



# 10<sup>th</sup> International Congress of Neuroethology

Aug 5 – 10, 2012  
University of Maryland  
College Park



PROGRAM BOOK

[www.icn2012.umd.edu](http://www.icn2012.umd.edu)



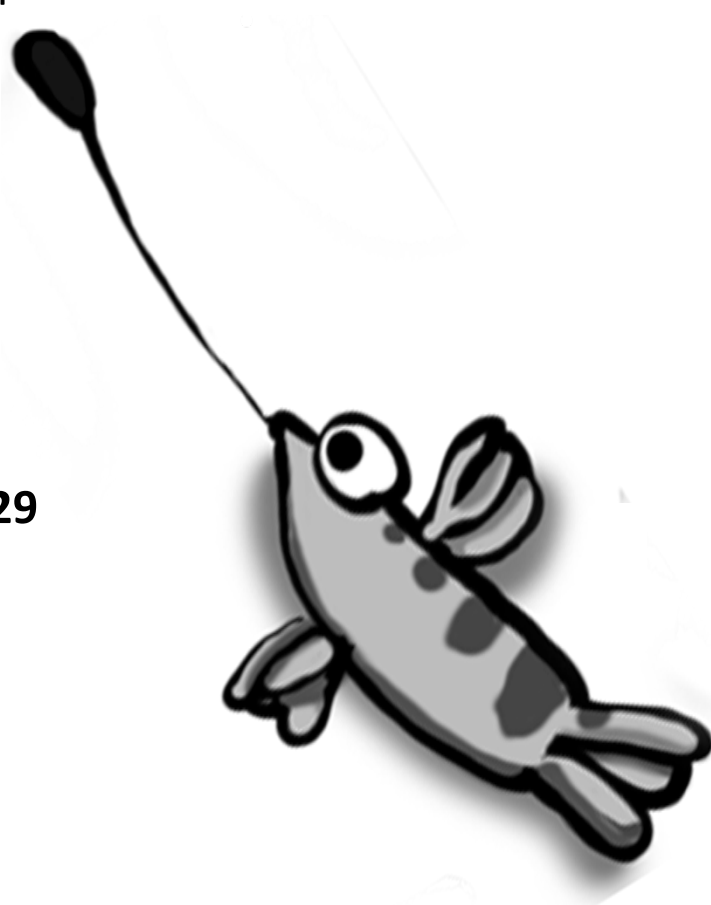
UNIVERSITY OF  
MARYLAND

Time	MONDAY, August 6	TUESDAY, August 7	WEDNESDAY, August 8	THURSDAY, August 9	FRIDAY, August 10
8:20 – 8:30	<b>Welcome:</b> Dean Jayanth Banavar <i>College of Computer, Mathematical, and Natural Sciences</i>				
8:30 – 9:30	<b>Plenary 1:</b> Arthur N. Popper	<b>Plenary 3:</b> Ole Kiehn	<b>Plenary 5:</b> Constance Scharff	<b>Plenary 6:</b> Elke K. Buschbeck	<b>Plenary 7:</b> Toshiya Matsushima
9:30 – 10:00	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>	<b>Coffee Break</b>
10:00 – 12:00	<b>Special Symposium: Roots, Progress, and Prospects</b> <ul style="list-style-type: none"> <li>William B. Kristan</li> <li>Darcy B. Kelley</li> <li>Ronald R. Hoy</li> <li>Catherine E. Carr</li> </ul>	<b>Special Symposium: Young Investigators</b> <ul style="list-style-type: none"> <li>Antoine Wystrach</li> <li>Basil el Jundi</li> <li>Michael Yartsev</li> <li>Lauren O'Connell</li> </ul>	<b>Concurrent Invited Symposia</b> <b>Symposium 4:</b> <i>Variability in intrinsic properties of neurons and their synaptic connections</i> <b>Symposium 5:</b> <i>Multiple cues for orientation</i> <b>Symposium 6:</b> <i>No oxygen, no problem! The neuroethology of hypoxia-tolerant mammals</i>	<b>Concurrent Invited Symposia</b> <b>Symposium 7:</b> <i>Activity generated modulation of motion vision responses</i> <b>Symposium 8:</b> <i>Automated social behavior analysis</i> <b>Symposium 9:</b> <i>Invertebrate models for locomotion research</i>	<b>Concurrent Invited Symposia</b> <b>Symposium 10:</b> <i>Nociceptors in the real world</i> <b>Symposium 11:</b> <i>Polarization vision: New discoveries of natural behaviors</i> <b>Symposium 1:</b> <i>Motor and sensorimotor processing</i>
12:00 – 2:00	<b>Lunch/Informal Poster Viewing</b>	<b>Lunch/Informal Poster Viewing</b>	<b>Lunch/Informal Poster Viewing</b>	<b>Free Time</b>	<b>Lunch</b>
2:00 – 4:00	<b>Plenary 2:</b> Carsten Duch (2:00 – 3:00 pm)	<b>Plenary 4:</b> Malcolm Burrows (2:00 – 3:00 pm)	<b>Poster Session II &amp; Coffee</b> (2:00 – 3:30 pm: even poster numbers; 3:30 – 5:00 pm: uneven poster numbers)		<b>Concurrent Participant Symp.</b> <b>Symposium 2:</b> <i>Attention, Localization, and Alarm</i> <b>Symposium 3:</b> <i>Audition and mechanosensation</i> <b>Symposium 4:</b> <i>Visual processing</i>
4:00 – 6:00	<b>Poster Session I &amp; Coffee</b> (3:00 – 4:30 pm: even poster numbers; 4:30 – 6:00 pm: uneven poster numbers)	<b>Coffee Break</b> (3:00 – 3:30 pm) <u>Concurrent Invited Symposia</u> (3:30 – 5:30 pm) <b>Symposium 1:</b> <i>Animal visual search</i> <b>Symposium 2:</b> <i>Correlated neural activity in tadpole and zebrafish studied by recent advanced technologies</i> <b>Symposium 3:</b> <i>Fixed and flexible traits in mating signals: evolution, genetics, and physiological background</i>	<b>Free Time</b>		<b>End of Congress</b>
6:00 – 9:00	<b>Heiligenberg Lecture:</b> James A. Simmons (6:00 – 7:00 pm) <b>Graduate Student/Post-Doc Mixer</b> (7:00 – 9:00 pm)	<b>Huber Lecture:</b> Edward A. Kravitz (6:00 – 7:00 pm) <b>EC Meeting</b> (7:00 – 8:00 pm)	<b>Business Meeting and Awards</b> (6:00 – 7:00 pm)	<b>Cruise Banquet</b>	

**Sunday, August 5, 6:00-9:00 pm: Registration and Welcome Reception at the Clarice Smith Performing Arts Center (CSPAC)**

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# WELCOME

## *Message from Local Organizing Committee*

On behalf of the Local Organizing Committee I welcome you to the 10<sup>th</sup> meeting of the International Congress for Neuroethology. The University of Maryland (UMD) is one of the leading public institutions in the United States, with over 25,000 undergraduate and 10,000 graduate students. We have numerous world-class programs in science and engineering, as well as in the social sciences, arts, and humanities.

Of particular interest to ICN attendees might be our programs related to neuroscience and cognitive science. Indeed, you might want to explore the website of our Neuroscience and Cognitive Science (NACS) program ([www.nacs.umd.edu](http://www.nacs.umd.edu)) or our auditory neuroscience program website ([www.ccebh.umd.edu](http://www.ccebh.umd.edu)) to find colleagues on campus with whom you might like to visit while here. We have over 100 faculty involved in these disciplines, and they cover a wide range of research areas. We are particularly proud of our large number of neuroethologists.

Please, while you are here, feel free to also explore our lovely campus. Perhaps you will have a chance to meet Testudo, our campus mascot, or even discover (right outside of our meeting venue) a wonderful statue honoring the brilliant puppeteer Jim Henson and his greatest creation, Kermit the Frog. Henson was an undergraduate here at UMD where he created his own major in puppeteering!

The opening of the meeting will take place in the Clarice Smith Center for the Performing Arts. The meetings themselves take place in the Adele H. Stamp Student Union. This building is fully handicapped accessible and well air conditioned. Wi-Fi is available all over campus and every participant will be given an account for free access. Lunches will be near the Stamp Union in the Riggs Alumni Center.

Since UMD is so close to our Nation's capital, we set aside Thursday afternoon so those who are here for only a limited time can enjoy some of the sights of Washington, DC. DC (as the locals refer to it) abounds with things to do. Thus, you may want to look at our web page in advance and plan your visit. Because this area is rather warm in summer, you may prefer to spend time in some of our museums. Many of our world-class museums are part of the Smithsonian Institution, and admissions to all is without cost! Of course, you can also go to any of the great monuments (though the Washington Monument is closed for repair) or national buildings and wander around. There are many good restaurants in DC as well (take a look at the restaurant pages at [www.washingtonpost.com](http://www.washingtonpost.com) or [www.washingtonian.com](http://www.washingtonian.com)). Finally, our evening cruise/banquet on the Potomac (which will allow lovely views of DC) will take place Thursday evening. It will be easy to get to the cruise boat from anywhere in DC. Instructions will be included with your cruise tickets, and we will provide transportation back to campus afterwards.

Of course, if you have any questions during the meeting we will have a team of student and post-doc volunteers who will be clearly identified and ready to help you. And, there will always be someone at the registration desk to help out as well.

Finally, I want to express my personal thanks to all of my colleagues on the Local Committee, as well as to the outstanding co-chairs of the Program Committee, for their help, cooperation, and very effective work in putting the meeting together. We also are very grateful to the organizations that provided funds to the meeting to help us keep costs reasonable and also for the funds that have enabled us to support the attendance of over 100 graduate students and postdocs.



*Photo: S. Blumenrath*

- Arthur Popper, Chair, Local Organizing Committee

# WELCOME

## *Message from ISN President*

As the outgoing President of the International Society for Neuroethology (ISN), it is my pleasure to welcome you to the International Congress of Neuroethology (ICN). As you attend the talks and posters this week, you will find research at all levels of analysis from molecular to purely behavioral. You will find a wide variety of species represented. Most importantly, you will find researchers from many different nations. I find these Congresses to be the most enjoyable and intellectually stimulating conferences that I attend, and I hope that you will as well.

In addition to organizing this Congress, the ISN helps promote young investigators through various awards and prizes. On Tuesday morning we will hear presentations from winners of the Young Investigator Awards. Wednesday evening at the Business Meeting, we will recognize this and last year's winners of the Capranica Prize, preceded by a short tribute to Bob Capranica who recently passed away. We will also recognize winners of the Heiligenberg Travel Award and the Developing Neuroethology Award, which assists young investigators from the developing world.

I encourage everyone to attend the business meeting, where we will see a presentation about the 2014 International Congress of Neuroethology, which will be held in Sapporo Japan. We will also see proposals for the 2016 International Congress of Neuroethology, meet the candidates for ISN Officers and Council, and I will turn over the leadership of the ISN to our new president, Alison Mercer. As a member, you help shape the future of the ISN by helping to select conference sites, choose representatives, and organize symposia.

As ISN looks to build the future, it also remembers its roots. Monday morning is the Roots, Progress, and Prospects Symposium. Prior to the talks, we will take a moment to recognize the recipients of a new honor for our distinguished members: Fellow of the International Society for Neuroethology. Some of the founders of our Society will be given this special honor.

If you are not already a member of the ISN, please go to [www.neuroethology.org](http://www.neuroethology.org) and join. Your membership helps promote the kind of science represented at this conference. I hope that you will find the International Society for Neuroethology your academic home.

- Paul S. Katz, ISN President



# ACKNOWLEDGEMENTS

## FUNDING

Funding for this conference was generously provided by grants from the National Institute of Neurological Disorders and Stroke (NINDS; NIH grant # 1R13NS080516-01), the National Science Foundation (grant #: IOS 1226873), and the Air Force Office of Sponsored Research (AFOSR grant #: 12RSL145). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services or any other of the funding agencies; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

We are also very grateful for broad support for the Congress from various Colleges and Programs at the University of Maryland including the A. James Clark School of Engineering, College of Behavioral and Social Sciences (BSOS), College of Computer, Mathematical, and Natural Science (CMNS), Center for Comparative and Evolutionary Biology of Hearing (C-CEBH), The Graduate School, Program in Neuroscience and Cognitive Science (NACS), and School of Public Health (SPH).

We are appreciative of additional support provided by the Acoustical Society of America.

## PROGRAM COMMITTEE

Hans-Joachim Pflüger (Germany), Co-Chair  
Andrea Simmons (USA), Co-Chair  
Melissa Coleman (USA)  
Mark Frye (USA)  
Asif Ghanzanfar (USA)  
Martin Giurfa (France)  
Zhongmin (John) Lu (USA)  
Justin Marshall (Australia)  
Roy Ritzmann (USA)  
Peter Simmons (UK)  
Sakiko Shiga (Japan)  
Annemarie Surlykke (Denmark)  
Lidia Szczupak (Argentina)

## LOCAL ORGANIZING COMMITTEE

Arthur N. Popper, Chair  
Sandra Blumenrath  
Hilary Bierman  
Beth Brittan-Powell  
Amanda Chicoli  
Karen Carleton  
Catherine E. Carr  
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# ACKNOWLEDGEMENTS

## CONFERENCES & VISITOR SERVICES CENTER UNIVERSITY OF MARYLAND

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## ADDITIONAL HELP WAS PROVIDED BY

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## DOODLE ARTIST

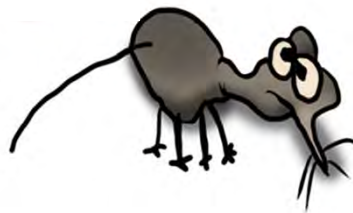
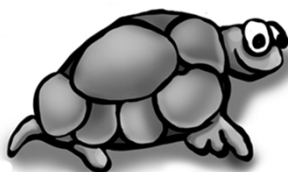
Tzur Haspel-Soares

## PROGRAM BOOK

Hilary Bierman  
Sandra Blumenrath

## CONFERENCE PHOTOGRAPHY

Peter Berger



*Like the ICN 2012 Doodles?*

*You can purchase merchandise with them by visiting the Neuroethology 2012 store on cafepress:  
[www.cafepress.com/isn2012](http://www.cafepress.com/isn2012)*

# GENERAL CONFERENCE INFORMATION

## REGISTRATION & INFORMATION DESK

The conference registration desk will be located Monday through Friday in the Stamp Student Union, adjacent to the Grand Ballroom. On Sunday, registration will be available at the Welcome Reception in the Clarice Smith Performing Arts Center.

At the registration desk you can:

- Check in and receive your participation packet
- Ask questions about registration or on-campus accommodations
- Get tourist information
- Lost and found

## VENUE INFORMATION

The majority of the conference activities will take place in the Adele H. Stamp Student Union. All Plenary talks, Special Symposia, and Evening Lectures will take place in the Colony Ballroom, located on the 2nd floor. Concurrent Invited and Participant Symposia will take place in the Hoff Theater (ground floor), Colony Ballroom (2nd floor) and Prince George's Room (1st floor). Poster sessions will take place in the Grand Ballroom (1st floor).

## LUNCH & COFFEE BREAKS

Lunch will be provided to registered attendees Monday, Tuesday, Wednesday, and Friday from 12 to 2 pm in the Riggs Alumni Center. Coffee break refreshments will be served in the Grand Ballroom and Grand Ballroom Lounge.

## INTERNET ACCESS

At registration you will receive a login and password for gaining internet access on your private computer or mobile device. Internet access is available throughout all buildings and open spaces of the campus. To access, select "UMD" from the list of available networks. You will be prompted to enter your login and password upon opening your browser.

## HOTEL LOOP SHUTTLE

Shuttle service is provided between the conference venue and the Holiday Inn College Park, Hilton Garden Inn, and Comfort Inn & Suites College Park. Shuttles will leave hotels at 7:30 am to arrive at the venue by 8 am and will return after the last scheduled session or event. Thursday after the morning sessions, the shuttle will make an additional stop at the College Park Metro Station. A detailed schedule and routes can be picked up at the registration desk.

If you wish to return to your hotel during the day, hotel-owned shuttles can be called at the numbers listed below. Please go to the registration desk if you need assistance.

Hilton Garden Inn: (301) 474-7400

Holiday Inn College Park: (301) 345-6700

Comfort Inn & Suites College Park: (301) 441-8110

## PARKING

Visitor parking is available in several garages on campus. Regents Garage and Union Lane Garage are the closest parking options for the meeting (see back cover for garage locations). Please park in specified visitor parking areas and use the pay stations upon leaving your car.

**Note: Residence hall parking permits are not valid in the garages.**

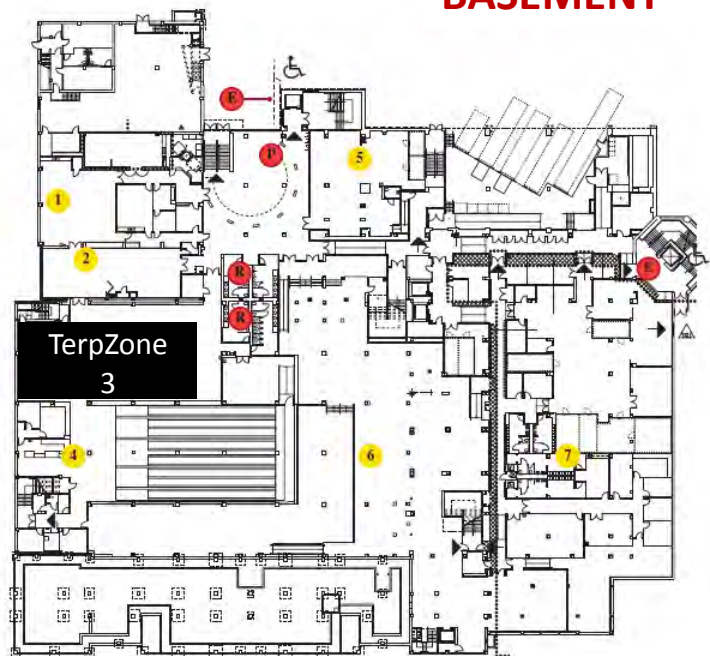


# MAP OF STAMP STUDENT UNION

## BASEMENT

### Basement

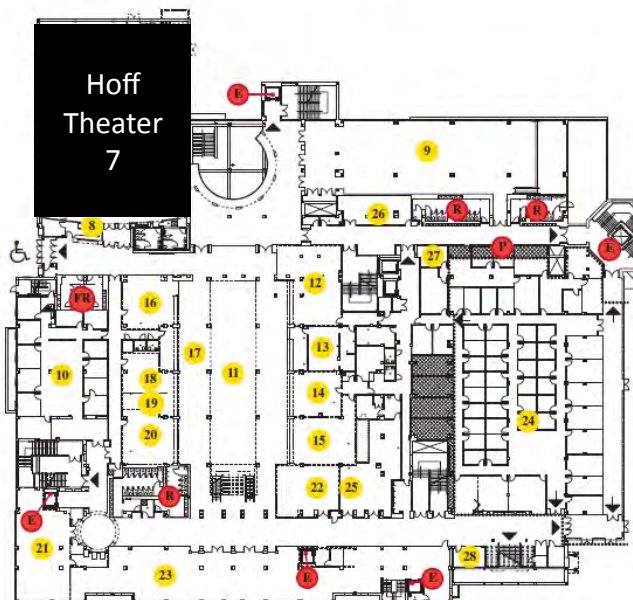
- 1 – Art & Learning Center (B0107)
- 2 – Activities Room (B0108)
- 3** – TerpZone–Bowling/Billiards/TV Lounge
- 4 – Subway (B0106)
- 5 – Food Co-op (B0203)
- 6 – University Book Center
- 7 – Facilities Office (B0226)
- P – Public Phones
- R – Restrooms
- E – Elevator



## GROUND FLOOR

### Ground Floor

- 7** – Hoff Theater (0126)
- 8 – Stamp Ticket Office (0124)
- 9 – Baltimore Room (0240)
- 10 – Campus Programs – Student Engagement/Leadership/Community Service Learning (0110)
- 11 – Food Court (0496)
- 12 – McDonald's (0215)
- 13 – Saladworks (0214)
- 14 – Moby Dick
- 15 – Sbarros (0212)
- 16 – Chick-Fil-A (0118)
- 17 – Sushi by Panda (0117)
- 18 – Taco Bell (0113)
- 19 – Auntie Anne's (Coming soon)
- 20 – Panda Express (0112)
- 21 – Capital One Bank (0105)
- 22 – Terrapin Shipping and Mailing (0211)
- 23 – University Book Center (Terp Shop)
- 24 – Student Involvement Suite (0207, 0208, 0209)
- 25 – Union Shop (0210)
- 26 – Copy Services (0232)
- 27 – SEE–Student Entertainment Events (0221)
- 28 – Terrapin Technology Store (0203)
- P – Public Phones
- FR – Family Restroom
- R – Restroom
- E – Elevator

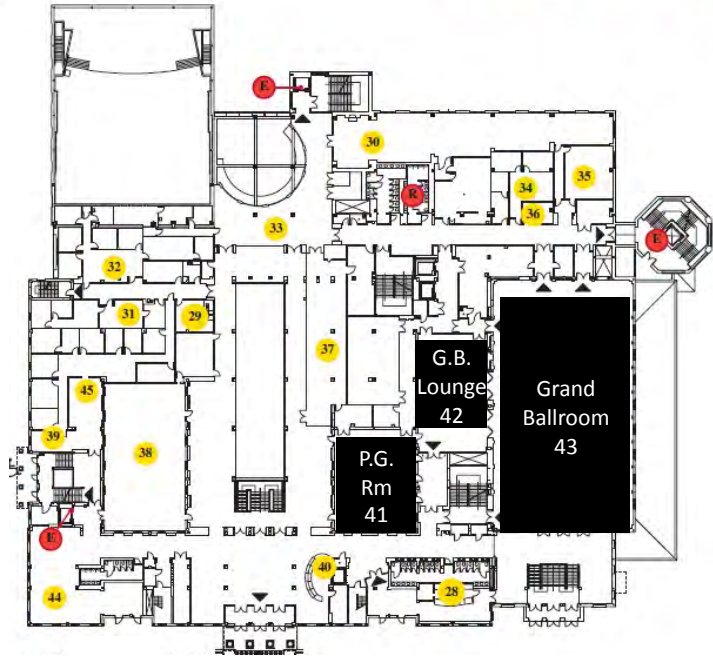


# MAP OF STAMP STUDENT UNION

## First Floor

- 28 – Coffee Bar (1203)
- 29 – Multicultural Involvement & Community Advocacy
- 30 – Adele’s (1240)
- 31 – Graduate Student Suite (1121)
- 32 – Event Services/Marketing
- 33 – North Court (1482)
- 34 – Undergraduate/Graduate Legal Aid (1235)
- 35 – Nanticoke Room (1238)
- 36 – Marketing Asst. (1236)
- 37 – Stamp Gallery (1220)
- 38 – Atrium (1107)
- 39 – Off Campus Housing (1110)
- 40 – Information Desk (1201)
- 41** – Prince George’s Room (1210)
- 42** – Grand Ballroom Lounge (1209)
- 43** – Grand Ballroom (1206)
- 44 – Reading Room (1105)
- 45 – Office of Fraternity & Sorority Life (1110)
- R – Restrooms
- E – Elevator

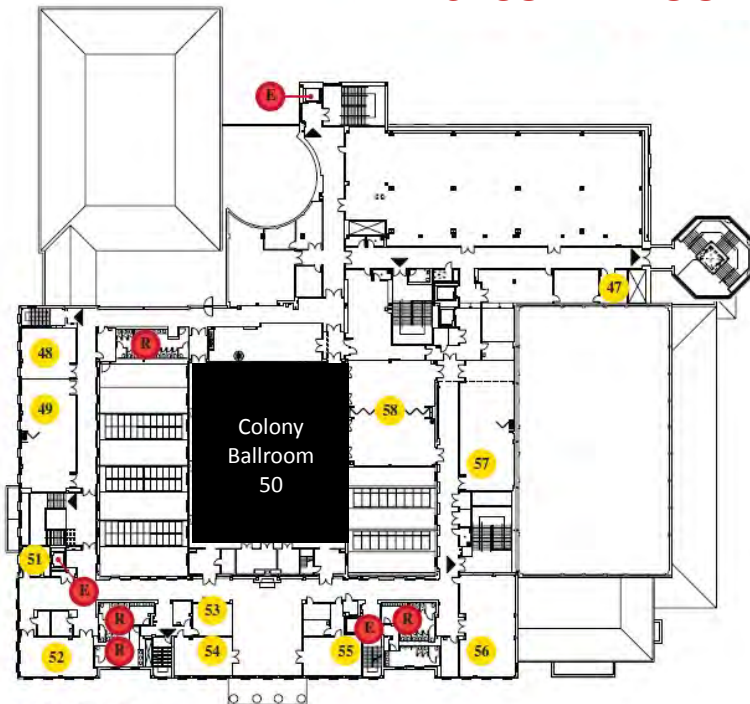
## FIRST FLOOR



## SECOND FLOOR

### Second Floor

- 47 – Technology Services - IT Help/  
Audio Visual Services (2220)
- 48 – Thurgood Marshall Room (2113)
- 49 – Margaret Brent Room (2112)
- 50** – Colony Ballroom (2203)
- 51 – Harriet Tubman (2110)
- 52 – Pyon Su Room (2108)
- 53 – Edgar Allen Poe Room
- 54 – Calvert Room
- 55 – Crossland Room
- 56 – Juan Ramon Jimenez Room
- 57 – Benjamin Banneker Room
- 58 – Charles Carroll Room
- R – Restrooms
- E – Elevator



# AREA INFORMATION

## THE UNIVERSITY OF MARYLAND, COLLEGE PARK

The University of Maryland is one of the largest and most respected public universities in the United States. Started in 1859 as Maryland Agricultural College with 34 students, the university now serves over 25,000 undergraduate students and 10,000 graduate students. A self-guided tour of many of the campus landmarks can be found at our Conference & Visitor Services website <http://www.cvs.umd.edu/visitors/campustour.html> or picked up at the Visitor Center (see campus map on back cover). You can learn more about the university's history at <http://www.lib.umd.edu/univarchives/links.html>.

### TRANSPORTATION

The university campus is located in Prince George's County, Maryland, in the city of College Park. The campus is 10 miles from Washington D.C. and about 30 miles each from Baltimore and Annapolis, Maryland's State capital. A combination of free university shuttle service and the Metro (our subway) is the best way to get to most Washington D.C. attractions. Taxis and rental cars, such as the many Zipcars parked on campus, might be the best choice for other locations.

#### Shuttle UM

Route 104 travels between several locations on campus and the College Park metro station. It is about 1.5 miles from the Stamp Student Union to the Metro station. Shuttles leave from the bus bay outside the Union on College Drive. Weekday service runs every 10 minutes from 6 am to 8 pm, continuing every 20 minutes until 12:40 am.

For other routes and additional information see the Shuttle UM website:

<http://www.transportation.umd.edu/>

#### The Metro (Subway)

The Metro is probably the best way to get downtown. The next page shows a subway system map. The College Park Metro Station is near the end of the Green Line. The price of your ride is determined by how far you want to go and the time of day. A trip from College Park to the Smithsonian Station, for example, costs \$3.90 with SmarTrip Card and \$4.90 using cash during rush hour (weekdays from opening to 9:30 am and 3 to 7 pm), and \$2.75 or \$3.75 (SmarTrip Card and cash, respectively) during non-rush hour. Upon exiting the station the cost of your trip will be deducted from your fare card. FYI, it is against the law to eat or drink or carry open food on the Metro, and you are liable to be ticketed if you do.

In addition to the subway, the metro also runs many buses throughout the area. Useful bus routes are the 81, 83, and 86 – which connect to the campus, College Park Metro, Rhode Island Ave Metro and points in Beltsville.

A trip planner and other information can be found on [www.wmata.com](http://www.wmata.com), or use the DC Metro Transit smartphone app.

# M System Map

wmata.com  
 Customer Information Service: 202-637-7000  
 TTY Phone: 202-638-3780

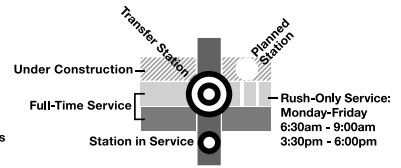
- ### Legend
- RD** Red Line • Glenmont to Shady Grove
  - OR** Orange Line • New Carrollton to Vienna
  - BL** Blue Line • Franconia-Springfield to Largo Town Center
  - GR** Green Line • Branch Ave to Greenbelt
  - YL** Yellow Line • Huntington to Fort Totten
  - SV** Silver Line • Future Dulles Corridor Line

### Station Features

- Bus to Airport
- Parking
- Hospital
- Airport

### Connecting Rail Systems

- AMTRAK
- VRE
- MARC



**Metrorail Operating Times**  
**Mon-Thu**  
 5am-midnight  
**Fri**  
 5am-3am  
**Sat**  
 7am-3am  
**Sun**  
 7am-midnight  
 Times are approximate; check station kiosks or online for exact times.

Metro is accessible.

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- No Smoking
- No Eating or Drinking
- No Animals (except service animals)
- No Audio (without earphones)
- No Littering or Spitting
- No Dangerous or Flammable Items

# AREA INFORMATION

## AREA ATTRACTIONS & RESTAURANTS

### College Park

#### *Dining in College Park:*

There are a variety of dining options both on- and off-campus. In the Stamp Student Union you can find a number of fast food options in the food court, a Subway sandwich shop, the Food Co-op (vegetarian and vegan food), a coffee shop serving Starbucks' coffee, and Adele's restaurant (for a nice sit-down lunch). Another notable on-campus option is The Dairy, located in Turner Hall on Route 1 (next to the visitor's center). The Turner Dairy serves various food items and the university's own outstanding ICE CREAM. Off-campus, a number of take-out and sit-down eating places can be found on the Route 1 corridor, both north and south of campus. A list of these and other local eateries can be found on the separate **College Park & Hyattsville Restaurant Guide** in your registration packet.

#### *College Park Attractions:*

College Park Airport and Aviation Museum (1985 Corporal Frank Scott Drive)

Known as the "Cradle of Aviation", this airport is the world's oldest continually operated airport.

[http://history.pgparcs.com/sites\\_and\\_museums/College\\_Park\\_Airport.htm](http://history.pgparcs.com/sites_and_museums/College_Park_Airport.htm)

Lake Artemesia Natural Area Park (55<sup>th</sup> Ave and Lake Artemesia)

Public park with a 38-acre lake, fishing pier, aquatic garden, and several miles of hiker-biker trails.

[http://www.pgparcs.com/Things\\_To\\_Do/Nature/Lake\\_Artemesia.htm](http://www.pgparcs.com/Things_To_Do/Nature/Lake_Artemesia.htm)

### Beyond College Park

Many great attractions are located relatively close to College Park. In Washington D.C., the Smithsonian offers many free metro-accessible museums, including the Natural History Museum, a number of phenomenal art museums (National Gallery, National Portrait Gallery, African Art, Sacklar, Freer, Hirshhorn Museum, and Sculpture Garden), the Air and Space Museum, American Indian Museum, American History Museum, and the National Zoo. For music lovers, the U Street Corridor boasts great jazz venues and a vibrant night life. Attendees who are renting cars may want to explore Annapolis, Baltimore's Inner Harbor, or Great Falls Park. The registration and information desk may be able to assist with specific ideas and touring plans.



# PRESENTER INFORMATION

## ABSTRACTS

Abstracts of all poster and oral presentations are published online and can be accessed at [http://www.frontiersin.org/events/Tenth International Congress o 1/1576/all events](http://www.frontiersin.org/events/Tenth_International_Congress_o_1/1576/all_events) by using the “View Abstracts” button, or through links embedded in the PDF version of this program book.

## POSTER PRESENTATIONS

Poster boards will be located in the Grand Ballroom in the Stamp Student Union. Each poster has been designated with a number which matches a poster board. Please put your poster up in the appropriate spot.

### Session I:

Set-up can start as early as 6 pm on Sunday, Aug. 5, and should be completed by 12 pm on Monday. All posters have to be removed by 3:30 pm on Tuesday, Aug. 7.

Presenters of EVEN numbered posters should be at their posters on Monday from 3 to 4:30 pm.

Presenters of ODD numbered posters should be at their posters on Monday from 4:30 to 6 pm.

### Session II:

Set-up can start as early as 3:30 pm on Tuesday, Aug. 7, and should be completed by 12 pm on Wednesday. All posters have to be removed by 12 pm on Thursday, Aug. 9.

Presenters of EVEN numbered posters should be at their posters on Wednesday from 2 to 3:30 pm. Presenters of ODD numbered posters should be at their posters on Wednesday from 3:30 to 5 pm.

In addition to scheduled viewing times, the poster hall will be open until 10:00 pm Monday, Tuesday, and Wednesday for informal poster viewing. Presenters are encouraged to list other times that they will be available on a card that will be provided at their poster. We also encourage presenters to include a cellphone number or email address where other participants can reach them to set up a time to meet at the poster.

## ORAL PRESENTATIONS

Symposium presentations will last 25 minutes, followed by 5 minutes for questions, unless otherwise noted. All presenters should have received a URL and an individual upload password. Please use these to upload your presentation by 6 am of the day on which you are scheduled to present. Presenters can not use their own computers, and all presentations should be in Windows-compatible format (PDF or PowerPoint).

## PRESENTATION CODES

PL Plenary Lecture

SY Symposium

HE Heiligenberg Lecture

HU Huber Lecture

PO Poster

# SOCIAL PROGRAM

## WELCOME RECEPTION & PRESENTATIONS

Sunday, August 5<sup>th</sup>

6:30– 9:00 pm

Clarice Smith Performing Arts Center

(Registration opens at 6:00 pm)

Welcome to the University of Maryland, *Dr. Wallace Loh, University President*

Welcome to ICN2012, *Dr. Arthur N. Popper, Local Chair*

## GRADUATE STUDENT & POST-DOC MIXER

Monday, August 6<sup>th</sup>

7:00 – 9:00pm

TerpZone in the basement of the Stamp Student Union

Hosted by: Amanda Chicoli, Ben Falk, and Melville Wohlgemuth

Pool tables, bowling alleys, and food.

Tickets (including one drink ticket) are available for free to registered graduate students and post-docs. Tickets are needed for entrance and for the pizza and dessert buffet. Legal photo ID showing you are over 21 years of age is required to purchase alcohol.

## BANQUET CRUISE

Thursday, August 9<sup>th</sup>

6:00 – 9:00 pm

6<sup>th</sup> and Water Street SW, Washington, DC 20024

Odyssey III Washington Cruise

Tickets are \$96 and may be purchased at the registration desk until Monday afternoon or until the tickets sell out. The cruise company obliges the following dress code: “For women, cocktail wear, a dress or dressy-casual attire is appropriate. For men, collared shirts and dress pants are recommended. Nice, designer jeans are acceptable. However, casual jeans, t-shirts, athletic shoes or flip flops are discouraged.”

To get to the cruise from UMD, take the Metro to the Waterfront Metro Station (Green Line), exit the station and turn right on M Street, which turns into Maine Ave. Turn left onto 6<sup>th</sup>. Shuttle service will be available to bring you back to the UM campus and hotels.

If you are coming from downtown, you can take Metro from wherever you are to the Waterfront Metro Station (Green Line) or take a taxi to the cruise location. **Limited** Pay parking is available at the adjacent Gangplank Marina (off of Water Street). If you plan to park, you should allow extra time. You can always enjoy a stroll along the piers.

\*\*Look for ICN representatives next to the boat to receive your ticket/boarding pass in exchange for your voucher. PLEASE NOTE: The boat sails promptly at 7 pm and you must pick up your boarding pass **before 6:45 pm**. There are no refunds if you miss the boat.

# OPTIONAL THURSDAY PM PROGRAMMING

## THINGS TO DO ON THURSDAY AFTERNOON OTHER THAN EXPLORING DC

**Lunch** can be purchased in the Stamp Student Union either in the Food Court where you can grab “typical” American fast food ranging from burgers to pizza to sushi, or in Adele’s – a sit-down restaurant on the upper level. The Stamp Union also has a Subway and several other venues to get sandwiches. There are signs to tell you where these are.

**Lab Visits:** We have arranged to open a number of labs of faculty in the Neuroscience and Cognitive Science Program (NACS) for informal visits. A listing of these labs will be available at the registration desk, starting Monday morning. ICN2012 participants can visit one or more of the open labs any time from 1 to 5 pm and stay as long as they like and in any sequence. We do ask that you sign up at the registration desk and indicate which lab(s) you are likely to visit, so we can let the investigators and their students know to expect people.

**Doing Science Ethically & Globally (*Biological Science Research Building Rm. 3101*):** Many neuroethologists today are involved in some kind of international collaborations. This is one of the “fun” parts of doing science, and one of the most stimulating. As we work on a more global scale, we often encounter a broader range of values and views on how science should be conducted. Yet, as we all know, there are core sets of basic principles on the conduct of science that remain relatively invariant across different cultures.

This session, run by an international group of neuroethologists, will consider the topic of scientific misconduct. Using an exceptionally well done interactive video, we will go step by step through a fictitious case study on scientific misconduct with ample opportunities for discussion and for understanding the consequences of making alternate decisions on discovering, reporting, and adjudicating scientific misconduct in a research laboratory.

This session, which will run about 90 minutes, is limited to 15 participants, with a focus on younger faculty. Lunch will be provided. To participate, please sign up at the registration desk starting on Monday.





# DAILY PROGRAM

## SUNDAY, AUGUST 5

6:30 – 9:00

**Registration & Welcome Reception at Clarice Smith Performing Arts Center** (Registration opens at 6:00)

## MONDAY, AUGUST 6

Unless noted, all events will take place in the Colony Ballroom.

8:20 – 8:30 am	<b>Welcome</b> <b>Jayanth Banavar</b> , Dean, College of Computer, Mathematical, and Natural Sciences
8:30 – 9:30	<b>Plenary 1</b> <b>Arthur N. Popper</b> (U. Maryland) <i>From blind cave fish to the Tappan Zee bridge – A tale of “translational neuroethology”</i> Chair: John Lu (U. Miami)
9:30 – 10:00	<b>Coffee Break</b> - Grand Ballroom Lounge
10:00 – 12:00	<b>Special Symposium: Roots, Progress, and Prospects</b> (p. 16)
12:00 – 2:00 pm	<b>Lunch</b> (Riggs Alumni Center), <b>Posters</b> (Grand Ballroom)
2:00 – 3:00	<b>Plenary 2</b> <b>Carsten Duch</b> (Arizona State U. and U. Mainz) <i>Probing motoneuron function with targeted genetic manipulation in Drosophila</i> Chair: Hans-Joachim Pflüger (Freie Universität)
3:00 – 6:00	<b>Poster Session I and Coffee Break</b> Grand Ballroom (p. 29 and p. 30)
6:00 – 7:00	<b>Heiligenberg Lecture</b> <b>James A. Simmons</b> (Brown U. and Doshisha U.) <i>Coherence for perception of target vs. clutter in bat sonar: The role of neuroethology as pathfinder for neuroscience</i> Chair: Cynthia F. Moss (U. Maryland)
7:00 – 9:00	<b>Graduate Student and Post-doc Mixer @ TerpZone</b>

# MONDAY, AUGUST 6

## SPECIAL SYMPOSIUM

### ROOTS, PROGRESS, AND PROSPECTS

Chair: Peter M. Narins (U. California Los Angeles)

Colony Ballroom

10:00		Announcement of New ISN Fellows	<b>Paul S. Katz</b>
10:05		Introduction	<b>Peter M. Narins</b>
10:10	SY1	Neuro-Ethology: Evolution and ontogeny of motor control	<b>William B. Kristan</b> (U. California San Diego)
10:35	SY2	Musical qualities in the songs of African clawed frogs: Phylogenetic signals and laryngeal mechanisms	<b>Darcy B. Kelley</b> , Ursula Kwong-Brown, Martha L. Tobias, and Damian O. Elias (Columbia U. and U. California Berkeley)
11:00	SY3	The roots of neuroethology: Where have all the flowers gone?	<b>Ronald R. Hoy</b> (Cornell U.)
11:25	SY4	Evolutionary foundations of sensory neuroethology	<b>Catherine E. Carr</b> (U. Maryland)



# TUESDAY, AUGUST 7

Unless noted, all events will take place in the Colony Ballroom.

8:30 – 9:30 am	<b>Plenary 3</b> <b>Ole Kiehn</b> (Karolinska Inst.) <i>Probing neural circuits controlling walking: Moving forward</i> Chair: Lidia Szczupak (U. Buenos Aires)
9:30 – 10:00	<b>Coffee Break</b> - Grand Ballroom Lounge
10:00 – 12:00	<b>Special Symposium:</b> <i>Young Investigators</i> (p. 18)
12:00 – 2:00 pm	<b>Lunch</b> (Riggs Alumni Center), <b>Posters</b> (Grand Ballroom)
2:00 – 3:00	<b>Plenary 4</b> <b>Malcolm Burrows</b> (U. Cambridge) <i>How do animals move quickly: Interactions between brain, muscle, and skeleton</i> Chair: Roy Ritzmann (Case Western Reserve U.)
3:00 – 3:30	<b>Coffee Break</b> - Grand Ballroom Lounge
3:30 – 5:30	Concurrent Invited Symposia <b>Invited Symposium 1:</b> <i>Animal visual search</i> Colony Ballroom (p. 18)  <b>Invited Symposium 2:</b> <i>Correlated neural activity in tadpole and zebrafish studied by recent advanced technologies</i> Prince Georges' Room (p. 18)  <b>Invited Symposium 3:</b> <i>Fixed and flexible traits in mating signals: Evolution, genetics, and physiological background</i> Hoff Theater (p. 19)
5:30 – 6:00	<b>Coffee Break</b> - Grand Ballroom Lounge
6:00 – 7:00	<b>Huber Lecture</b> <b>Edward A. Kravitz</b> (Harvard U.) <i>Genetic manipulations in the fruit fly fight club: Role of amine neurons studied at a single neuron level</i> Chair: Hans Hofmann (U. Texas)

# TUESDAY, AUGUST 7

## SPECIAL SYMPOSIUM

### YOUNG INVESTIGATORS SYMPOSIUM

Chair: Paul Katz (Georgia State U.)

Colony Ballroom

10:00	SY5	What ants do when they are lost? Multiple interactions between different navigational systems	<b>Antoine Wystrach</b> (U. Sussex and Macquarie U.)
10:30	SY6	The neural substrate of the celestial compass	<b>Basil el Jundi</b> (Lund U.)
11:00	SY7	Neural representation of two- and three-dimensional space in the hippocampal formation of behaving bats	<b>Michael Yartsev</b> (Weizmann Inst.)
11:30	SY8	Evolutionary convergence of gene modules regulating social systems	<b>Lauren O'Connell</b> (U. Texas)

## INVITED SYMPOSIA

### INVITED SYMPOSIUM 1: ANIMAL VISUAL SEARCH

Chairs: Hermann Wagner (RWTH Aachen U.) and Ohad Ben-Shahar (Ben-Gurion U.)

Colony Ballroom

3:30	SY9	Non-selective and selective processing in human visual search	<b>Karla K. Evans</b> (Harvard U.)
4:00	SY10	Visual search and orientation saliency in barn owls	<b>Julius Orłowski</b> and Hermann Wagner (RWTH Aachen U.)
4:30	SY11	Orientation saliency processing – abstracted from neural hardware and perceptual dimensions	<b>Alik Mokeichev</b> , Ronen Segev, and Ohad Ben-Shahar (Ben Gurion U.)
5:00	SY12	Visual search and attention in bumblebees	<b>Vivek Nityananda</b> , Muyun Wang, Thomas Ings, Michael Proulx, Peter Skorupski, Jonathan Patrick, and Lars Chittka (Queen Mary U.)

### INVITED SYMPOSIUM 2: CORRELATED NEURAL ACTIVITY IN TADPOLE AND ZEBRAFISH STUDIED BY RECENT ADVANCED TECHNOLOGIES

Chair: Kazuo Imaizumi (Louisiana State U.)

Prince George's Room

3:30	SY13	Global and local synchronous spontaneous activity in the developing optic tectum	<b>Ikazuo Imaizumi</b> (Louisiana State U.)
4:00	SY14	Activity correlation imaging: Visualizing function and structure of neuronal populations	<b>Mihai Alevra</b> , Stephan Junek, Tsai-Wen Chen, and Detlev Schild (Georg-August U. Göttingen, Max Planck Inst., HHMI, and DFG Research Ctr.)

# TUESDAY, AUGUST 7

4:30	SY15	Visualization of functional neural circuits in zebrafish	<b>Akira Muto</b> and Koichi Kawakami (Natl. Inst. of Genetics)
5:00	SY16	Ongoing spontaneous activity dynamics in zebrafish larvae	<b>German Sumbre</b> (Inst. de Biologie de l'École Normale Supérieure)

## INVITED SYMPOSIUM 3: FIXED AND FLEXIBLE TRAITS IN MATING SIGNALS: EVOLUTION, GENETICS, AND PHYSIOLOGICAL BACKGROUND

Chairs: Varvara Vedenina (Russian Academy of Sciences) and Michael D. Greenfield (Université François Rabelais de Tours)

Hoff Theater

3:30	SY17	Using colour vision principles to understand criteria for mate choice	<b>John A. Endler</b> (Deakin U.)
4:00	SY18	Phenotypic plasticity, genotype x environment interaction, and the sexual selection process	<b>Michael D. Greenfield</b> (U. François Rabelais de Tours)
4:30	SY19	Complex signals: What do spiders have to say?	<b>Andrew Mason</b> , Damian Elias, and Paul De Luca (U. Toronto, U. California Berkeley, College of the Bahamas)
5:00	SY20	Variable courtship song traits in the field cricket <i>Gryllus assimilis</i> fit the features of the female sensory system	<b>Varvara Vedenina</b> and Gerald Pollack (Russian Acad. of Sci. and McGill U.)

# WEDNESDAY, AUGUST 8

Unless noted, all events will take place in the Colony Ballroom.

8:30 – 9:30 am	<b>Plenary 5</b> <b>Constance Scharff</b> (Freie U. Berlin) <i>Is FoxP2 a candidate for 'deep homology'?</i> Chair: Melissa Coleman (Claremont McKenna College)
9:30 – 10:00	<b>Coffee Break</b> - Grand Ballroom Lounge
10:00 – 12:00	Concurrent Invited Symposia <b>Invited Symposium 4:</b> <i>Variability in intrinsic properties of neurons and their synaptic connections: Consequences for the functional output of neuronal networks</i> Hoff Theater (p. 21) <b>Invited Symposium 5:</b> <i>Multiple cues for orientation: Integration, hierarchy, and representation of cues</i> Colony Ballroom (p. 21) <b>Invited Symposium 6:</b> <i>No oxygen, no problem! The neuroethology of hypoxia tolerant mammals</i> Prince George's Room (p. 22)
12:00 – 2:00 pm	<b>Lunch</b> (Riggs Alumni Center), <b>Posters</b> (Grand Ballroom)
2:00 – 5:00	<b>Poster Session II and Coffee Break</b> Grand Ballroom (p. 29 and p. 42)
6:00 – 7:00	<b>Business Meeting and Awards</b>

# WEDNESDAY, AUGUST 8

## INVITED SYMPOSIA

### INVITED SYMPOSIUM 4: VARIABILITY IN INTRINSIC PROPERTIES OF NEURONS AND THEIR SYNAPTIC CONNECTIONS: CONSEQUENCES FOR THE FUNCTIONAL OUTPUT OF NEURONAL NETWORKS

Chair: Ronald Calabrese (Emory U.)  
Hoff Theater

3:30	SY21	Variability and co-variation of ion channel properties in mammalian pacemaker neurons	<b>Jean-Marc Goillard</b> (INSERM Marseille)
4:00	SY22	Individual variability in synaptic properties has functional consequences for susceptibility to and recovery from lesion of a central pattern generator	<b>Akira Sakurai</b> (Georgia State U.)
4:30	SY23	Animal-to-animal variability in temporal pattern and synaptic strength: Implications for functional coordination of motor neurons by the heartbeat CPG of leeches	<b>Brian J. Norris</b> , Angela Wenning, and Ronald L. Calabrese (California State U. and Emory U.)
5:00	SY24	Temperature perturbations reveal variability in cellular and circuit properties in a rhythmic motor system	<b>Eve Marder</b> (Brandeis U.)

### INVITED SYMPOSIUM 5: MULTIPLE CUES FOR ORIENTATION: INTEGRATION, HIERARCHY, AND REPRESENTATION OF CUES

Chair: Rachel Muheim (Lund U.)  
Colony Ballroom

3:30	SY25	Spatial cognition: The representation of three-dimensional space	<b>Robert I. Holbrook</b> and Theresa Burt de Perera (Oxford U.)
4:00	SY26	3-D head-direction cells in the bat presubiculum	<b>Arseny Finkelstein</b> , Dori Derdikman, Jakob Foerster, Liora Las, and Nachum Ulanovsky (Weizman Inst. and Technion)
4:30	SY27	Magnetic compass orientation and polarized light sensitivity in birds - behavioural and physiological mechanisms of cue integration	<b>Rachel Muheim</b> (Lund U.)
5:00	SY28	Multimodal sensing for flight control and navigation in honeybees	<b>Mandyam Srinivasan</b> (U. Queensland)

# WEDNESDAY, AUGUST 8

## INVITED SYMPOSIUM 6: NO OXYGEN, NO PROBLEM! THE NEUROETHOLOGY OF HYPOXIA TOLERANT MAMMALS

Chair: Thomas Park (U. Illinois, Chicago)

Prince George's Room

3:30	SY29	Resistance to cerebral ischemia/reperfusion injury in the arctic ground squirrel ( <i>Urocitellus parryii</i> ) does not depend on the hibernation season	<b>Kelly L. Drew</b> and Jeanette T. Moore (U. Alaska)
4:00	SY30	Adaptations for long term anoxia tolerance reduce oxidative stress in the freshwater turtle <i>Trachemys scripta</i>	<b>Sarah Milton</b> , Howard Prentice, and Shailaja Kesaraju (Florida Atlantic U.)
4:30	SY31	When the brain goes diving: Adaptations for cerebral hypoxia tolerance in diving mammals	<b>Lars P. Folkow</b> (U. Tromso)
5:00	SY32	Buried alive! Arrested development and hypoxia tolerance in the naked mole-rat	<b>John Larson</b> , Bethany L. Peterson, Madeline Romano, and Thomas J. Park (U. Illinois, Chicago)





# THURSDAY, AUGUST 9

Unless noted, all events will take place in the Colony Ballroom.

8:30 – 9:30 am	<b>Plenary 6</b> <b>Elke K. Buschbeck</b> (U. Cincinnati) <i>The making of an eye: Structural and functional diversity of stemmata</i> Chair: Thomas Park (U. Illinois, Chicago)
9:30 – 10:00	<b>Coffee Break</b> - Grand Ballroom Lounge
10:00 – 12:00	Concurrent Invited Symposia <b>Invited Symposium 7: Activity generated modulation of motion vision responses</b> Colony Ballroom (p. 23)  <b>Invited Symposium 8: Automated social behavior analysis</b> Prince George's Room (p. 24)  <b>Invited Symposium 9: Invertebrate models for locomotion research</b> Hoff Theater (p. 24)
12:00 – 6:00 pm	<b>Free Time</b> <b>Optional Thursday Programming</b> (p. 14)
6:00 – 9:00	<b>Cruise Banquet</b>

## INVITED SYMPOSIA

INVITED SYMPOSIUM 7: ACTIVITY GENERATED MODULATION OF MOTION VISION RESPONSES			
Chair: Karin Nordstrom (Uppsala U.)			
Colony Ballroom			
10:00	SY33	Modulation of visual processing by flight behavior in <i>Drosophila</i>	<b>Gaby Maimon</b> (Rockefeller U.)
10:30	SY34	Endogenous release of octopamine mediates flight-induced modulation of visual interneurons in <i>Drosophila melanogaster</i>	<b>Marie P. Suver</b> , Akira Mamiya, and Michael H. Dickinson (U. Washington)
11:00	SY35	State-dependent motion vision in walking blowflies	<b>Kit Longden</b> and Holger G. Krapp (Imperial College London)
11:30	SY36	Linking vision and action in <i>Drosophila</i>	<b>Vivek Jayaraman</b> (HHMI)

# THURSDAY, AUGUST 9

## INVITED SYMPOSIUM 8. AUTOMATED SOCIAL BEHAVIOR ANALYSIS

Chair: Tali Kimchi (Weizmann Inst.)

Prince George's Room

10:00	SY37	Machine vision tools for quantitatively measuring animal behavior in large scale experiments	Mayank Kabra, Alice Robie, Marta Rivera-Alba, Jonathan Hirokawa, Steven Branson, and <b>Kristin Branson</b> (HHMI and U. California San Diego)
10:30	SY38	Completely automatic tracking of individuals in groups from video, with a focus on fish	Alfonso Perez-Escudero and <b>Gonzalo de Polavieja</b> (Cajal Inst.)
11:00	SY39	Quantifying mouse social behavior	<b>S. E. Roian Egnor</b> , Shay Ohayon, Pietro Perona, and Adam Taylor (HHMI)
11:30	SY40	Automated behavioral phenotyping platform for multiple mice	<b>Genadiy Vasserman</b> , Aharon Weissbrod, and Tali Kimchi (Weizmann Inst.)

## INVITED SYMPOSIUM 9. INVERTEBRATE MODELS FOR LOCOMOTION RESEARCH

Chair: Amir Ayali (Tel Aviv U.)

Hoff Theater

10:00	SY41	Origin of the first neurons as sensory-motor and sensory-neurosecretory cells	<b>Gaspar Jekely</b> (Max Planck Inst.)
10:30	SY42	The worm turns: Neural control of nematode locomotion	<b>Netta Cohen</b> (U. Leeds)
11:00	SY43	The neurophysiological basis of motor function in the octopus - an animal with an unusual 'embodiment'	<b>Binyamin Hochner</b> (Hebrew U.)
11:30	SY44	Adaptive control of six-legged locomotion	<b>Einat Fuchs</b> , Amir Ayali, Philip Holmes, Tim Kiemel, and Izhak David (Princeton U., Tel Aviv U. and U. Maryland)

# FRIDAY, AUGUST 10

Unless noted, all events will take place in the Colony Ballroom.

8:30 – 9:30 am	<b>Plenary 7</b> <b>Toshiya Matsushima</b> (Hokkaido U.) <i>Chick neuro-economics: Profitability, risk, and competition</i> Chair: Andrea M. Simmons (Brown U.)
9:30 – 10:00	<b>Coffee Break</b> - Grand Ballroom Lounge
10:00 – 12:00	Concurrent Invited and Participant Symposia <b>Invited Symposium 10:</b> <i>Nociceptors in the real world</i> Prince George's Room (p. 26)  <b>Invited Symposium 11:</b> <i>Polarization vision: New discoveries of natural behaviors</i> Hoff Theater (p. 26)  <b>Participant Symposium 1:</b> <i>Motor and sensorimotor processing</i> Colony Ballroom (p. 27)
12:00 – 2:00 pm	<b>Lunch</b> (Riggs Alumni Center)
2:00 – 4:00	Concurrent Participant Symposia <b>Participant Symposium 2:</b> <i>Attention, Localization, and Alarm</i> Prince George's Room (p. 27)  <b>Participant Symposium 3:</b> <i>Audition and mechanosensation</i> Hoff Theater (p. 28)  <b>Participant Symposium 4:</b> <i>Visual processing</i> Colony Ballroom (p. 28)

# FRIDAY, AUGUST 10

## INVITED SYMPOSIA

### INVITED SYMPOSIUM 10. NOCICEPTORS IN THE REAL WORLD

Chairs: Zen Faulkes (U. Texas-Pan American), Ashlee H. Rowe (U. Texas), and Ewan Smith (Max-Delbrueck Center)

Prince George's Room

10:00	SY45	Larval nociception behavior in <i>Drosophila</i>	<b>W. Daniel Tracey</b> (Duke U.)
10:30	SY46	Does nociceptive sensitization confer fitness benefits on injured squid, <i>Loligo pealeii</i> ?	<b>Robyn J. Crook</b> , Roger T. Hanlon, and Edgar T. Walters (U. Texas Health Science Ctr. and Marine Biol. Lab.)
11:00	SY47	The molecular basis of behavioural acid insensitivity in the African naked mole-rat	<b>Ewan St. John Smith</b> , Damir Omerbasic, Stefan G. Lechner, Gireesh Anirudhan, Liudmila Lapatsina, and Gary R. Lewin (Max-Delbrueck Ctr. and New York U.)
11:30	SY48	Nociception and pain in teleost fish	<b>Victoria Braithwaite</b> (Pennsylvania State U.)

### INVITED SYMPOSIUM 11: POLARIZATION VISION: NEW DISCOVERIES OF NATURAL BEHAVIORS

Chairs: Nicholas Roberts and Shelby Temple (U. Bristol)

Hoff Theater

10:00	SY49	Through the looking glass: Polarization vision versus transparency and mirror-based camouflage in the open sea	<b>Sönke Johnsen</b> (Duke U.), N. Justin Marshall (U. Queensland), and Thomas W. Cronin (U. Maryland, Baltimore)
10:30	SY50	Polarized communication and camouflage in fishes	<b>Molly E. Cummings</b> , Gina Calabrese, and Parrish Brady (U. Texas)
11:00	SY51	Polarisation vision: An unexplored channel for communication?	<b>Justin Marshall</b> , Martin How, Tsyrr-Huei Chiou, Nicholas Roberts, Shelby Temple, and Thomas Cronin (U. Queensland, U. Bristol, U. Maryland Baltimore Co.)
11:30	SY52	The evolution of polarization vision in stomatopods: Molecules, signaling, and behavior	<b>Megan L. Porter</b> , Nicholas W. Roberts, Roy L. Caldwell, Justin Marshall, and Thomas W. Cronin (U. Maryland Baltimore Co., U. Bristol, U. California Berkeley, U. Queensland)

# FRIDAY, AUGUST 10

## PARTICIPANT SYMPOSIA

### PARTICIPANT SYMPOSIUM 1: MOTOR AND SENSORIMOTOR PROCESSING

Chair: Alan Roberts (U. Bristol)

Colony Ballroom

10:00	SY53	The core of crawling: Analysis of fictive motor patterns in the isolated <i>Drosophila</i> larval ventral nerve cord	<b>Stefan R. Pulver</b> , Timothy G. Bayley, Adam L. Taylor, Jimena Berni, Michael Bate, and Berthold Hedwig (HHMI Janelia Farm and U. Cambridge)
10:30	SY54	Dendritic membrane properties influence multimodal integration for fast behavioral decision	<b>Violeta Medan</b> , Heike Neumeister, and Thomas Preuss (Hunter College and U. Buenos Aires)
11:00	SY55	Making tadpole escape unpredictable: From behaviour to neurons	<b>Edgar Buhl</b> , Stephen R. Soffe, Michael Hull, and Alan Roberts (U. Bristol and U. Edinburgh)
11:30	SY56	Motor responses to mechanical deflections of individual neuromasts of the lateral line system in larval zebrafish ( <i>Danio rerio</i> )	<b>Melanie Haehnel</b> and James C. Liao (U. Florida)

### PARTICIPANT SYMPOSIUM 2: ATTENTION, LOCALIZATION, AND ALARM

Chair: Ana Silva (Universidad de la República)

Prince George's Room

2:00	SY57	The role of pressure-difference receiver ears in alligator sound localization	<b>Hilary S. Bierman</b> and Catherine E. Carr (U. Maryland)
2:30	SY58	Aging brains and social behavior in an invertebrate model: Neuromodulation and neuroanatomy of task attendance across the worker lifespan of the ant <i>Pheidole dentate</i>	<b>Ysabel M. Giraldo</b> , Adina Rusakov, Adrianna Kordek, and James F. Traniello (Boston U.)
3:00	SY59	Towards elucidating the phenomenon of alarm response in fish	<b>Ajay S. Mathuru</b> and Suresh Jesuthasan (Natl. U. Singapore)
3:30	SY60	Spatial representation of odorant valence in an insect brain	<b>Markus Knaden</b> , Antonia Strutz, Jawaid Ahsan, Silke Sachse, Kathrin Steck, and Bill S. Hansson (Max Planck Soc.)

# FRIDAY, AUGUST 10

## PARTICIPANT SYMPOSIUM 3: AUDITION AND MECHANOSENSATION

Chair: Annemarie Surlykke (U. Southern Denmark)  
Hoff Theater

2:00	SY61	A comparison of active hearing in male and female <i>Aedes (Stegomyia) aegypti</i> , the dengue-fever mosquito	<b>Kathleen M. Lucas</b> and Daniel Robert (U. Bristol)
2:30	SY62	Auditory brainstem response evoked by clicks of an echolocating harbour porpoise approaching a target	<b>Meike Linnenschmidt</b> , Magnus Wahlberg, and Janni Damsgaard-Hansen (U. Southern Denmark)
3:00	SY63	Same prey, different strategies: How sensory morphology and behavior differ between two species of Lake Malawi cichlids	<b>Margot A. Schwalbe</b> and Jacqueline F. Webb (U. Rhode Island)
3:30	SY64	No pain, big gain: Coevolution between bark scorpion pain-inducing toxins and grasshopper mouse nociceptors	<b>Ashlee H. Rowe</b> , Yucheng Xiao, Matthew Rowe, Theodore Cummins, and Harold Zakon (U. Texas)

## PARTICIPANT SYMPOSIUM 4: VISUAL PROCESSING

Chair: Thomas Cronin (U. Maryland Baltimore Co.)  
Colony Ballroom

2:00	SY65	Predictive response facilitation to moving targets in an insect neuron	<b>James R. Dunbier</b> , Steven D. Wiederman, and David C. O'Carroll (U. Adelaide)
2:30	SY66	Two distinct visual microcircuits required for figure-ground discrimination in flies	<b>Jessica L. Fox</b> , Ross G. Kelley, Jacob W. Aptekar, Camilla Larsen, and Mark A. Frye (U. California Los Angeles)
3:00	SY67	Neural control of dynamic structural coloration in squid iridophores	<b>Trevor J. Wardill</b> , Paloma T. Gonzalez Bellido, Robyn Crook, and Roger T. Hanlon (Marine Biol. Lab., Woods Hole)
3:30	SY68	Visual learning and spatial orientation in the whirligig beetle <i>Dineutus sublineatus</i>	<b>Chan Lin</b> (U. Arizona)

# POSTER PRESENTATIONS

## LIST OF POSTER TOPICS

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Hitoshi Aonuma	<i>Social isolation regulates task dependent interspecific aggression in the ant, Formica japonica</i>	PO183
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Amanda Chicoli, Sheryl Coombs, Derek Paley	<i>What's flow got to do with it? Effects of flow on schooling and startle response in fish</i>	PO185
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Ana Silva, Rossana Perrone	<i>AVTergic modulation of the agonistic behavior in two species of weakly electric fish with different social strategies</i>	PO192
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Krista L. Todd, William B. Kristan, Kathleen A. French	<i>Fictive flirting: Reproductive behavioral modules are revealed by pharmacological blockers</i>	PO194
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Mike H. Huynh, James Alan Murray, Gurinder Singh, Altha Wong	<i>Visible light increases locomotor activity but does not influence body orientation or crawling direction of the nudibranch mollusk Tritonia diomedea</i>	PO197
Lauren E. Kirouac, Amanda A. Naimie, Kimberly Bixby, Winsor H. Watson, James M. Newcomb	<i>Circadian rhythm of locomotion in the nudibranch mollusc Melibe leonina</i>	PO198
Adriana Migliaro, Ana Silva	<i>The role of AVT in the modulation of the circadian rhythmicity of EOD basal rate in South American weakly electric fish</i>	PO199
Julia Schulze, Thomas Schendzielorz, Monika Stengl	<i>Role of myoinhibitory peptides in the light entrainment pathway to the circadian pacemaker of the Madeira cockroach (Rhyarobia maderae)</i>	PO200
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Christopher T. Noto, Kevin K. Ohlemiller, Jagmeet S. Kanwal	<i>Neural coding of call pitch and syllable type in the auditory cortex of mustached bats</i>	PO201
Clint J. Perry, Andrew B. Barron	<i>Honey bees avoiding decisions: Evidence for metacognition in an invertebrate?</i>	PO202
<b><i>Communication</i></b>		
Michael S. Caldwell, Mark A. Bee	<i>Sound source localization in noise: Open-loop and closed-loop tests with Cope's gray treefrog (Hyla chrysoscelis)</i>	PO203
Kristina Gebhardt, Miriam Böhme, Gerhard von der Emde	<i>Electrocommunication in social groups of weakly electric fish: A comparison of Mormyrus rume and Marcusenius altisambesi (Mormyridae, Teleostei)</i>	PO204
Elizabeth Katherine Heisler, J. Matthew Kittelberger	<i>Both D1- and D2-like receptors contribute to dopamine-induced inhibition of vocal production in the midbrain periaqueductal gray of a teleost fish</i>	PO205
Jagmeet S. Kanwal, Christopher T. Noto, Kevin K. Ohlemiller	<i>Social calls exhibit a distributed consensus map in the auditory cortex of mustached bats</i>	PO206
Archer Freni Larned, Gerald Borgia, Jean-Francois Savard	<i>Male satin bowerbirds use sunlight to illuminate decorations to enhance mating success</i>	PO207

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Mario Penna, Felipe N. Moreno-Gómez, Nelson Velásquez	<i>Propagation and degradation of natural anuran calls in the temperate austral forest</i>	PO210
Laura Quintana, Erik Harvey-Girard, Daniel Lorenzo, Carolina Lescano, Leonard Maler, Omar Macadar	<i>Variations in the glutamatergic system underlying seasonal communication signals</i>	PO211
Michael Reichert, Carl Gerhardt	<i>Effects of competition on call timing strategies in the gray treefrog, Hyla versicolor</i>	PO212
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Francesco Guarato, James Windmill, Tony Gachagan	<i>Directional properties of bat ears for target localization</i>	PO214
DaeEun Kim, Seung-Eun Yu	<i>Burrow-centered localization in surveillance behavior of fiddler crabs</i>	PO215
Nicholas Szczecinski, Alexander Lonsberry, Roger Quinn	<i>CPG stability characterization by a numerical modified Floquet technique</i>	PO216
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Chihiro Mori, Kazuhiro Wada	<i>An inherited genetic program for acquisition of species-specific vocal pattern in songbird</i>	PO217
Sathish K. Raja, Björn Brembs	<i>Identification of neural circuits required for spontaneous behavioral variability</i>	PO218
Atsushi Ugajin, Taketoshi Kiya, Takekazu Kunieda, Masato Ono, Tadaharu Yoshida, Takeo Kubo	<i>Neural activity in the brains of the Japanese worker honeybees involved in a hot defensive bee ball reflects thermal stimuli processing</i>	PO219
Kazuhiro Wada, Masahiko Kobayashi, Wan-Chun Liu	<i>Epigenetic gene expression dynamics induced by singing in a critical period of vocal learning</i>	PO220
Takayuki Watanabe, Hitoshi Aonuma	<i>Molecular basis of the biogenic amine system in the field cricket Gryllus bimaculatus</i>	PO221
Xingguo Zheng, Yehuda Ben-Shahar	<i>The role of DEG/ENaC subunit ppk8 in regulating neuronal excitability in Drosophila melanogaster</i>	PO222
<b>Hormones and Sex Differences</b>		
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Eva Kristin Fischer, Rayna Michelle Harris, Hans A. Hofmann, Kim L. Hoke	<i>Exposure to predation across different time scales alters cortisol levels in guppies</i>	PO224

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Sarah Bella, Stephanie Gordon, Marie C. Pizzorno, Emily Ralen, Calvin Tracy, Elizabeth Wiewiorowski, Hannah Young, Elizabeth Capaldi Evans	<i>Does injection with Deformed Wing Virus influence avoidance learning by honey bees?</i>	PO227
Amir Ben-Nun, Moshe Guershon, Amir Ayali	<i>Creating and updating body-size perception in insect discontinuous growth</i>	PO228
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Aya Fujioka, Takashi Fujioka, Ryosuke Tsuruta, Tomonori Izumi, Shunji Kasaoka, Koji Matsuo, Yoshifumi Watanabe, Tsuyoshi Maekawa	<i>Effects of a constant light environment on hippocampal system in mice</i>	PO230
Katrin Gehring, Karin Heufelder, Dorothea Eisenhardt	<i>Localization of phosphorylated CREB in the honeybee brain</i>	PO231
Etsuro Ito, Koichi Mita, Dai Hatakeyama, Ryuichi Okada, Mika Morikawa, Yuki Sakamoto, Miki Yamagishi, Akiko Okuta	<i>Relationship between learning ability and starvation status in taste aversion learning of a pond snail</i>	PO232
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James C. Liao	<i>The effect of flow speed and body length on swimming kinematics of rainbow trout in a vortex street</i>	PO244
Anna Malec, Mark A. Willis	<i>Load-associated modulation of the overlap between the fore and hind Wings in the Moth Manduca sexta</i>	PO245
Karen A. Mesce, Kevin M. Crisp, Amy J. Shafqat, Christian W. Nagel, Joshua G. Puhl	<i>Steps and strides in understanding how a dopamine-regulated locomotor behavior is organized in the medicinal leech</i>	PO246
Carol I. Miles, Brianna E. Allison, Quang Su, Cameron Cribbs	<i>Motor basis for vibrational communication in the treehopper, Umbonia crassicornis</i>	PO247
Joshua G. Puhl, Michael J. O'Donovan	<i>Visualizing the three dimensional organization of locomotor-like activity in the mouse spinal cord using calcium imaging</i>	PO248
Aaron Andrew Simmons	<i>Responses to postural perturbations in decapod crustaceans</i>	PO249
Gregory P. Sutton, Jeffrey M. McManus, Miranda J. Cullins, Hillel Chiel	<i>Neural control of slow muscle mechanics during feeding in Aplysia californica</i>	PO250
Karen J. Thompson	<i>Inhibition of a CPG: Investigating descending control</i>	PO251
Barry Andrew Trimmer, Samuel Vaughan, Huai-Ti Lin	<i>Ground reaction forces during caterpillar climbing</i>	PO252
Nikolaus F. Troje, Andres M. Kroker, Kate Boby, Qingguo Li	<i>Function and biomechanics of head-bobbing in pigeons</i>	PO253
HongYan Zhang, Stephen Paul Currie, Laurence Picton, Keith Thomas Sillar	<i>Locomotor network performance controls future network output in Xenopus frog tadpoles</i>	PO254
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Angelique Christine Paulk, Bruno Van Swinderen	<i>Whole brain recordings reveal physiologically separable endogenous oscillations in Drosophila melanogaster</i>	PO256
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Kandice Fero, Antonio Fernandes, Aristides Arrenberg, Sadie Bergeron, Wolfgang Driever, Harold Burgess	<i>Dark photokinesis behavior in larval zebrafish does not require the eyes or the pineal</i>	PO261
T.J. Florence, Charles S. Zuker, Michael B. Reiser	<i>Features of the surround important for Drosophila visual place memory</i>	PO262
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Arseny S. Khakhalin, David Koren, Carlos D. Aizenman	<i>Neural mechanisms underlying the collision avoidance behavior in the African Clawed frog tadpole</i>	PO265
Jacob K. Lockey, Mark A. Willis	<i>Altering the map of odor sensors on the antennae changes olfactory behavior in the American cockroach, Periplaneta americana</i>	PO266
Eliza Jean Middleton, Ajay Narendra, Jochen Zeil	<i>Navigational knowledge of homebound Australian sugar ants, Camponotus consobrinus</i>	PO267
Jochen Smolka, Marcus Byrne, Clarke Scholtz, Marie Dacke	<i>The galloping dung beetle: A new gait in insects and its consequences for navigation</i>	PO268
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Stefanie Anders, Monique Amey-Özel, Gerhard von der Emde, Kirsty Grant	<i>Sensorimotor control of the finger-like mormyrid Schnauzenorgan</i>	PO274
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Jose Guillermo Crespo, Neil J. Vickers, Franz Goller	<i>Recruitment of motor units in flight muscles accounts for pheromone-mediated modulation of pre-flight heating rates in male moths</i>	PO278
Paul C.P. Curtin, Samantha S. Cohen, Violeta Medan, Shushanik Karapetyan, Heike Neumeister, Thomas Preuss	<i>Discrete uni- and multimodal mechanisms control sensorimotor gating of goldfish startle</i>	PO279
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Franz Goller, Tobias Riede	<i>Control of fundamental frequency in zebra finch vocal behavior</i>	PO282
Peiyuan Guo, Alan Pollack, Roy Ritzmann	<i>The role of the central complex in antenna guided orientation behavior in tethered walking cockroaches</i>	PO283
Stavros P. Hadjisolomou, Frank W. Grasso	<i>Dynamics of chromatophore response to visual stimulation</i>	PO284
Benjamin J. Hardcastle, Daniel A. Schwyn, Kit D. Longden, Karin Bierig, Reiko J. Tanaka, Holger G. Krapp	<i>Ocellar contributions to gaze control: A behavioural linear systems analysis in the blowfly</i>	PO285
Andreas Haselsteiner, Cole Gilbert, Jane Wang	<i>Closed loop visual guidance of prey pursuit by tiger beetles</i>	PO286
Matthew A. Klein, Nicholas S. Szczecinski, Sasha N. Zill, Roger D. Quinn, Roy E. Ritzmann	<i>Effects of leg loading on muscle activations in cockroach walking</i>	PO287
Bradley M. Lawrence, Aliza O. Abraham, David L. McLean, Malcolm A. MacIver	<i>Kinematic analysis of a goal-directed behavior in the larval zebrafish (Danio rerio)</i>	PO288
Akira Mamiya, Michael H. Dickinson	<i>Two-photon calcium imaging from antennal mechanosensory neurons in flying Drosophila reveals groups of neurons that respond to different types of antennal motions during flight</i>	PO289
Yotam Ophir, Gil Ariel, Amir Ayali	<i>Visual stimuli as triggers for collective movement in desert locust nymphs</i>	PO290
Stefan Schöneich, Berthold Hedwig	<i>Corollary discharge modulation of wind-sensitive interneurons in the singing cricket</i>	PO291
Gavin Taylor, Tien Luu, David Michael Ball, Mandyam Srinivasan	<i>Combining the senses: Looking at the interaction of wind and vision on a honeybee's streamlining</i>	PO292
Floris Van Breugel, Michael Dickinson	<i>The visual control of landing and obstacle avoidance in the fruit fly, Drosophila</i>	PO293

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Peter Weir, Michael Dickinson	<i>Calcium imaging of activity in Central Complex neurons during flight in Drosophila</i>	PO295
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Steffen Hage, Tinglei Jiang, Sean Berquist, Jiang Feng, Walter Metzner	<i>Lombard effect revisited: Ambient noise induces independent shifts in call frequency and amplitude</i>	PO299
Manfred Hartbauer, Marian Ewald Siegert, Heiner Römer	<i>Selective encoding of conspecific signals in a noisy habitat</i>	PO300
Joseph Curt Jackson, James Frederick Charles Windmill	<i>The benefits of listening to yourself: Enhanced audition in the male mosquito ear</i>	PO301
Christine Koepl, Go Ashida, Sandra Brill, Richard Kempter, Hermann Wagner, Catherine Carr	<i>Experience-dependent plasticity in the nucleus laminaris of the barn owl</i>	PO302
Zhongmin Lu, Alexandra A. DeSmidt	<i>Early Development of Hearing in Zebrafish</i>	PO303
Silvio Macias, Julio C. Hechavarría, Marianne Vater, Emanuel C. Mora, Manfred Koessl	<i>Blurry topography in the cortical target-distance maps of bats</i>	PO304
Ikuo Matsuo, Takuma Takanashi	<i>Echolocation of flying insects by using the frequency modulated sound</i>	PO305
C. Daniel Meliza, Daniel Margoliash	<i>Redefining the avian auditory functional hierarchy: Selectivity and tolerance in the auditory cortex of European starlings</i>	PO306
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Gerald Pollack, Jin Sung Kim	<i>Calling-song recognition in a rapidly singing cricket, Gryllus assimilis</i>	PO310
Abhilash Ponnath, Kim Hoke, Hamilton Farris	<i>Adaptation in phasic auditory units of the frog midbrain is sensitive to changes in stimulus frequency and ear of input</i>	PO311
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Assadollah Tabatabaie, Dorel Homentcovschi, Robert Wyttenbach, Quang Su, Carol Miles, Ronald Miles, Ronald Hoy	<i>Sound-induced vibration of Aedes aegypti antennae measured in three dimensions</i>	PO317
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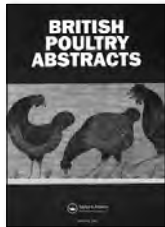
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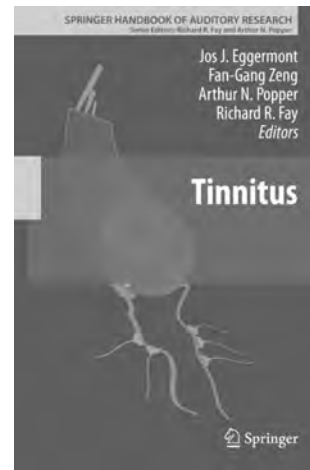
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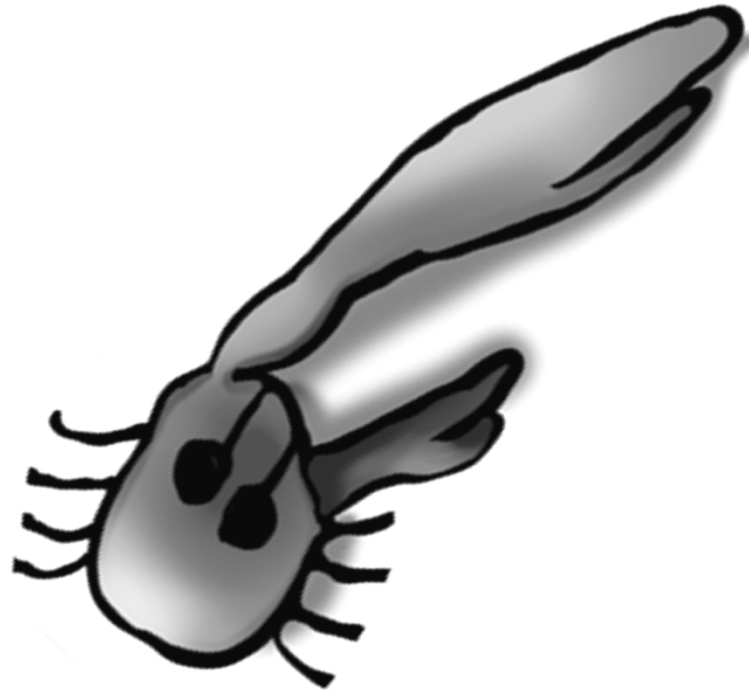
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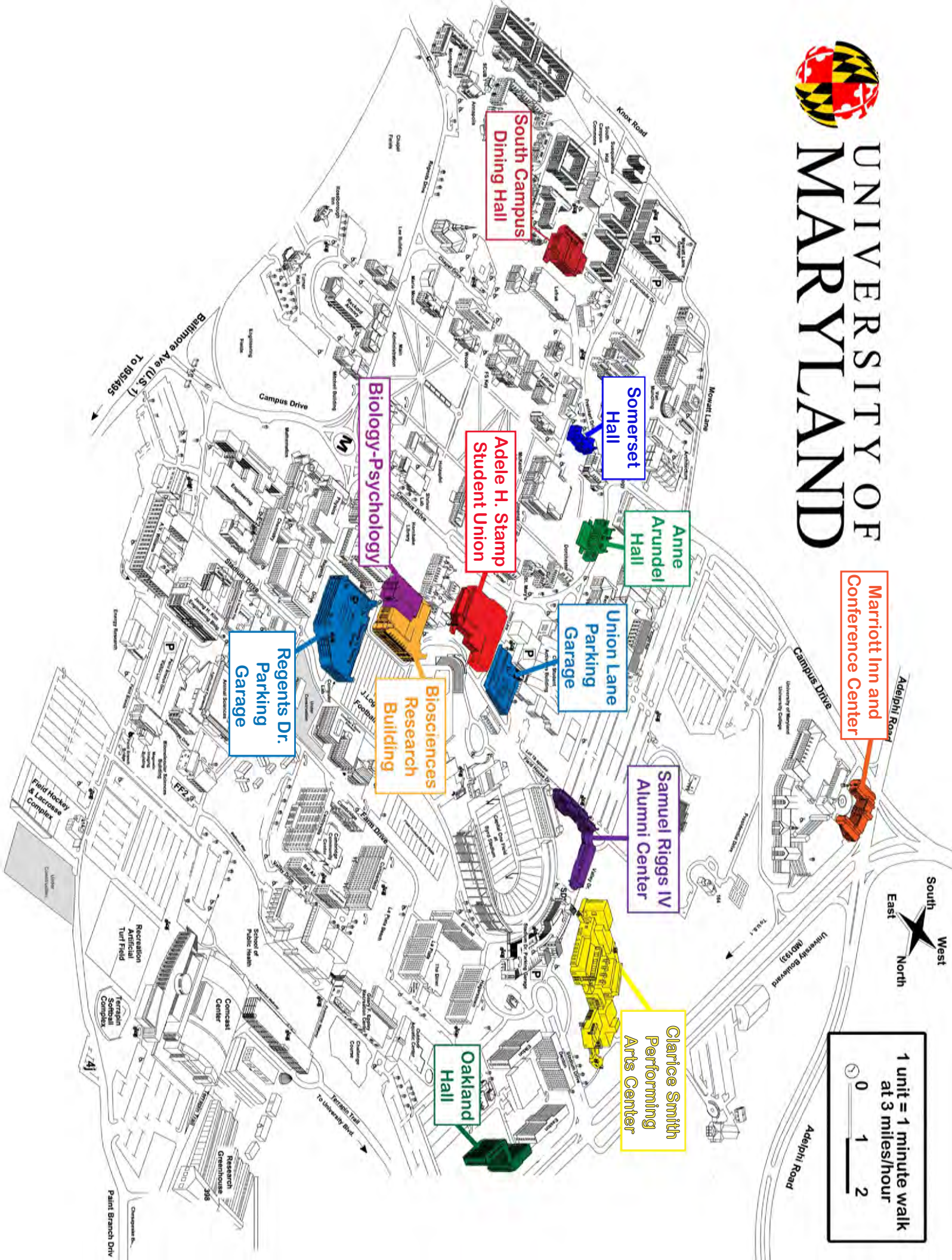


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