



Animal Behavior Bulletin

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WINTER 2008

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NEWS STORIES IDEAS

IF YOU HAVE NEWS YOU WANT TO SHARE WITH THE CISAB COMMUNITY CONTACT US AT:

Sulinvil
@indiana.edu

Or

855-9663

Spring Speakers

Ralph Mistlberger, Simon Fraser University: "A circadian system for finding food (and other rewards?)" Friday, Feb 22nd, 12:00pm, Student Building 150

Thomas Coombs-Hahn, University of CA-Davis: "Evolution of environmental cue response systems in birds: Patterns and mechanisms" Friday, Feb 29th, 4:00pm. Myers 130.

Jill M. Mateo, University of Chicago: "The ecology of stress: behavioral, developmental, and cognitive con-

nects of stressors in ground squirrels" Friday, March 21, 4:00pm, Myers 130

Jonathon D. Crystal, University of Georgia: "Oscillator representations of

time" Friday, April 11, 12:00pm, Student Building, 150

Michael R. Gorman, University of CA-San Diego: "By the light of the silvery moon: nighttime illumination and circadian plasticity" Friday, April 18, 4:00pm, Myers 130

Irving Zucker, University of CA-Berkeley: "Why we study 'weird' species and two sexes" Friday, April 25, 4:00pm, IU Animal Behavior Conference, Indiana Memorial Union Solarium



New IU SACNAS Chapter

SACNAS is a national organization that encourages Chicano, Latino, and Native American students to pursue graduate education and obtain the advanced degrees necessary for science research, leadership, and teaching careers at all levels. The

organization brings together undergrads, grads, post-docs, researchers and faculty from different backgrounds whose shared love of science and technology and desire to see more minorities as colleagues come together to help each other succeed. Each year, the

SACNAS national conference brings its members together to share their research and to facilitate interactions between individuals from all levels in their academic careers.

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Director's Message



Siberian Hamsters

*“Consider the little
mouse, how
sagacious an animal
it is which never
entrusts its life to
one hole only”
Platus 254-184bc*

Greetings again to the CISAB community; I hope the spring semester is proving to be both productive and rewarding for everyone. As I mentioned in the last newsletter, planning is well underway for the **Annual CISAB Animal Behavior Conference**, which will take place in the Indiana Memorial Union on Friday April 25th, so if you have not done so, please reserve this date on your calendars and plan to spend the day enjoying a series of exciting and intellectually stimulating talks and posters from colleagues within IU and beyond. Please note, the conference website is up-and-running at: <http://www.indiana.edu/~animal/symposium/index.html>

The conference registration deadline has been moved up this year to MARCH 27th for BOTH general registration AND abstract submissions, so please visit the website and register today. We hope to have a strong turnout again this year. A couple of additional items to note:

Students, time is running out to apply for **CISAB/CTRD Fellowships**, so if you have not done so, please go ahead and apply. The application instructions can be found at: <http://www.indiana.edu/~animal/forms/gradfellow08.pdf> and the deadline is February 22.

Rose Stewart has the AB Lab running at full strength. She has already begun to develop new assays to measure tissue-level (e.g., brain) peptide hormone concentrations and plans are

to expand our existing EIA/RIA repertoire to include salivary hormone assays in the near future, so please contact her if you think the lab might be able to help you with techniques relevant to your own research.

The Society for Advancement of Chicanos and Native Americans in Science (SACNAS) now has a local chapter affiliated with IU. For those of you unaware of SACNAS, this organization helps Chicano/Latino and Native American students to pursue graduate education in science and fosters research, leadership, and teaching skills. CISAB students and members have attended their national meeting in the past and have found them to be a most rewarding experience, so I encourage students to get involved. See article on front page.

Lastly, I would like to extend my thanks to those people who made monetary contributions to CISAB during 2007: Emilia Martins, Michael Lynch, Julia Heiman, Johan Verhulst, Colin Allen, G. Troy Smith, Laura Hurley, Ellen Ketterson and Val Nolan. As I'm sure you all know, CISAB is not a “money making machine” and these donations are critical to ensure that the many important CISAB activities that take place throughout the year continue uninterrupted. They also support the smaller amenities (i.e., providing food and drinks) that make all our CISAB activities more cordial and enjoyable. So thank you for your generous donations and, as always, I wish everyone a wonderful spring semester.

—Greg Demas

Greg Demas
in the lab.



Winnie Ho attends CBN Conference

The music was tentative and a bit elusive. But if you looked, amongst the heady talk of gene guns, and viral vectors, sex changing fish, and off-kilter advisors, there was a kid in the corner basking with a cello and a hand-written sign. We were gathered at the home of Dr. Larry Young, one of the Center for Behavioral Neuroscience's faculty members the evening before the CBN fall symposium. The scene was a fitting demonstration not only of the casual hospitality of the CBN students who hosted me this past November, but of the next day's schedule that would showcase a wealth of techniques and research programs.

CISAB has a partnership with the CBN and the Keck Center for Behavioral Biology that promotes student exchanges during annual symposia. I was in Atlanta for this conference as a CISAB representative along with Sarah Ayroles and Erica Marsh, both affiliated with the Keck Center at North Carolina State University. The day-long conference was held as a series of invited presentations, sensibly interspersed with shorter student and post-doc talks for a very manageable session.

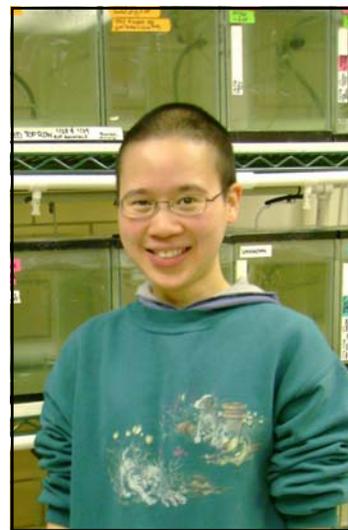
Ralph Greenspan launched off the conference with a wonderful talk on gene networks that affect behavior in *Drosophila*. Using fruit fly aggression as a model system, he attempts to answer the nagging problem of how genotype translates into phenotype by looking at data from selection experiments and mutant screens. Instead of a traditional pathway paradigm that links genes and behavior deterministically, he suggested that behavior is affected by a network of genes, and that the interactions between components are flexible and can be adjusted, as in a Darwinian network.

Following this talk was Sarah Ayroles who, when not saving unspecified CISAB affiliates from getting lost in downtown Atlanta, explores the relationships between behavior and genes using honey bees. Her talk, "Genomic Analysis of Post-Mating Changes in the Honey Bee Queen" addressed how she is looking for the genes involved in the behavioral phenotype of the Honey Bee queen. After mating, the queen honeybee stops flying and shows changes in pheromone profile and vitellogenesis. By looking at three age-matched phenotypes - virgin, mated, and laying individuals, Sarah was able to correlate differences in transcript abundance in the brain and ovaries with either flight-oriented or mating-oriented patterns. The post-mating phenotype, Sarah found, was decoupled in the

brain and ovary, with the mating stimulus triggering major changes, mainly in the ovary.

Hans Hofmann, who presented his work on *Astatotilapia burtoni*, is using cichlid genomics as a gateway to understanding the evolution of social behavior. Among his ongoing projects is one looking at the way serotonergic inputs modulate Mauthner cells and the escape response times of dominant and subordinate males. Behavior, according to Hofmann, is not generated by genes, but by its neural substrates. Explaining complex behavior hence requires study not only at the molecular level, but also pharmacologically and physiologically.

Other poster and talk presentations during the day incorporated a wide range of approaches to understand the mechanisms of behavior, including studies of memory, brain monoaminergic pathways of mouse depression, Es-



tradiol based inhibition of sex change in blue-head wrasse, primate tool use, zebrafinch song development, V1a receptor evolution in primates, prairie vole brains, and the role of p38K genes in neuronal development. The final talk of the day was by Joe Callicott from the NIMH, who applied studies of genes and behavior to human pathologies by trying to understand the polygenic and genetically heterogeneous nature of psychiatric disorders.

Sarah, Erica and I wrapped up the evening by heading to an eclectic Italian restaurant with a crowd of students and post-docs before being dropped off at our hotel. Kudos to our hosts, who chauffeured us back and forth from hotel, to conference, to airport, all in the midst of Atlanta traffic. I am gratified that CISAB was able provide this chance to interact with colleagues from the Keck Center and the CBN, both scientifically and socially. Such opportunities exemplify the commitment CISAB has towards an integrative and collaborative approach in understanding how animals behave. —Winnie Ho

Keck Center hosts Nicole Gerlach



*“An African monkey supposedly is adept at picking every lock on every cage he has been in. For that he got twenty minutes on a National Geographic Special. I had a cousin with the same skill who got two years”
Erma Bombeck*



This year marked the tenth anniversary of the founding of the W.M. Keck Center for Behavioral Biology at North Carolina State University, one of the institutions for the study of behavior with which CISAB has an established partnership. Fittingly, this year’s Keck Center Annual Student & Postdoctoral Symposium was the largest ever, with 22 student presentations. CISAB student Nicole Gerlach participated in the symposium, presenting her research entitled “Sex and consequences: extra-pair behavior and female fitness in the dark-eyed junco (*Junco hyemalis*).”

This symposium is designed to give students and postdocs a chance to present their research to an



audience of their peers from all of the institutions that participate in the exchange. Also invited to present were several students from the Center for Behavioral Neuroscience (CBN) in Atlanta: Dayna Loyd and Joseph Normandin from Georgia State University, and Zoe Donaldson from Emory University, as well as Joshua Mast, a visiting postdoctoral student from Stanford University.

The presentations covered a wide range of topics in behavioral biology, and were organized into five sessions: (1) Physiology and Behavior, (2) Evolution of Behavior, (3) Behavioral Genetics and Genomics, (4) Ecology and Social Regulation of Behavior, and (5) Behavioral Neuroscience and Disease Models.

In the Evolution of Behavior session, North Carolina State post-doc Warren Booth presented his research of the population genetics of German cockroaches at hog farms. Cockroaches are a major pest in livestock farms, and understanding their population structure and how they spread to new environments can potentially lead to more effective meth-

ods of control. If populations from farms owned by the same management company are the most closely related, it is likely that cockroaches are being spread by movement between farms, perhaps with supplies or animals from the company’s distribution center. In contrast, if populations from neighboring farms are most similar, then the cockroaches are most likely dispersing by other methods unrelated to human activity. In his research, Warren analyzed microsatellite markers and genetic sequences of cockroaches from a number of North Carolina farms. He found no effect of either management company or geographic distance on the population genetic structure; each farm was equally diverse from all others. While these results may be disappointing from a pest management point of view, they did have one impressive outcome – Warren’s talk was shortly before the lunch break, and had a significant negative effect on the consumption of the available ham sandwiches!

In the Behavioral Neuroscience and Disease Models session, Joseph Normandin from CBN at Georgia State University presented his research on the neurobiology of genital reflexes during sexual behavior. Sexual dysfunction in both males and females is of large concern to the medical industry, and knowing more about the neural regulation of sexual behavior is one key piece to unraveling that mystery. Joseph’s research focused on the nucleus paragigantocellularis (nPGi) in rats, a brainstem region that is known to inhibit genital reflexes such as erection and ejaculation. By injecting a retrograde tracer into the nPGi before allowing the animals to engage in sexual behavior, he was able to determine which brain regions project to the nPGi. Several areas of these areas also showed high levels of immediate early gene activity during sexual behavior, as well as high levels of androgen and/or estrogen receptors. These patterns appeared in both sexes, although some areas such as the medial preoptic area (mPOA) showed much higher connectivity to the nPGi in males than in females.

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CISAB 2007 Annual Report

Current Participants:

Faculty = 50 faculty representing 14 departments/programs. In 2007, we added 4 faculty members.

New CISAB Director = In July, Gregory Demas, Biology accepted the position of CISAB Director .

Students and Affiliated Scientists = 25 postdoc and affiliated scientists, 54 graduate and 39 undergraduate students. In 2007, we added 5 postdocs, 14 graduate and 21 undergraduates.

Core Facilities:

Animal Behavior Laboratory (AB Lab). Rose Stewart, Ph.D. is the new Director of our Animal Behavior Lab. Since its inception in 2003, the CISAB Animal Behavior Lab has served as an important resource for more than 50 members of the IU research community. The primary purpose of the lab is to provide equipment, training and sample analysis to faculty, post-docs, graduate students and affiliates interested in incorporating molecular or endocrine techniques into their research. It also plays an integral role in student training during CISAB's annual "Summer Undergraduate Research Experience" and graduate-level animal behavior technique courses.

In 2007, the **AB Lab** (JH 136) provided training and advice on 14 new research projects and equipment access to 19 individuals. Five new grant proposals and one manuscript resulted from this research.

The lab also was used for training sessions during the NSF-supported "Summer Research Undergraduate Experiences for Undergraduates (REU)" program. The lab remains fiscally-independent and users are charged for supplies and reagents purchased by CISAB.

In 2008, we hope to expand the lab's capabilities by acquiring additional lab space and identifying new funding sources for equipment and lab

maintenance. We also plan to update the CISAB website to provide more information on the various techniques performed in the lab.

Training Program:

Spring 2005, IU was awarded a five-year, million-dollar **NIH training grant** "Common Themes in Reproductive Diversity" under the direction of CISAB faculty members Ellen Ketterson, Dale Sengelaub, Troy Smith and Greg Demas. CISAB, the Kinsey Institute for Research in Sex, Gender, and Reproduction, and the Department of Gender Studies are key units involved in the training. The grant funds 4 graduate students and 2 postdocs each year.

Eleven students participated in our NSF-supported **Summer Undergraduate Research Experience** (2006-2010). We applied for and received funds from NSF for a RET supplement grant for a biology high school teacher to participate in this year's REU Program.

Twenty-one undergraduate and 7 graduate students were awarded animal behavior **minors and area certificates**. Currently, 33 undergraduates and 19 graduate students are actively working toward a minor or area certificate.

Six students signed up for the **Animal Behavior Internship**. Internship involved projects taking place at WildCare, the Exotic Feline Rescue Center and Wonderlab.

CISAB maintained active email communication about the undergrad minor in animal behavior and internship program, as well as assisted transfer students and high school students with questions about animal behavior.

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Annual Report continued



*“The crow does
not hide its prey,
but calls for others
to share it; so
wealth will be with
those of a like
disposition”
Tiruvalluvar
5th Century AD*



Eight PhD students became **CISAB Scholars**, receiving stipend support in 2007/08. Thirteen students received **travel awards** to present their research at major conferences.

The **A501 graduate course** was offered in Fall 2007. Topic: **“Mate Choice”**. The class covered a wide range of topics related to the evolution and proximate mechanisms of mate choice -- including sensory, hormonal and neural mechanisms; adaptive functions; and touched on a few related topics including the evolution of mating systems, mate competition, etc. There was also an A501 course offered in Spring 2007. Topic: **“Sensory Ecology”**. In this graduate-level course students explored the growing field of how selective pressures shape the production and reception of natural signals. Course content will be partly driven by student interest but will emphasize the breadth of topics that are considered in this field. Topics included: signal-receiver issues, including signals that are coordinated across multiple modalities, hormonally-induced or seasonal changes in sensory systems, coevolution of sensory abilities in predator-prey relationships, specializations in sensory organs or brain circuits, and signaling systems and speciation.

Seminars and other Events:

Our annual **Animal Behavior Conference** (April 2007) was a full-day conference followed by a reception. The conference included nineteen oral presentations and 26 poster presentations. Our student exchange program is in its 4th year and continues to be very successful. We hosted three representatives from the **Keck Center for Behavioral Biology** (North Carolina State University) and two from the **Center for Behavioral Neuroscience** (Atlanta, Georgia). One CISAB graduate student attended at both symposiums.

The 2007 **Exemplar Award** was presented to Michael J. Ryan, Clark Hubbs Regional Professor in Zoology at the University of Texas at Austin. The award is given to a scientist with an outstanding career exemplifying the integration of different perspectives of animal behavior. Dr. Ryan was the plenary speaker at the IU Animal Behavior Conference where the award was presented.

The **William J. Rowland Mentoring Award** was presented to Bronwyn Heather Bleakley, Ph.D. candidate in the Biology Department. This award honors doctoral students who follow the example of Bill Rowland, in being exemplary mentors to undergraduate researchers.

CISAB contributed to the hosting or co-sponsoring of 23 guest speakers in 2007.

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SACNAS aims to support diversity by encouragement of minorities in the sciences and to act as a support group through mentoring relationships among its members.

Here at IU, the SACNAS student run chapter will strive to achieve these aims through two main goals: (1) by preparing students for the national conference, so both IU and the student can be featured at the national level; and (2) by outreaching to minority high-school students in the area and encouraging them to pursue a college education and advanced degrees.

If interested in joining SACNAS or for more information on upcoming events, contact one of the officers or check out our website (coming soon).

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Justin Henson, national liaison: jwhenson@indiana.edu (contact)

Carolina Penalva, advisor: dcpenalv@indiana.edu

National website: www.sacnas.org

IU chapter website coming soon!

—Mayte Ruiz

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The students and faculty of the Keck Center were exceptionally gracious and accommodating hosts during Nicole's visit to North Carolina. Upon arrival, a large group of students, postdocs, and visiting students had an excellent dinner at a local restaurant, which gave everyone a chance to meet each other and served to make the visitors feel welcome. There was plenty of time for informal interaction with students and faculty during the symposium, and topics ranged from the research being presented and various graduate school experiences to apologies for the weather (low thirties – frigid for the North Carolinians, practically balmy for those from Indiana). After the symposium, everyone was invited to a party at faculty member Bob Grossman's house, which featured a fantastic spread of delicious Italian food, plenty of chatting, and some highly contested and heavily watched games of pool.

Overall, the conference was a wonderful way to interact with colleagues from a variety of institutions, and to learn more about recent research from across the wide span of behavioral biology.

—Nicole Gerlach

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In Summer 2007, we supervised an REU trip to the **Exotic Feline Rescue Center**

CISAB continued to coordinate the NSF-sponsored **Charles H. Turner program** which sends 10-15 undergraduates each year to the annual meeting of the Animal Behavior Society. 4 of the 11 2007 Turner award recipients were REU interns. CISAB staff hosted a one-day workshop immediately before the meetings to help the students get the most out of their meeting experience. CISAB assisted Peggy Hill with the **Turner Award** student applications and webpage

We maintained a CISAB Table at **Freshman Orientation Fair** which took place at the IMU

Re-designing of the **CISAB Web Page** was begun, including a new REU page design and new conference pages. In addition, CISAB has worked with Ellen Ketterson to help update the CTRD web page.

We created a new CISAB brochure with updated information on our REU Program, undergradu-

ate and graduate minor and area certificate in animal behavior, funding, awards, and “how to apply” to Indiana University and the Program in Animal Behavior. Approximately 700 **brochures** were sent out to recruit undergraduate and graduate students. We participated in a Graduate School presence at **SACNAS**, **ABCRMS**, and **ABS** meetings and participated in the **Biology and Psychological & Brain Sciences Departments Graduate Recruitment Weekend**. We met also with several prospective undergraduates, and participated in the **IU Freshman Exposition** and our annual **CISAB Open House**. At this year's Open House we **honored Emilia Martins** for all her outstanding accomplishments in shepherding CISAB through the past four years. To honor her directorship and all that she accomplished, she was presented with a plaque.

CISAB will host the **International Ethological Conference (ICE)** in 2011.

**Center for the Integrative
Study of Animal Behavior**

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National Meetings

**Interdisciplinary Symposium of
the Mind**

University of Toronto, March 1-2

**Tri-State Conference on Animal
Learning and Behavior**

University of Kentucky, March 28-30

**South East Nerve Net
Conference**

Georgia State University, Mar 28-29

Cognitive Neuroscience Society

San Francisco, April 12-15

Animal Behavior Conference

Indiana University, April 25

**Genetics & Genomics of
Behavior**

North Carolina State, June 4-7

**Consciousness, Agency and the
Will**

University of Edinburgh, June 28-29

**Society of Behavioral
Neuroendocrinology**

Groningen, Netherlands, July 9-12

**2008 North American Comput-
ing & Philosophy Conference**

Indiana University, July 12-12

CogSci 2008

Washington, DC, July 23-26

**International Primatological
Society Congress**

Edinburgh, Scotland, August 3-8

**International Society for Behav-
ioral Ecology Conference**

Ithaca, NY, August 9-14

Animal Behavior Society

Snowbird, UT, Aug 16-20

**10th International Conference
on Cognitive Neuroscience**

Bodrum, Turkey, September 1-5