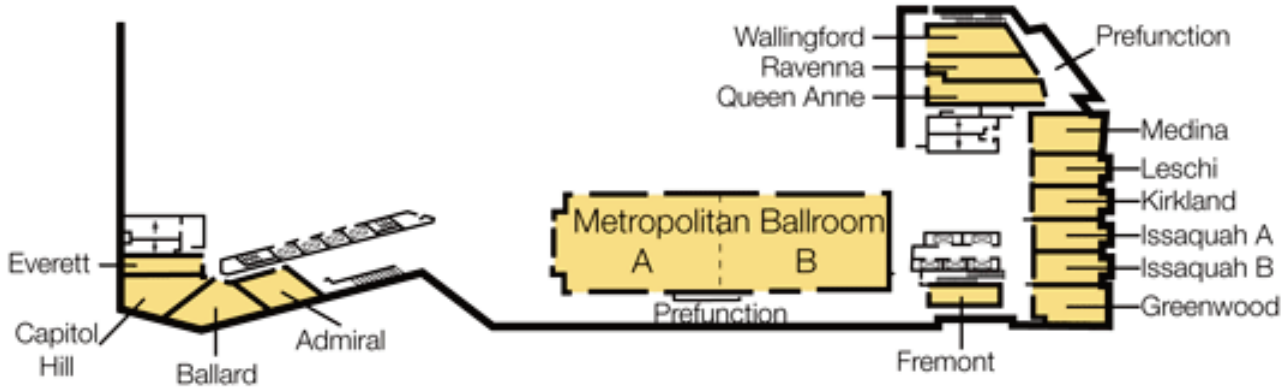
Sheraton Seattle
First Floor Lobby Level



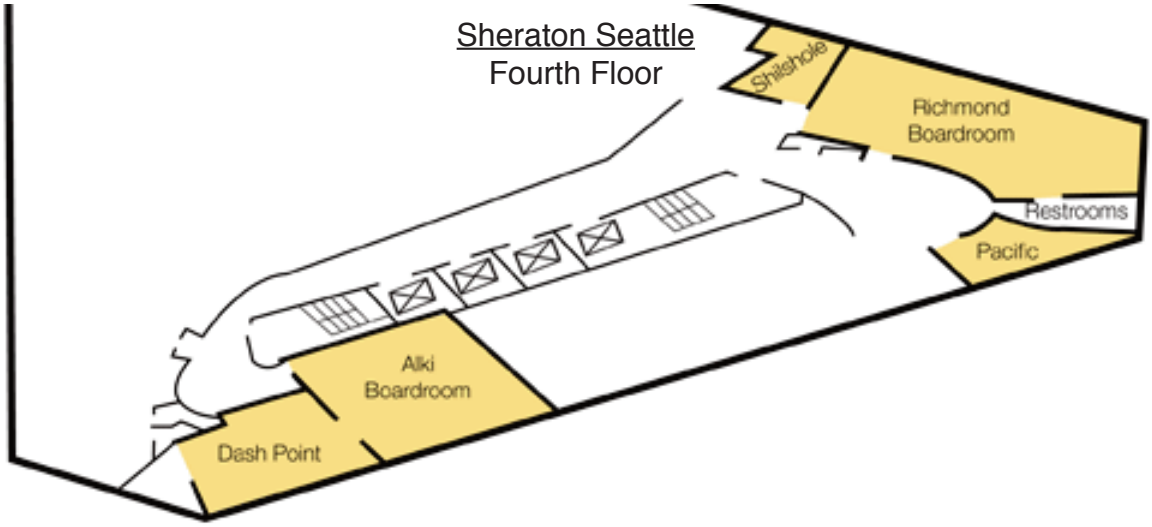
Sheraton Seattle
Second Floor

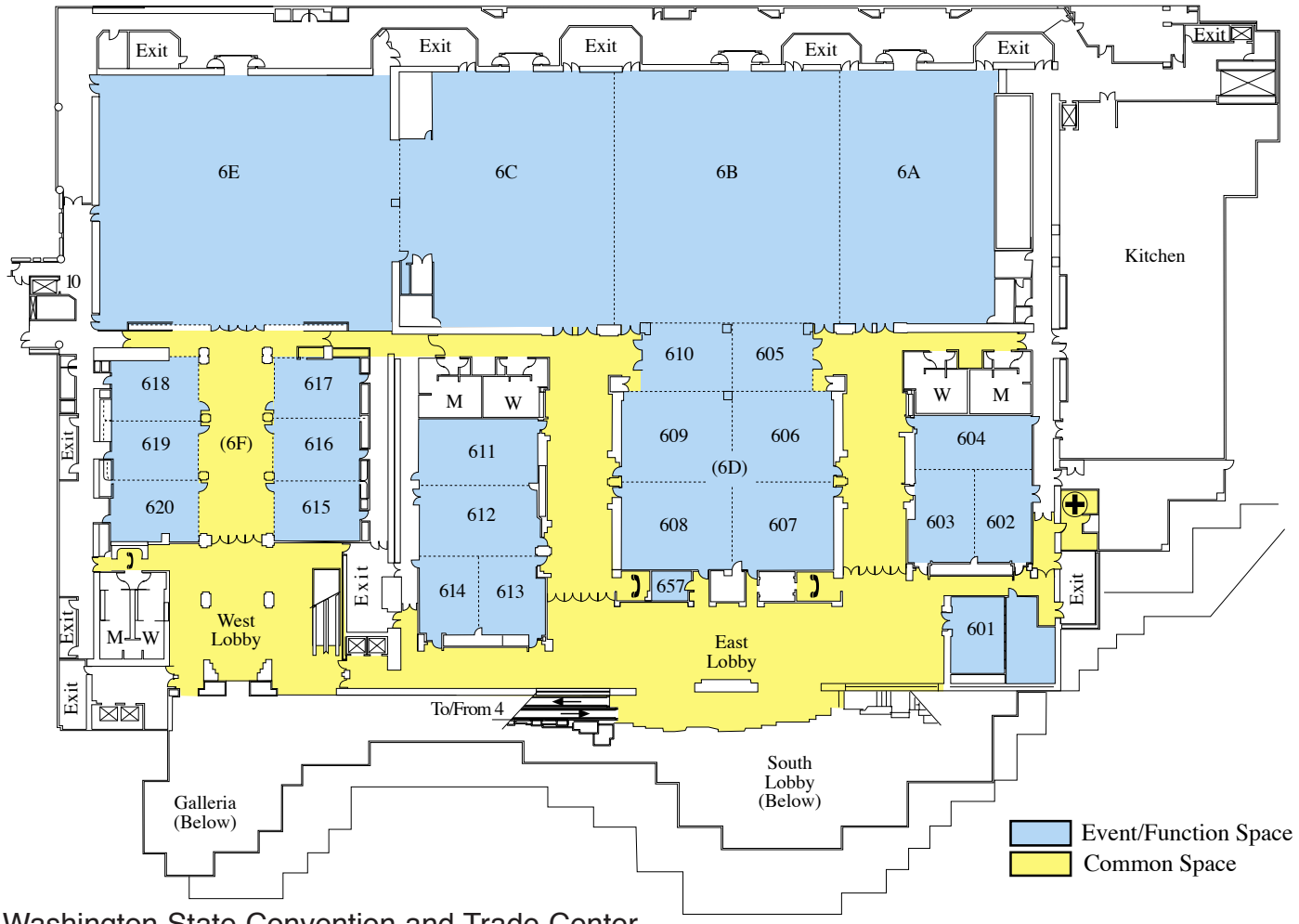


Sheraton Seattle
Third Floor

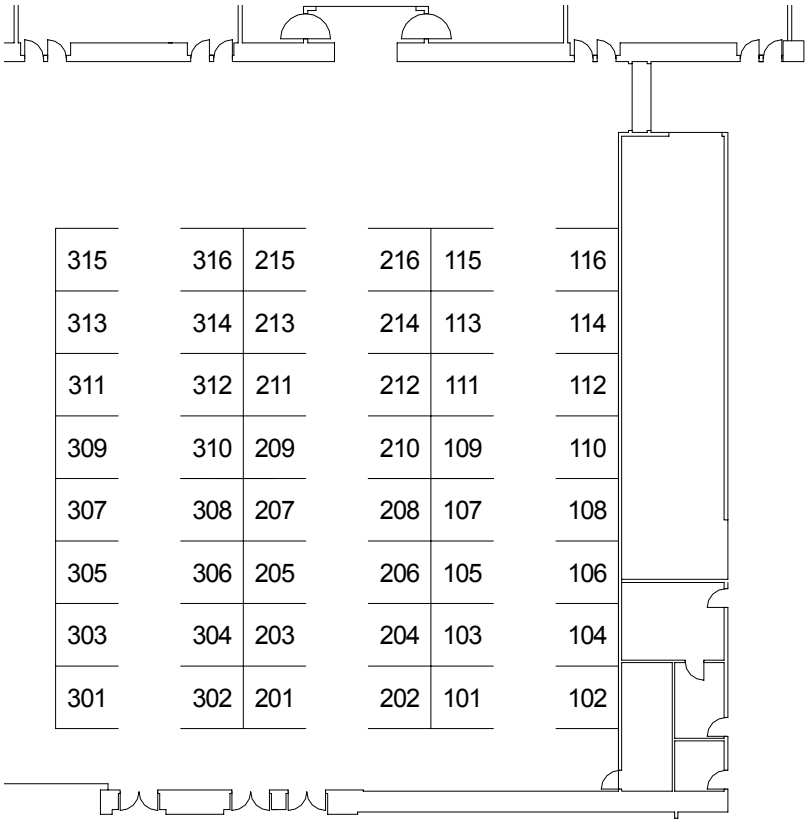


Sheraton Seattle
Fourth Floor





Washington State Convention and Trade Center
Sixth Floor



Washington State Convention and Trade Center
Exhibitor Floorplan

Join us next year in Salt Lake City

January 3-7, 2011
Salt Lake City Marriott Downtown and
Salt Lake City Convention Center (Salt Palace)

The Society for Integrative & Comparative Biology
1313 Dolley Madison Blvd.
Suite 402
McLean, VA 22101
Phone: 703-790-1745 - 800-955-1236
FAX: 703-790-2672
Email: SICB@BurkInc.com
Web: www.SICB.org