

NEWSLETTER

Animal Behavior Society

A quarterly
publication

Sue Bertram,
Editor

Front Page | Career Awards | Plenaries & Symposia | Public Day & Outreach Fair | Grants & Awards | Announcements | Essay Discussion | Archive

2016 ABS Election

Society Election

RESULTS OF THE ABS ELECTION

A total of 443 validated ballots were cast in the election. This represents approximately 25% of the ABS membership. A big THANK YOU to those who ran for office, those who voted, and those who will soon be serving the society.

Congratulations to the new officers:

Second President-Elect: John Swaddle

Member-at-Large: Melissa Hughes

Parliamentarian: Tamra Mendelson

Treasurer: Gil Rosenthal



Election Results

ABS Annual Meeting



The 53rd Annual Conference of ABS will be held in Columbia, Missouri from Saturday, July 30, through Wednesday, August 3, 2016.

<http://www.animalbehaviorsociety.org/2016/>

Dear ABS members and friends –

As hosts of the ABS 2016 meeting in Columbia, Missouri, we are delighted to invite you to attend what promises to be a stimulating and excellent conference. There are many advantages to meeting in Missouri. 1) Our state is pretty much in the center of the USA, and Columbia is in the center of the state; therefore, Missouri will be driving distance for many and, even if you need to fly in, transportation should be easy to arrange and relatively economical. 2) The University of Missouri-Columbia, where the meeting will take place is a major university with plenty of dorm space, as well as nearby hotels, motels, and even a few B&Bs for those of you who may not want to stay on campus. There is an active and diverse downtown area, not far from campus, ideal for special dinners and nightlife. 3) Costs can be kept low, including both registration and housing. 4) For those of you who attended the Alaska meeting last year and found yourselves distracted by moose on campus, bears, glaciers and gorgeous mountains, not to worry – here you can concentrate exclusively on science! But this is not to say that Missouri is boring – see the listed activities in the nearby attractions section.

Our program committee is currently finalizing the program, and the line-up of plenary speakers and seminars is outstanding. Plenary speakers will include Vanessa Ezenwa, of the University of Georgia, giving a talk titled, "Parasites and Behavior: Old Ideas and New Insights". Juan Carlos



2016 Career Awards

The Animal Behavior Society is pleased to announce the recipients of the 2016 Career Awards. Plaques will be presented to these distinguished award recipients at the 2016 ABS Meeting in Columbia.

[Read more »](#)



ABS Plenary Sessions and Symposia

We are pleased to announce the ABS 2016 Plenary Sessions and Symposia.

[Read more »](#)



ABS Outreach Fair: Call for Participants

There is a suite of public events planned for the first day of the ABS 2016 Missouri meeting, which currently include the sixth annual ABS outreach fair, a symposium hosted by the ABS Applied Animal Behavior Committee and Certified Applied Animal Behaviorists, a

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Reboreda, of the University of Buenos Aires, will give his talk, "Adaptations to brood parasitism in host generalist and host specialist cowbirds". Lauren O'Connell, from Harvard University, will present, "Parenthood on the brain: neural mechanisms of piggyback rides and nursing behavior in poison frogs". As well as the ABS President's Plenary by Emília Martins of Indiana University-Bloomington. Our keynote speaker will be the eminent primatologist and ethologist, Frans de Waal, presenting his talk titled, "Are We Smart Enough to Know How Smart Animals are?".

Conference Symposia will cover a range of timely topics, including: "Using Tinbergen's Four Questions to Understand Emerging Conservation Concerns in Behavioral Toxicology", "New Frontiers in Animal Communication: In Honor of H. Carl Gerhardt", "Behavioral Genomics in Non-Model Systems", and "Comparative Canine Behavior".

Other highlights include contributed papers, poster sessions, the annual graduate student Allee Award session, the Charles H. Turner workshop for undergraduates (by invitation), a Public Day, and workshops both before and after the 5 day meeting. And, of special interest to many, we plan to revive our hilarious Acaoke tradition (Academic Karaoke) during this meeting.

In short, you can expect 2016 ABS conference to be intellectually stimulating but also lots of fun. So come, learn, present your latest fascinating research, attend the opening reception and final banquet, meet and make new friends, laugh - and maybe even dance!

In summary, we look forward to hosting the 2016 ABS meeting in Columbia, MO and hope that you will join us for a superb conference, and that you also will enjoy spending vacation time in our multifaceted state. Information on registration, conference events, housing options, transportation, and other issues will be posted later as details become available. Please check the web page regularly and register early.

We hope to see you in Columbia in July and August!



Johannes Schul, University of Missouri-Columbia



Zuleyma Tang-Martínez, University of Missouri-St. Louis



ABS 2016 Conference Website

public talk, and a scavenger hunt of behavior labs.

[Read more »](#)



Grants & Awards

The ABS offers a number of grants and awards to support the educational activities of its members.

[Read more »](#)



Announcements

View the current ABS announcements.

[Read more »](#)



Essay Discussion

We are hoping this essay will start a discussion within the community of animal behaviorists about what we can do as individuals and as a society to reduce the attrition of women in biology

[Read more »](#)

Louis, E-mail: historian@animalbehaviorsociety.org

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[Emily DuVal](#), Florida State University, E-mail: mematlarge3@animalbehaviorsociety.org

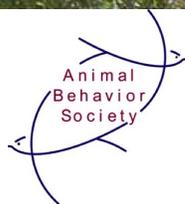
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2016 ABS Career Awards

ANNOUNCING THE CAREER AWARDS

On this occasion, we would like to announce the recipients of the 2016 Career Awards. Plaques will be presented to these distinguished award recipients at the 2016 ABS Meeting in Columbia. In our August Newsletter we will highlight their achievements and recognize their contributions to the field of animal behavior.



Distinguished Animal Behaviorist Awards:

The Society's most prestigious award recognizes an outstanding career in animal behavior. **Dorothy Cheney**, University of Pennsylvania (pictured left) and **Jane Brockmann**, University of Florida (pictured right) are joint recipients of the 2016 Animal Behaviorist Award.



Exemplar Award:

This Award recognizes a major long-term contribution in animal behavior. The 2016 Exemplar Award goes to **Janice Moore**, Colorado State University.



Quest Award:

This award recognizes an outstanding seminal contribution in animal behavior. **Jan Randall**, San Francisco State University is the recipient of the 2016 Quest Award.



Penny Bernstein Distinguished Teaching Award:

This award recognizes a sustained record of excellent teaching of animal behavior in the classroom or informal education setting. The 2016 Bernstein Distinguished Teaching Award goes to **Peggy Hill**, University of Tulsa.



Outstanding New Investigator Award:

This award recognizes an outstanding contribution in animal behavior by a new investigator, no more than 10 years past obtaining a Ph.D. The 2016 Outstanding New Investigator Award goes to **Ned Dochtermann**, North Dakota State University.

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Emily DuVal, Florida State University, E-mail:
mematlarge3@
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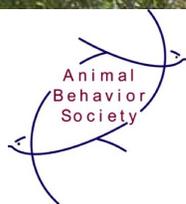
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ABS Meeting Plenary Sessions and Symposia



Frans de Waal (Emory University)

Are We Smart Enough to Know How Smart Animals are?

Frans de Waal is an eminent primatologist and ethologist who is best known for his work on social behavior in chimpanzees and bonobos. de Waal's early research concerned competition, conflict resolution, and deception, inspiring advances in the field of primate cognition and laying the groundwork for studies of cooperation and fairness. His more recent work has focused on the evolution of empathy and morality, designating bonobos as 'the make love – not war' primate. He has also applied his research on primate morality to human societies with an exploration of the role of religion in shaping human interactions. de Waal has authored or edited 14 books, including *Chimpanzee Politics*, *The Age of Empathy*, and *The Bonobo and the Atheist*. His latest book (*Are We Smart Enough to Know How Smart Animals Are?*) will be published by W.W. Norton in April,

2016. He is a member of the National Academy of Sciences and is the C.H. Candler Professor of Primate Behavior at Emory University.



Vanessa Ezenwa (University of Georgia)

Parasites and Behavior: Old Ideas and New Insights

Parasites can have profound effects on animal behavior. For example, parasites are considered to be a major cost of group-living that imposes constraints on social group size. Larger group sizes favor the transmission of parasites for a variety of reasons, and associations between group size and more intense parasite infections have been documented in many species. However, recent insights from eco-immunology, microbial ecology, and physiological ecology suggest interesting ways in which the parasite-related costs of group-living might be offset under certain circumstances. In this talk, I describe two mechanisms that potentially

counterbalance the parasite costs of group-living, and consider the implications for our understanding of the connections between social behavior and parasitism.



Lauren O'Connell (Harvard University)

Parenthood on the Brain: Neural Mechanisms of Piggyback Rides and Nursing Behavior in Poison Frogs

Specialized parental care strategies have evolved independently many times in response to different selective pressures and ecological constraints, but the mechanistic basis of these behavioral phenotypes remains unclear, especially in males. Moreover, separating the mechanisms of pair bonding from those underlying preparations for the onset of parental behavior is difficult, given that pair bonding is coupled

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Beth Jakob, University of Massachusetts-

with paternal care in most animals. The best strategy for identifying mechanisms governing parental care is to perform a comparative analysis across closely related species that vary in parental care strategies in a manner that is independent of pair-bonding. Poison frogs are the best model clade for this research, as they show diverse parental care strategies amongst closely related species. Using the latest tools in genomics and neuroscience within a comparative context, we have identified core neural mechanisms that promote parental care and sheds light on how behavioral and neural plasticity influence the evolution of diverse reproductive strategies.

Amherst, E-mail: mematlarge2@animalbehaviorsociety.org

[Emily DuVal](#), Florida State University, E-mail: mematlarge3@animalbehaviorsociety.org



Juan Carlos Rebores (University of Buenos Aires)

Adaptations to Brood Parasitism in Host Generalist and Host Specialist Cowbirds

Obligate avian brood parasites, like cuckoos and cowbirds lay their eggs in the nests of other species (hosts), which provide all parental care to the parasitic offspring. The exploitation of parental care by brood parasites typically entails fitness costs to host parents and these interactions may result in a coevolutionary arms race in which hosts evolve defenses against parasitism that, in turn, select for counterdefenses in parasite populations. In this talk I will describe some adaptations to brood parasitism in the Shiny Cowbird (*Molothrus bonariensis*), an extreme host generalist that uses more than 250 species, and the Screaming Cowbird

(*M. rufoaxillaris*), a host specialist that parasitizes almost exclusively one species. I will analyze the prospecting of host nests by female Shiny Cowbirds and discuss their memory abilities for remembering the precise location and nesting stage of multiple host nests within the home range. I will also describe behavioral flexibility of egg pecking behavior by Shiny Cowbird females and begging behavior by Shiny Cowbird chicks depending on brood conditions. Finally, I will show evidence of visual and vocal mimicry between the fledglings of Screaming Cowbirds and those of its primary host.

ABS 2016: SYMPOSIA

Comparative Canine Behavior

Organizers: Robin Foster and Camille Ward

New Frontiers in Animal Communication: In Honor of H. Carl Gerhardt

Organizers: Margaret Ptacek and Felix Breden

Using Tinbergen's Four Questions to Understand Emerging Conservation Concerns in Behavioral Toxicology

Organizers: Elizabeth Peterson and John Swaddle

Behavioral Genomics in Non-Model Systems

Organizers: David Schulz, Johannes Schul and Zuleyma Tang-Martinez

Presidential Symposium

Organizer: Regina Macedo

Allee Symposium for Best Student Poster Paper

Organizer: Jeff Podos

For more information, please visit the ABS conference website:

<http://www.animalbehaviorsociety.org/2016/program-symposia.php>

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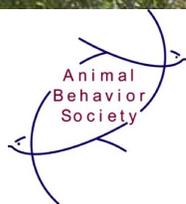
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2016 PUBLIC DAY & OUTREACH FAIR

2016 ABS PUBLIC DAY

***Service Animals: Perspectives from Animal Behavior Professionals
Hosted by ABS Applied Animal Behavior Committee
and Certified Applied Animal Behaviorists
Saturday, July 30th 9:00 AM - 5:00 PM***

The goal of the 2016 Public Day is to educate the community and ABS members about dilemmas facing the service animal community and regulatory agencies, and the role of Animal Behavior professionals.

Animals play multiple and diverse roles in the lives of humans. The positive effects of the human-animal bond is well documented by empirical research, and supported by both the pet-owning public and the professional pet service community.

Service animals are a special arena of the human-animal bond, which includes therapeutic animal partners, working dogs, counseling programs, and the legal world of human-animal regulatory agencies, as well as the professional animal behavior community.



Image kindly provided by Mary Lee Nitschke (CAAB & ABS Member)

A wide range of species are employed in the service role to meet the diverse needs that arise from health impairment conditions in humans. Animal Behavior professionals have a specialized knowledge base for advancing these therapeutic partnerships. This Public Day event aims to enlarge our understandings of these relationships.

Speakers will present on various issues within the service animal community including Equine Assisted Therapy, Quality of Life Issues for Service Dogs, Effects of Greeting a Working Service Animal, Owner-Trained Individualized Service Dogs, Scent Training for Medical Detection Dogs and more. A panel will also discuss issues surrounding "fake" service animals.

2016 ABS PUBLIC DAY
Saturday, July 30th 9:00 AM - 5:00 PM
OUTREACH FAIR: CALL FOR PARTICIPANTS

There is a suite of public events planned for the first day of the ABS 2016 Missouri meeting, which currently include the sixth annual ABS outreach fair, a symposium hosted by the ABS Applied Animal Behavior Committee and Certified Applied Animal Behaviorists, a public talk, and a scavenger hunt of behavior labs.

Sixth Annual ABS Outreach Fair

We are looking for participants for the outreach fair, held on Saturday July 30th from 1-5 pm in the atrium of the Life

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Science Center. This event will feature interactive displays and activities related to the research of labs from around the country and is meant to engage the public in the excitement of animal behavior, from the methods and techniques used to study behavior, to major concepts and ideas in the field, to various applications of the research. In the past, 300-600 people have passed through the event and students and professors alike have had great fun communicating their research to a wide audience. If your lab is interested in participating, please contact Emilie Snell-Rood (emilies@umn.edu).

SYMPOSIUM: Service Animals: Perspectives from Animal Behavior Professionals *Hosted by the ABS Applied Animal Behavior Committee and Certified Applied Animal Behaviorists*

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Saying hello to a Manduca caterpillar at the Papaj lab display (Image © Kate Webbink)

For more information on past fairs, check out some coverage at: <http://www.idsnews.com/article/2011/07/iu-animal-behavior-conference-ends-with-science-festival> (2011)

OR

<http://blogs.scientificamerican.com/not-bad-science/2013/08/09/meeting-the-locals-science-outreach-at-the-animal-behavior-society-conference/> (2013).

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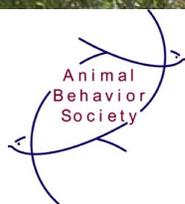
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Research Grants & Travel Awards

To apply for the following awards and grants, qualified applicants may indicate to be considered in the online abstract submission system. Please note you must first register for the conference to be able to submit an abstract.

Warder Clyde Allee Award

The 2016 Warder Clyde Allee Session for Best Student Paper Competition will be held during the annual meeting of the Animal Behavior Society scheduled July 30 through August 3, 2016 at the University of Missouri. All eligible students and recent graduates are encouraged to participate.

Eligibility requirements: Any independent graduate student research (including, but not limited to, the doctoral dissertation) is eligible. The work presented may be part of a larger collaborative effort, but the student must be first author and have principal responsibility for conceptualization and design of the research, collection and analysis of the data, and interpretation of the results. The entrant cannot have been awarded the Ph.D. degree before the start of the preceding ABS annual meeting (for the 2016 meeting, this date is June 10, 2015). An individual can enter the session only once per lifetime.

To Enter: Interested candidates must 1) check the appropriate box in the online abstract submission system for the annual meeting; 2) submit a cover letter and an electronic version of their paper as specified below; 3) confirm that they meet all eligibility requirements; 4) present a spoken version during the 2016 Annual Meeting; and 5) attend both the Allee welcoming dinner and the awards ceremony during the Annual Meeting. Applications, including the written paper, will be due on the meeting's abstract submission date. Applicants will be asked to submit a cover letter with addresses and phone numbers, as well as a manuscript in PDF format (see below for details).

Manuscripts should consist of no more than seven double-spaced, line-numbered, text pages, plus no more than a total of four tables and/or figures. This limit does not include abstract, references, or acknowledgments. Papers MUST be formatted using the instruction for authors for a research paper in the journal *Animal Behaviour* to insure eligibility (author instructions: <http://bit.ly/1tfykZF>). The spoken presentation should focus on the material presented in the submitted paper, but may also include other original material as well as general introductory and concluding remarks. Questions should be addressed to ABS Second President-Elect, Jeff Podos: (preselect2@animalbehaviorsociety.org).

Genesis Poster Award Competition

Genesis Award for the Outstanding Undergraduate Poster Presentation was first presented at the 2000 ABS Annual Meeting the Genesis Award honors the best undergraduate poster presentation at the meeting. To encourage quality presentations the following guidelines and suggestions are available for viewing. Further information, if needed, can be obtained from the chair of the Genesis Sub-committee, Sarah Humfeld, E-mail: humfelds@missouri.edu.

Applicants can mark their abstract to be considered for this award via the abstract submission system.

Charles H. Turner Travel Award

The Diversity Committee of the Animal Behavior Society is calling for nominations for the 2015 Charles H. Turner Award. This program, previously funded by an NSF grant but now supported entirely by the Society, is a travel grant that supports the goals of increasing the diversity of our membership through support for undergraduate students to

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Historian: **Zuleyma Tang-Martinez**, University of Missouri- St. Louis, E-mail: historian@animalbehaviorsociety.org

Members-at-Large:

Alison Bell, University of Illinois at Urbana-Champaign, E-mail: mematlarge1@animalbehaviorsociety.org

Beth Jakob, University of Massachusetts-

attend the annual meeting. Selected Turner Program Fellows will receive support to travel to the 53rd Annual Conference being held in Columbia, Missouri, and participate in a one-day workshop structured to integrate students into both the meeting experience and the broader community of the Animal Behavior Society.

The Turner Program is managed by the Animal Behavior Society Diversity Committee and with generous funding by the The Animal Behavior Society. Please contact us if you would like to make a donation: diversity@animalbehaviorsociety.org.

Amherst, E-mail: mematlarge2@animalbehaviorsociety.org

Emily DuVal, Florida State University, E-mail: mematlarge3@animalbehaviorsociety.org

Founders' Memorial Poster Paper Award

Eligibility: Any graduate student or postdoctoral member of the society in good standing is eligible to enter the competition. Applicants can indicate their intention to enter the competition by marking the appropriate box on the Meeting Abstract submission form. All Founders presenters will be expected to provide a single page preview of their poster for the judges and give a rapid fire 1 minute 2 slide poster preview presentation prior to their session. This will be your opportunity to increase general interest in your presented research.

Diversity Fund Student Registration Fee Award

The Animal Behavior Society is strongly committed to increasing the diversity of attendees at the ABS Annual meeting. A limited number of registration fee bursaries are available to aid attendance by students who will increase the participation of racial minorities under-represented in our field. This includes, but is not limited to: minorities from developing nations, minorities living in developed nations, and individuals of Native American, First Nation/First Peoples, Aboriginal or Maori descent. Preference is given to individuals presenting research results. You must be enrolled in a graduate program at the time of application.

Eligibility: Applicants from North America must be enrolled in a graduate program at the time of application and must be members of under-represented minorities who are of African, Asian, or Latin American descent or of Native American heritage. Citizens (graduate students or established professionals) of Latin American countries and non-white citizens of African countries are also encouraged to apply.

Latin American Travel Award

The Latin American Travel Awards are intended to encourage greater participation of Latin American researchers in ABS meetings by helping to defray the costs of international travel, housing and/or meals at meetings. The deadline for applications is the last day of abstract submissions (March 31, 2016).

Given the eligibility criteria below, priority will be given to Ph.D. students who are attending an ABS meeting for the first time and who have not received a Latin American Travel Award in previous years. Award values vary according to funds available. Candidates are prioritized according to the quality of their abstracts and CVs.

Eligibility: Latin American Travel Awards are restricted to Latin American graduate students enrolled in programs in Latin American institutions, who will be presenting a talk/poster at the annual ABS meeting.

Applications consist of:

- your submitted abstract, including the title and indicate whether talk or poster
- your curriculum vita (CV)
- indicate whether you have attended or presented at a previous ABS meeting and, if so, please describe. Also indicate if you have previously received a Latin American Travel Award(s).

Checks in US dollars for the amount of the award will be mailed directly to recipients following announcement of the results or via an electronic transfer. Applicants are responsible for any bank or transfer fees and fees associated with currency exchange.

General questions should be direct to 2nd Member-at-Large, Beth Jakob: mematlarge2@animalbehaviorsociety.org.

Caregiver Travel Grant

The Caregiver Travel Grant award is intended to provide financial caregiving support for active ABS members to attend and present at the annual ABS meeting. Funds may be used to aid in caregiving costs that will enable ABS members to attend the annual meeting (e.g., childcare or dependent care costs, airfare for caregiver, etc.).

The deadline for applications is the last day of abstract submissions (March 31, 2016).

Award values vary according to funds available. Candidates are prioritized according to their need, abstract and

CVs. Preference will be given to applicants who are presenting their work.

Eligibility: Caregiver Travel Grant Awards are for ABS members who will be attending the annual ABS meeting. Receiving this award does not preclude ABS members from applying for additional funding from ABS.

Applications consist of:

- your submitted abstract, including the title and indicate whether talk or poster
- your curriculum vita (CV)
- justification for request for support (one paragraph)
- indicate whether you have attended or presented at a previous ABS meeting and, if so, please describe.

Questions about this award can be directed to 3rd Member at Large Emily DuVal:

mematlarge3@animalbehaviorsociety.org.

Graduate Student Travel Grant

The Graduate Student Travel Grant award is intended to provide financial support for graduate students to attend and present at the annual Animal Behavior Society meeting by helping to defray the costs of travel, housing and/or meals at the meetings.

The deadline for applications is the last day of abstract submissions (March 31, 2016).

Priority will be given to Ph.D. students who are attending an ABS meeting for the first time. Award values vary according to funds available. Candidates are prioritized according to the quality of their abstracts and CVs.

Eligibility: Graduate Student Travel Awards are restricted to graduate students who will be presenting a talk/poster at the annual ABS meeting and who are active members of ABS. Receiving this award does not preclude students from applying for additional funding from ABS.

Applications consist of:

- your submitted abstract, including the title and indicate whether talk or poster
- your curriculum vita (CV)
- justification for request for support, including information about whether support for attendance is covered by other sources
- indicate whether you have attended or presented at a previous ABS meeting and, if so, please describe.

Applicants will be able to apply via the conference website when they register for the conference.

Questions about the Graduate Student Travel Grant can be directed to 2nd MAL Beth Jakob:

mematlarge2@animalbehaviorsociety.org.

George W. Barlow Award for Outstanding Research Proposal

An endowment fund has been established in memory of George W. Barlow for the purpose of encouraging excellence in graduate student research in the field of animal behavior. The **Barlow Award** will be awarded annually to one top-ranked proposal in the Student Research Grant cycle in accordance with the most recent ABS Student Research Grant competition rules. A cash award and a certificate will be given to the student selected. The amount of the **Barlow Award** will be the maximum amount allowed for a Student Grant Award as specified in the most recent ABS Bylaws and Policies.

If you would like to make a US tax-deductible donation to this cause, please use our online donation system:

<http://www.animalbehaviorsociety.org/web/support.php>

You may also send donations by mail to: ABS Central Office, 2111 Chestnut Avenue, Suite 145, Glenview, IL 60025, USA (with appropriate notation for this fund).

We will recognize major donors in a future issue of the Newsletter. Thanks to Dr. Judy Stamps for arranging for ABS to manage this endowment and for her generous seed donation.

Notice to Developing Nation Scientists Planning to attend ABS 2016

The Latin American Affairs Committee and/or Diversity Committee can provide letters of invitation to help scientists (faculty or students) from developing countries obtain travel funding from their universities in order to attend the

ABS meeting in 2015. If such a letter would be useful in helping you to obtain funding, please contact either the Latin American Affairs Committee Chair, Lilian T. Manica (latinamericanaffairs@animalbehaviorsociety.org) or the Diversity Committee Chair, Daniel Howard (diversity@animalbehaviorsociety.org) to request an invitation. Please provide your name and address, as well as the title or topic of the paper you plan to present at the conference.

ABS Newsletter

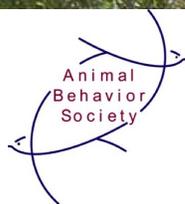
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Animal Behaviour

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Change of address, missing or defective issues: ABS Central Office, 2111 Chestnut Ave., Ste 145, Glenview, IL 60025, USA. Phone: 312-893-6585, Fax: 312-896-5614, E-mail: info@animalbehaviorsociety.org.



NEWSLETTER

Animal Behavior Society

A quarterly
publication

Sue Bertram,
Editor

Front Page | Career Awards | Plenaries & Symposia | Public Day & Outreach Fair | Grants & Awards | **Announcements** | Essay Discussion | Archive

Announcements

TEACHING WORKSHOP July 30, 2016: Practicing Best Practices in Teaching Animal Behavior

We invite ABS members to a special workshop that will take place on Saturday, July 30 at University of Missouri Columbia. We will **not** have invited speakers who talk **about** teaching. Instead, four master teachers will actually model and teach four different types of classes. This will allow participants to easily incorporate these lessons into their animal behavior courses. This workshop is targeted at graduate students, post-docs and new faculty, but everyone is welcome. Breakfast and lunch will be provided.

Sampling Animal Behavior: Dr. Susan Margulis, Associate Professor in Animal Behavior, Ecology and Conservation, and Biology, Canisius College, will teach a lesson on focal, scan and all-occurrences sampling. Participants will use different sampling methods to collect data from video footage. Analysis and discussion will illustrate the appropriate use of different methods to different research questions.

Teaching with Wikipedia: Dr. Joan Strassmann, Professor of Biology, Washington University. Wikipedia can be a powerful teaching tool. What better way to teach your students the strengths and weaknesses of Wikipedia than having them write for it? The Wikipedia Education Foundation is there to help, even if you don't know how to edit well yourself, there is tons of help out there! This workshop will introduce you to this wonderful resource, including information from a course on behavioral ecology.

Parental Care in the Wild (in the classroom): Dr. Alexandra Basolo, Professor of Biology, University of Nebraska, will teach how to identify behaviors exhibited by parental cichlids. Then we will collect data from video of parents, young and predators in a stream in Belize. Finally, we will learn to summarize the results and we will discuss differences between the parents.

Distinguishing Questions, Hypotheses, Predictions in Science: Dr. Stan Braude, Professor of Practice in Biology, Washington University, will teach a revealed case study that guides students along the process of asking scientific questions, offering hypotheses, forming predictions, designing experiments, and ultimately interpreting data.

This workshop offers a unique opportunity for those looking for some new ideas to incorporate into their animal behavior classes. Join these experts for some exciting hands-on learning opportunities.

- The workshop will begin at 8am and conclude at 5pm
- Breakfast, lunch, and coffee breaks included

ANNUAL MEETINGS

ANIMAL BEHAVIOR SOCIETY - ANNUAL MEETINGS

2016: July 30-Aug 3, 53rd Annual Meeting Animal Behavior Society - University of Missouri, Columbia, MO

2017: Dates TBD, 54th Annual Meeting Animal Behavior Society - University of Toronto, Toronto, Canada

OTHER UPCOMING US MEETINGS

2016: 30 March-April 3, 12th Annual International Congress of Neuroethology, Montevideo, Uruguay, South

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Alison Bell, University of Illinois at Urbana-Champaign, E-mail: mematlarge1@animalbehaviorsociety.org

Beth Jakob, University of Massachusetts-

America.

2016: 17-22 April, Animal Behavior Management Alliance Conference Annual Meeting, Tampa, Florida, United States.

2016: 16-19 May, 23rd International "Stress and Behavior" Neuroscience and Biopsychiatry Conference, St. Petersburg, Russia.

2016: 18- 21 June, Evolution 2016, Austin, Texas, United States.

2016: 22-24 June, 7th International Regional "Stress and Behavior" Neuroscience and Biopsychiatry Conference Miami Beach, Florida, United States.

2016: 29 June-2 July, 28th Annual Human Behavior and Evolution Society (HBES) Meeting, Vancouver, Canada.

2016: July 29-August 4, 16th International Behavioral Ecology Congress (ISBE), University of Exeter, Exeter, England, United Kingdom.

2016: July 30-August 3, 53rd Annual Meeting Animal Behavior Society (ABS), University of Missouri, Columbia, Missouri, United States.

2016: 21-27 August, 39th Annual American Society of Primatologists Conference, will be held jointly with the 26th Congress of the International Primatological Society Conference, Chicago, Illinois, United States.

2017: 4-8 January, Society for Integrative and Comparative Biology (SICB) - Annual Meeting, New Orleans, Louisiana, United States.

2017: 12-16 June, 54th Annual Meeting Animal Behavior Society, University of Toronto, Toronto, Canada.

2017: 25-28 August, 40th meeting of the American Society of Primatologists, Washington, D.C., United States.

Amherst, E-mail: mematlarge2@animalbehaviorsociety.org

Emily DuVal, Florida State University, E-mail: mematlarge3@animalbehaviorsociety.org

ATTENTION AUTHORS

Are you an author or editor of a book related to animal behavior? If so, we would like to list it on the ABS Books by Members Web page. Click on member books under additional resources or click on the following link to see the book currently available (<http://www.shelfari.com/o1514504629/shelf>). Listing your book is quick and easy! And remember, if the book is still available, there is a direct link to [Amazon.com](http://www.amazon.com) from the web site for interested buyers (and ABS earns up to 5% from purchases made through this link). Send the following information to the Chair of Public Affairs Committee Chair of the Public Affairs Committee Patricia Brennan at publicaffairs@animalbehaviorsociety.org : Author name(s), book title, publication year, publisher, number of pages, ISBN number (specify whether for hardcover or paperback), and a BRIEF abstract of the book.

DID YOU KNOW?

Consider helping the Animal Behavior Society earn up to 7.5% on your purchases by ordering your books and other qualifying products from Amazon.com (up to 5%) or Powell's Bookstore (up to 7.5%) using the links found here: <http://www.shelfari.com/o1514504629/shelf>.

CALL FOR SYMPOSIA, INVITED SESSIONS & WORKSHOP PROPOSALS 2017 ABS MEETING

To organize a symposium, an invited paper session, or a workshop for the ABS Annual Meeting, you should first contact the Program Officers to discuss your ideas. We ask you to propose your topic to the Program Officers to make sure that there is no conflict with already existing plans and topics. A symposium should be a profound and stimulating review of an important subject area that currently is a major focus of research. It should be a thorough treatment of past work and current research advances. A symposium should be of general interest to the majority of ABS members. Limited funding is available from ABS to assist with travel, registration, and other expenses for symposia. An invited paper session is a special grouping of papers that focus upon empirical results relating to a particular topic. A workshop is a hands-on exchange of ideas in a more informal setting relative to lectures and symposia. Funding is not available from ABS for expenses related to invited paper sessions and workshops.

Symposia, invited paper sessions, or workshop proposals for the 2017 meeting in Toronto, Ontario, Canada must be submitted through the website:

<https://docs.google.com/forms/d/1r5rS8u6qUE534SxsBWbhobvEFilxvb8QBjBo3MWhzOL8/viewform>. Proposals are due on June 30, 2016 before the annual meeting in Missouri (July 30 – August 3):

<https://www.animalbehaviorsociety.org/2016>). The proposals will be circulated to the Executive Committee prior to the Annual Meeting in Anchorage and then discussed at the Executive Committee meeting.

Further information can be found on the ABS website or by contacting the ABS Program Officers: Mark Hauber, E-mail: progofficer@animalbehaviorsociety.org or Jonathan Pruitt, E-mail: progofficerelect@animalbehaviorsociety.org

CALL FOR RESOLUTIONS

Resolutions that deal with timely and substantive political or social issues that members wish to submit for the consideration of the ABS membership should be submitted by June 30, 2016 to President Emília Martins, E-mail: president@animalbehaviorsociety.org. Submitted resolutions should provide direction to the ABS President to facilitate prompt action and will be evaluated by the Public Affairs Committee for appropriateness. Resolutions will be voted on at the annual business meeting in Anchorage. Approved resolutions reflect the views of the Animal Behavior Society membership and are sent to the appropriate external agencies, organizations, or to the general public. Send resolution proposals to the Chair of the Public Affairs Committee Patricia Brennan, Organismic and Evolutionary Biology Graduate Program, University of Massachusetts Amherst, Amherst, MA 01003, E-mail: publicaffairs@animalbehaviorsociety.org

ABS CORRESPONDENCE

Send general correspondence concerning the Society to the Animal Behavior Secretary, Sue Bertram, secretary@animalbehaviorsociety.org

Information to be included in the ABSNews (<http://www.animalbehaviorsociety.org/web/news-members.php>) can be sent anytime and is quickly posted to the ABSNews forum. Of special interest for the ABSNews forum are announcements about openings for tenure track, post doctoral, technical, and graduate positions in the field of animal behavior and behavioral ecology. We also welcome advertisements about upcoming meetings, workshops, seminars, and field course offerings, provided they relate to animal behaviour and behavioral ecology. If you have something of interest to other members contact the ABS through (E-mail: info@animalbehaviorsociety.org) to get information on posting your announcement.

Articles submitted by members of the Society and judged by the Secretary to be appropriate are occasionally published in the ABS newsletter and/or posted to ABSNews. Information to be included in the ABS Newsletter must be received by the 15th of the month preceding each issue (the next deadline is 15 April, 2016). The publication of such material does not imply ABS endorsement of the opinions expressed by contributors.

FOLLOW ABS ON FACEBOOK

Go to <http://facebook.com/animalbehaviorsociety/> to stay on top of the latest news, events, and announcements about the Animal Behavior Society, its members, and their research. Members are welcome to contribute to our wall and share their ABS-related photos and experiences. Invite all your friends to help continue to expand the society!

SUPPORT THE ANIMAL BEHAVIOR SOCIETY

Contributions to the Animal Behavior Society are US tax-exempt under code 501(c)(3). DONATIONS make a big difference in our Society. YOU CAN HELP! The Animal Behavior Society is a non-profit organization dedicated to promoting the scientific study of animal behavior. We pride ourselves on being a top quality professional society with very low membership costs. Our Society supports and encourages animal behavior research and outreach through a number of programs and grants. With contributions from you, we can keep these programs in place and help to support animal behavior research, teaching, and outreach. Membership dues include a member's subscription to our journal *Animal Behaviour*, the quarterly Newsletter, and all of the operating expenses of the Society. In order to provide grants and other forms of financial support, we rely on contributions from members like you. Our members, especially our students, need your help. Please access our website to make contributions.

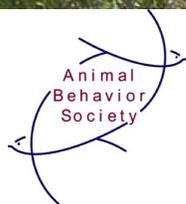
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NEWSLETTER

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Sue Bertram,
Editor

Front Page | Career Awards | Plenaries & Symposia | Public Day & Outreach Fair | Grants & Awards | Announcements | **Essay Discussion** | Archive

Essay Discussion

We are hoping this essay will start a discussion within the community of animal behaviorists about what we can do as individuals and as a society to reduce the attrition of women in biology. Please send comments to Shelley Adamo (sadamo@dal.ca) and Sue Bertram (secretary@animalbehaviorsociety.org). We will pick representative comments to publish in the next newsletter - and Shelley may weigh in as well.

Hypercompetition for Academic Positions Promotes the Attrition of Women in Biology: Evidence from Canada

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Sixty years ago, female professors were a rare sight in Canada (AUCC 2007). Since then, women have entered the professoriate, many becoming outstanding scientists and scholars. However, this progress appears to have stalled in some disciplines, including biology. In part, this plateau is an artifact of the boom/bust nature of university hiring over the last 60 years. However, other forces, such as biases against women in science and a lack of support for mothers, discourage women from achieving faculty level positions (Expert Panel 2012). These issues are exacerbated by the current intense competition for faculty positions.

Women's Movement into the Professoriate has Stalled in Biology

The years from 1955 to the mid 1970's were ones of expansion for the Canadian university system. Full time faculty numbers doubled between 1955 and 1965 (from 6,000 to 14,000), and doubled again by 1974 (30,000). This hiring binge led to departments filled with young professors, and by 1976 about 1/2 of all professors were under the age of 40 (all data from AUCC 2007).

During this period, employment at an academic institution was virtually guaranteed for a talented academic. Unfortunately, this era preceded the time of increased enrolment of women in doctoral programs. In the 1960's only about 8% of all doctoral students were women (AUCC 2007). However, by the 1980's the number of women awarded doctorates was increasing steadily and by 1990 about 1/3 of all doctorates were awarded to women (AUCC 2007). Unfortunately by then the hiring situation had changed dramatically.

Between 1992 and 1998 there was a net decrease in the number of full time faculty across Canada. Unfortunately this coincided with a sharp rise in both the number of women doctoral candidates as well as a large increase in the total number of graduating doctoral students. By the 1990's, there were many more doctoral candidates than jobs (all data from AUCC 2007). No longer were talented doctoral candidates assured an academic position.

The lack of hiring during this period helps explain the previous lag between the number of women gaining doctorates in biology and the number of women professors in the biological sciences. However, it does not explain the present disparity between the proportion of women achieving doctorate degrees and the proportion of women assistant professors. Although women have been awarded about half of all doctoral degrees in biology in Canada since 2004 [when international students, who are usually not eligible to apply for Canadian faculty positions, are excluded, King 2008; also see Table 2.7, Natural Sciences and Engineering Research Council of Canada (NSERC) 2010] they account for only about 37% of assistant professors, and this number has not changed for over a decade (see

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Beth Jakob, University of Massachusetts-

below). These data suggest an attrition rate of about 15% (relative to men) for women doctoral holders in biology. This phenomenon is not unique to biology. Since 1998, the proportion of women completing doctoral programs has outpaced the relative increase in the appointment of women to new faculty positions across all disciplines (AUCC 2007). The Canadian Association of University Teachers (CAUT 2008 Equity Review) also remarked on this lack of progress and concluded that women's gains at the assistant professor level had stalled. Biology is consistent with this larger trend.

Worse, there is evidence that the proportion of women achieving a faculty position in biology is falling relative to men. Although the proportion of female assistant professors in the broadly defined field of the biological sciences (i.e. including biomedical fields) is higher (37%) than the proportion of women at the associate level (28.8%; CAUT 2013/2014), the trend in some subfields is in the opposite direction. For example, in ecology and evolution, the proportion of women enrolled in a doctoral program in 2004, 2008, and 2010 was about 60% (CAUT 2006, 2008, 2010, 2012). In 2010, the latest year data were available, the proportion of female assistant professors in this area was 38.5% (n=39), but the proportion of women at the associate professor level was almost 10% higher (46.7%, n=45, CAUT, 2014). These results suggest a possible decline in the proportion of women Ph.D.s achieving tenure-track positions in this area. However, given the relatively small number of faculty in this sample, it is possible that it is a statistical anomaly (i.e. overly influenced by a small number of recent hires). Looking across biology departments in Canada, the proportion of assistant professors that are women is about the same as the proportion that are associate professors (associate professors: 33.4% n=377, assistant professors: 36.4%, n=151; data from 34 Canadian university biology departments). These data also suggest that the percentage of assistant professors that are women has not increased over the last several years, despite the continued increase in the proportion of doctoral degrees in biology awarded to women (NSERC 2010). These data support the contention that the attrition of women biologists is increasing.

Family responsibilities and problems with biases against women in science have plagued women academics for many years (e.g. see Mason et al., 2013). There is no evidence that these problems have become worse over the last decade, in fact, provisions for faculty with families have improved (Adamo, 2013). Why then do relatively fewer women appear to be reaching the professoriate? One aspect of academic life that has become worse over the last decade is the competition for academic positions (Iqbal, 2012). Various estimates exist, but it appears that fewer than 20% of doctorate holders in the biological sciences achieve a tenure track position in North America (Maldonado et al. 2013; Polka 2014; Sauermann and Roach 2012), although a tenure-track position is the goal for the majority of doctoral students regardless of discipline (Stanford et al. 2009). This hypercompetition for jobs exacerbates the effects of bias and family on women, because any reduction in career progression (e.g. due to reducing research time in order to raise children, or being overlooked because of bias) will have magnified effects when competition is severe.

Hypercompetition for positions is likely to have other negative effects on women biologists. Research has shown that when success in an academic subject is thought to require exceptional talent, women tend to eschew those areas (Leslie et al., 2015). Both men and women are less likely to believe that women can be exceptional; women are more likely to doubt their own abilities (Leslie et al., 2015). Given the low number of biology graduate students that achieve an academic position, graduate students may begin to perceive academic biology as a career that requires special 'innate' talent in order to succeed. The work of Leslie et al. (2015) would suggest that such a view would disproportionately discourage women from pursuing biology, even though they are equally talented.

Should We Reduce the Number of Graduate Students in Biology?

The hypercompetition for faculty positions could be reduced by decreasing the number of doctoral students. This could have a positive effect on the recruitment of women, by placing competition for entry into a biological career earlier in an individual's training (e.g. entry into graduate school instead of at the level of a tenure-track position). This timing, similar to that in medicine, would allow competition for an academic position to occur prior to family formation, reducing the handicap women face due to family issues (Adamo 2013). It is this timing that may help medicine attract and retain women despite this profession being stressful, family unfriendly and suffering from many of the same bias issues as biology (Adamo 2013). Lately there has been discussion as to whether fewer PhDs should be trained (Smaglik 2014; Polka 2014; Martinson 2011) and the issue is controversial (e.g. supporting a limit: Alberts et al. 2014, Bourne 2013; Cyranoski et al. 2011; against a limit: Marder 2014, Kelly and Mariani 2014). There are perverse incentives that reward faculty for training large numbers of graduate students, regardless of demand (Alberts et al. 2014). Given the conflict of interest between faculty and trainees on this issue, a resolution is unlikely to come soon.

Moreover, there are legitimate concerns about limiting the number of PhDs trained. How would scarce positions be allocated? Is scientific ability obvious at the undergraduate level (Marder 2014)? Moreover, reducing the number of PhD candidates in a given country will only reduce competition for faculty positions if immigration laws restrict these positions to citizens of that country; otherwise a decline in PhDs would have a negligible effect, given the global glut of PhDs (Cyranoski et al. 2011).

Perhaps most importantly, we need information about the career destinations of the 80% of biology PhDs who do not find a tenure-track position. If students find exciting, fulfilling careers that they could not otherwise obtain without

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a PhD, then that would be reason to continue to train the current number of doctoral students. But if many students are ending up in jobs for which they did not need the PhD, then perhaps we should reconsider the number that we train, especially if many of those students feel misled and bitter (e.g. see Stanford et al. 2009). The evidence from North America and Europe suggests that finding suitable employment is an issue for people with doctorates (Alberts et al. 2014; Auriol 2010; Cyranoski et al. 2011; Munro 2015).

Given the uncertainty as to the career trajectories of biology PhDs, biology departments should canvas recent doctoral and post doctoral alumni to determine whether they found employment related to their training, and whether they thought their present job makes good use of their skills. Ideally organizations, such as the Animal Behaviour Society, could compile a list of alternative careers for trainees. Such initiatives are already underway within some programs (e.g. Smaglik 2015; Alum et al. 2014). Another option is for granting agencies (e.g. NSERC) to take a more active role in identifying alternative careers for biology graduates. NSERC requires grant applicants to track the outcome of their trainees, making it not too difficult to compile the types of careers doctoral students are finding. Then, graduate students and post docs could be provided with realistic options. Ideally, with this information, departmental graduate program committees could re-structure training to include co-op like placements for students who wish to explore non-academic career options within biology. Presenting options to graduate students may increase the retention of women by alleviating the 'do-or-die' stress that comes from the search for faculty positions without a back-up plan. Although the attrition of women is greatest between the post doc and first faculty position, a second point of attrition is the disproportionate number of women who do not complete the PhD. (Mason et al. 2013). Demonstrating that the PhD can lead to non-academic careers in biology could reduce this attrition.

Increasing Support for Families, Especially for Young Trainees, Could Reduce Attrition

Assuming that competition for academic jobs will remain fierce for the foreseeable future, how can we reduce the attrition of women in biology?

Motherhood is exhilarating, but it is also exhausting and time consuming. The same can be said of science, leading to an obvious conflict. In a variety of countries, including Canada, policies exist that attempt to reduce this conflict. However, this protection is weakest for biologists when they are at their most vulnerable – i.e. at their early training stages. Perhaps it is no surprise that the career periods with the greatest attrition of women (NSERC 2010; Mason et al. 2013), correspond to those periods with the least family support. For example, graduate students and post doctoral fellows are given the fewest provisions for maternity leave in the Canadian system. For graduate students there is little or no salary support. In other words, biology graduate students, who usually make less than \$25,000 year (e.g. NSERC Doctoral award (PGS-D) \$21,000/year; http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/BellandPostgrad-BelletSuperieures_eng.asp) are expected to survive with no salary during their maternity leave. Moreover, many of these same students are likely to be carrying debt from their undergraduate degree (Statistics Canada 2013). Some external scholarships (e.g. NSERC) allow students a 6 month paid maternity leave, providing some support. In the US the situation can be even worse; many women graduate students lose both salary and health care coverage during their maternity leaves (Leibfarth and Vermaak, 2011).

Once maternity leave is over, graduate students who wish to return to work must now search for low cost, high quality daycare. Fortunately, most Canadian universities have excellent on-site day care. Unfortunately, it is frequently unavailable (Expert Panel on Women in University Research 2012). Here are the encouraging words from the University of British Columbia's Dept. of Zoology's handbook for graduate students regarding on-site daycare.

'UBC has an excellent day care system, as well as after school care and summer care for school age children. Note that waitlists are up to 2 1/2 years, *so plan to make other arrangements.*' [italics mine for emphasis]

(<http://www.zoology.ubc.ca/files/GettingStartedinZoologyAugust2013.pdf>, p.6).

No other suggestions are offered in the handbook.

Women faculty members at Canadian universities have the most family support (e.g. see <http://www.dal.ca/content/dam/dalhousie/pdf/hr/Academic-Staff-Relations/DFA-collective-agreement.pdf>). They are entitled to paid maternity and parental leaves; moreover these leaves are typically topped up to 95% of their current salary by the university. Women also have the option of deferring tenure decisions. Moreover, NSERC allows mothers on maternity leave to extend the funding of their grant for up to 2 years. NSERC also instructs committees to be sensitive to maternity leaves, although no explicit instructions are given to committees (e.g. assessing productivity over the number of years of the grant minus the maternity leave) http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Politiques-Politiques/assesscontrib-evalcontrib_eng.asp. These policies probably contribute to the retention rate of women at tenure time (e.g. NSERC 2010, Fig. 4.6), despite potential issues of bias against women at the tenure level in Canada (Acker et al., 2012). Correlation is not causality, but these data are consistent with the hypothesis that family support helps to retain women in science.

The lack of support for mothers in science during the early training years is likely to leave women with the false impression that science is not compatible with motherhood. However, motherhood can be combined with science of the highest quality (Connelly and Ghodsee 2014). Two recent Nobel Prize winners (Carol Greider and May-Britt Moser), both biologists, did some of their prize-winning science while raising small children (Greider 2010; http://www.nobelprize.org/nobel_prizes/medicine/laureates/2014/may-britt-moser-interview.html). Few careers

outside of academia offer the same level of independence, scope for creativity, the excitement of discovery, as well as sabbaticals, job security, excellent pay (in Canada), and benefits. Women considering changing careers because they perceive science as family-unfriendly should take a hard look at the alternatives (e.g. medicine, <http://www.physicianhealth.com/sites/default/files/Medicine%20and%20Motherhood-Can%20We%20Talk.pdf>) before hanging up their lab coat.

Encourage Fathers to Participate in Childrearing

The involvement of fathers in childrearing is increasing (Damaske et al. 2014). When fathers increase their contribution to childrearing, a mother's ability to remain competitive increases (Economist, 2015). Increasing equality in childrearing may be an overlooked issue that could decrease the attrition of women in biology. However, to encourage men to fully participate in raising children, better parental leave policies for fathers are needed. Moreover, encouraging fathers to take parental leave in a hypercompetitive job market may require some persuasion. For example, in Sweden, couples that split their parental leave more evenly are paid an 'equality bonus' (Economist, 2015).

Are More Academic Jobs on the Horizon?

In 2013, about 1/3 of faculty in Canadian universities were 55 years or older (CAUT 2014/2015). This age structure suggests that the number of academic openings in biology could increase in the future. However, whether faculty will be replaced as they retire depends on a number of factors, such as whether universities refill tenure-track faculty positions or whether they instead hire more temporary sessional lecturers. Moreover, new technologies, such as on-line class offerings, may also lead to a reduction in the number of professors in the future (Duncan 2015). Furthermore, mandatory retirement is no longer in force, and, therefore it is difficult to predict when positions will become available. However the evidence suggests that few professors work past 70 years of age (AUCC 2007), suggesting that new openings should become available over the next few years. Therefore, there may be an opportunity to increase the recruitment of women into biology, if we make an effort today to retain them past the trainee stage (NSERC 2010).

Further Suggestions to Reduce Attrition of Women

A number of reports and papers have made important suggestions to improve the retention of women in science and/or academia (e.g. Expert Panel on Women in University Research 2012). Below are some suggestions of how academic biologists could increase retention of women in the discipline:

1. Agitate for increased support for mothers, especially at the graduate and post doctoral level. High quality, affordable, on-site, *available* day care, allowing infants below the age of 12 months, with drop-in options, is essential. These facilities should also provide programs for school-aged children (e.g. after school care and holiday programs). The lack of childcare is a potential human rights issue in Canada (Monsebraaten 2014), as it disproportionately disadvantages women.
2. Increase support for paternal leave. Encourage fathers to take their parental leave. Women will not be able to contribute to science equally if responsibility for raising children is not shared between men and women.
3. Develop a family supportive environment within the university. Initiatives should include the development of hiring policies that explicitly instruct faculty search committees not to penalize individuals for maternity leaves or periods of part time work. The focus should be on the quality of the research, and not on the sheer number of publications.
4. Develop a family supportive environment within departments. The departmental culture can have a large influence on the perception of the family friendliness of a research career (Fox 2011; Villablanca et al. 2011; Mason et al. 2013). For example, mothers (and father caregivers) should be encouraged to share tips on how to successfully combine parenthood and research (either informally or in a department-wide discussion, Lahav 2010). Such a discussion could alleviate some of the concerns of young biologists (see Connelly and Ghodsee for other suggestions). Although individual mentors are helpful, it is also important to have a supportive departmental community. Men, too, are increasingly concerned about an appropriate work/life balance (Damaske et al. 2014). Therefore, a family-friendly environment can be an important recruitment tool when searching for the best faculty, regardless of sex.
5. Ensure a supportive and safe environment for women at conferences and on field trips. Sexual harassment remains an issue in science (e.g. Anonymous, 2016). Societies such as the Entomological Society of America have an explicit code of conduct for members, as well as a contact person to help individuals dealing with harassment at their annual meeting (<http://www.entsoc.org/entomology2015/code-conduct>).
6. Whether we are training too many biologists may be a matter of debate, but what is clear is that we have many more talented biologists than there are tenure-track faculty positions. This hypercompetitive job market disadvantages women, especially women with families (Adamo 2013; Mason et al. 2013), and this fact should be acknowledged. Departmental graduate program committees should track their doctoral student and post doctoral alumni and determine how well alumni have weathered the decline in the availability of tenure-track positions. Scientific societies and national granting agencies should also track the career trajectories of our doctoral students and post docs and develop a list of alternate careers.

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