

OEB

Organismic & Evolutionary Biology

OEB 2016-2017 Newsletter

Congratulations OEB Graduates!



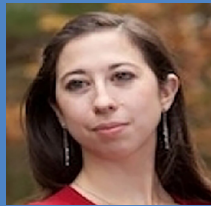
Pierre Baduel



Leonora Bittleston



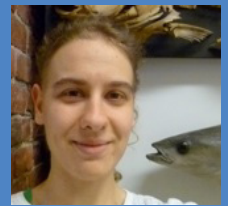
John Boyle



Glenna Clifton



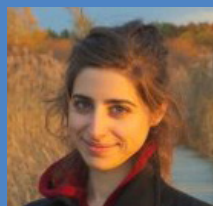
James Crall



Kara Feilich



Ambika Kamath



Leandra King



Joel Nitta



Daniel Rice



Allison Shultz



Jingyi Yu

NEWS AND NOTES

Faculty News

Notable Awards

- **Hopi Hoekstra** was elected to the American Academy of Arts and Sciences, April 2017
- **E.O. Wilson**, Professor Emeritus, was awarded the 2017 Reed Environmental Writing Award for his book, *Half-Earth: Our Planet's Fight for Life!*
- **Richard Lewontin**, Professor Emeritus, received the Thomas Hunt Morgan Medal, March 2017
- **Pardis Sabeti** was awarded the Richard Lounsbery Prize from the National Academy of Sciences, January 2017

- **E.O. Wilson**, Professor Emeritus, received the Humane Medal from the Humane Society of New York, December 2016
- **Elena Kramer** and **Martin Nowak** were awarded the Fannie Cox Prize for Excellence in Science Teaching, December 2016
- **Naomi Pierce** was awarded the Harvard Global Institute (HGI) grant, October 2016
- **Hopi Hoekstra** was elected to the Board of Directors of the Genetics Society of America, September 2016
- **Hopi Hoekstra** was elected to the National Academy of Sciences, May 2016

- **L. Mahadevan** was elected Fellow of the Royal Society, April 2016
- **Gonzalo Giribet** received the Guggenheim Fellow Award, April 2016
- **Mansi Srivastava** was named Searle Scholar, April 2016
- **Bence Ölveczky** received the Promising Scientific Research Award from the Star Family Challenge, April 2016

Research Highlights

An international team of scientists led by **Mary Caswell Stoddard** (former postdoc, Edwards Lab) and **L. Mahadevan** have

News and Notes

answered the question of why there is great diversity in egg shape and sizes. The answer may also help explain how birds evolved. The groundbreaking study, published in the June 2017 issue of [Science](#), was chosen for the cover image.

David Haig teamed with professors at the Department of Economics at the University of Warwick to examine the effect of learning a child's gender on parents' attitudes towards risky behaviors. The authors gathered prenatal and post-birth data from the pediatric wards of hospitals in both the United Kingdom and Ukraine, allowing for longitudinal and cross-sectional analyses of those attitudes; a first for a study of this kind. The study was presented at the [26th Society for Risk Analysis-E Conference](#), June 2017.

Thomas Powell (former PhD student, Moorcroft Lab), **James Wheeler** (former PhD student, Holbrook Lab) and **Paul Moorcroft** examined the unknown effects of drought tolerance among mature Amazon rainforest trees. The study, published in the May 2017 issue of [Global Change Biology](#), found the differences in xylem and leaf hydraulic traits not only explain the differences in drought tolerance among mature Amazon rainforest trees, but are critical in determining the fate of the Amazon rainforest if precipitation patterns change substantially.

Pardis Sabeti and her team authored one of three studies published in the May 2017 issue of [Nature](#) on the evolution and spread of the Zika virus. The Sabeti lab and two international teams of researchers sequenced and studied the genomes of the Zika virus to trace its origin and spread across the Americas. Using a genetic clock and looking at DNA from samples from people and mosquitoes, the three teams determined the virus was spreading long before the first cases were reported. The study was covered by [NBC News](#) and [Time](#).

Why are some mice and people monogamous? Why are monogamous fathers better at parenting? In a study led by postdocs, **Andrés Bendesky** and **Jean-Marc Lassance** (Hoekstra Lab), and **Hopi Hoekstra**, the answer to the questions point to a genetic basis for parental care in monogamous parents that can evolve independently in males and females. The study, published in the April 2017 issue of [Nature](#),

is in collaboration with Catherine Dulac's lab in MCB. The study was covered by the [New York Times](#).

Working with Emmanuel College scientists, **Martin Nowak** and Ben Allen (researcher in Nowak Lab) developed an algorithm to predict whether a social structure is likely to favor cooperation. Their findings, published in the April 2017 issue of [Nature](#), suggest strong pairwise relationships, rather than loose scattered networks, are more favorable for cooperation.

L. Mahadevan used mathematical models to form a theory of how stems and shoots develop a sense of self and environment to grow in the manner they do. The study is published in the March 2017 issue of [Journal of Royal Society Interface](#).

PhD student, **Danny Haelewaters** (Pfister Lab) collaborated with **Jasmin Casmacho** (PhD student, Hoekstra Lab) to screen ectoparasitic bat flies from Hungary and Romania for the Presence of ectoparasitic Laboulbeniales fungi. The study, published in the February 2017 issue of [Parasites & Vectors](#), shows a complex network of bats, bat flies and Laboulbeniales fungi.

Postdocs, **Rosa Fernandez** and **Ana Lucia Tourinho** (Giribet Lab), **Prashant P. Sharma** (former PhD student, Giribet Lab) and **Gonzalo Giribet** used transcriptomics on the broadest taxonomic sampling to shed light on the harvestmen (Opiliones) interrelationships. The study, published in the February 2017 issue of [Proceedings of the Royal Society B](#), also pieced together an overview of the general biogeographic patterns of the ancient arthropod group that dates back at least to the times of Pangea.

Heidi Fisher (former postdoc, Hoekstra Lab), **Emily Jacobs-Palmer** (former PhD student, Hoekstra Lab), **Jean-Marc Lassance** (postdoc, Hoekstra Lab) and **Hopi Hoekstra** compared two closely related species, the deer mouse (*Peromyscus maniculatus*) and the oldfield mouse (*P. polionotus*) and found the promiscuous deer mouse has a gene that makes their sperm faster and more virile. The study is published in the December 2016 issue of [Nature Communications](#).

Postdoc, **Melissa Whitaker** (N. Pierce Lab), PhD student, **Shayla Salzman** (N. Pierce Lab), **Jon Sanders** (former PhD student, N.

Pierce Lab), and **Naomi Pierce** published a study in the November 2016 issue of [Frontiers in Microbiology](#), showing that, unlike most herbivores, lycaenid butterflies do not rely on bacterial symbioses to mediate their diet.

James Hanken was part of a team of scientists that discovered three new species of minute salamanders in the Sierra Madre del Sur of Oaxaca, Mexico. Until this discovery, only a single species had been reported from the region. The three new salamanders, in the genus *Thorius*, are the tiniest tailed tetrapods known to science. The discovery was published in the November 2016 issue of [Peer Journal](#).

Pardis Sabeti was part of two teams of scientists that reported a genetic mutation that may have made Ebola more deadly by improving the virus's ability to enter human cells. The study, in the November 2016 issue of [Cell](#), analyzed thousands of Ebola genomes before discovering the deadly mutation. The exciting discovery was covered in the [New York Times](#), [NBC News](#), [Science Magazine](#) and [The Atlantic](#).

Research Associate, **Ricardo Mallarino** (Hoekstra Lab) and **Hopi Hoekstra** looked to the African striped mouse to investigate the periodic stripes pattern, which is common in mammals. Their findings, published in the November 2016 issue of [Nature](#), reveal the mechanisms that lead to the evolution of these patterns. The study was covered in [BBC News](#), [The Atlantic](#), [Science News](#) and [HHMI News](#).

Gerard Talavera (postdoc, N. Pierce Lab) discovered the mass migration and breeding of the painted lady butterfly (*Vanessa cardui*) between Europe and central Africa. The study is published in the September 2016 issue of [Biological Journal of the Linnean Society](#).

Student News

Notable Awards

Tauana Cunha (Giribet Lab) was awarded the GSAS Merit Fellowship for her research proposal, "Integrative research in gastropods: Phylogeny and shell shape evolution", May 2017

Min Ya (Kramer Lab) was selected as FAS Featured Artist of the Month, April 2017

News and Notes

Min Ya (Kramer Lab) and **Danny Haelewaters** (Pfister Lab) were awarded the Les Mehrhoff Botanical Research Fund, March 2017

Several OEB PhD students received the 2016 Derek Bok Certificate of Distinction in Teaching. *Fall 2016 Recipients:* **John Boyle** (OEB 155R), **Liming Cai** (OEB 59), **Samuel Church** (OEB 115), **Benjamin Goulet** (OEB 50), **Philip Grayson** (OEB 125), **Danny Haelewaters** (OEB 54), **Ambika Kamath** (OEB 210), **Clara Levy** (OEB 10), **Min Ya** (OEB 50), and **Kira Treibergs** (OEB 10). *Spring 2016 Recipients:* **Glenna Clifton** (OEB 399), **Mark Cornwall** (OEB 57), **Tauana Cunha** (OEB 51), **Miriam Johnston** (OEB 52), **Ambika Kamath** (OEB 167), **Mara Laslo** (OEB 167), **Clara Levy** (OEB 52), **Kelsey Lucas** (OEB 130), **Zachary Morris** (OEB 126), **Pavitra Muraidhar** (OEB 53), **Mary Salcedo** (OEB 173), **Allison Shultz** (OEB 190), **Kira Treibergs** (OEB 234), and **Dylan Wainwright** (OEB 130)

Four OEB PhD students received NSF Doctoral Dissertation Improvement Grants (DDIG) in the Directorate for Biological Sciences: **Tauana Cunha** (Giribet Lab), “Integrative Research in Gastropods: Phylogeny and Shell Shape Evolution”; **Mara Laslo** (Hanken Lab), “Evaluating the Role of Thyroid Hormone in Embryonic Limb Development in Direct-Developing Frogs”; **Brianna McHorse** (Biewener Lab), “Macroevolutionary Drivers of Digit Reduction in Fossil Horses”; and **Zach Morris** (S. Pierce Lab), “The Evolution of Crocodylian Cranial Development”

Sang Kim (Farrell Lab) received the Society of Systematic Biologists Graduate Student Research Award for his research on diurnal longhorn beetle radiation in the Caribbean, July 2016

Emily Hager (Hoekstra Lab) received the American Society of Mammalogists Grants-in-Aid Fellowship, June 2016

Making News

Molly Edwards (Kramer Lab) created and hosts a new YouTube channel, [Science IRL](#). Edwards’s popular channel takes viewers inside working labs for an upclose view of the daily work of scientists. The channel features several Harvard labs and affiliates, such as the Harvard Herbarium.

Thesis Defense

Congratulations to the 2017 PhD graduates successful defense and graduation!

- **Pierre Baduel** (Bomblies Lab), “Patterns of genome evolution and habitat adaptation in tetraploid *Arabidopsis arenosa*.”
- **Leonora Bittleston** (N. Pierce Lab), “Convergent interactions among pitcher plant microcosms in North America and Southeast Asia.”
- **John Boyle** (N. Pierce Lab), “Causes and consequences of coexistence in the *Vachellia drepanolobium* ant-plant mutualism.”
- **Glenna Clifton** (Biewener Lab), “Anatomical patterns, kinematics, and propulsive strategies of foot-based swimming birds.”
- **James Crall** (N. Pierce Lab), “Foraging in a complex world: From individual flight performance to collective behavior in bumblebees (*Bombus impatiens*).”
- **Kara Feilich** (Lauder Lab), “Disentangling the roles of form and motion in fish swimming performance.”
- **Ambika Kamath** (Losos Lab), “Phenotypic variation and the behavioral ecology of lizards.”
- **Leandra King** (Wakeley Lab), “Estimating TMRCA, modeling the fixed pedigree, and the effect of the Y chromosome on the chromatin landscape.”
- **Joel Nitta** (Davis Lab), “Ecology and evolution of the ferns of Moorea and Tahiti, French Polynesia.”
- **Daniel Rice** (Desai Lab), “Statistics and dynamics of adaptation from *de novo* mutations.”
- **Allison Shultz** (Edwards Lab), “Comparative and population genomics of host-pathogen co-evolution in birds.”
- **Jingyi Yu** (Zhang Lab), “Neural mechanisms of a hyperosmotic behavioral response in *Caenorhabditis elegans*.”

Welcome 2017 G1s!

- Wei-Ping Chan (N. Pierce Lab)
- Austin Garner (Hopkins Lab)
- Christopher Grassa (Davis Lab)
- Evan Hoki (N. Pierce Lab)
- Lydia Krasilnikova (Sabeti Lab)
- David Matthews (Lauder Lab)
- Michael Miyagi (Desai & Wakeley Labs)
- Samantha Royle (Hanken Lab)
- Shoyo Sato (Giribet Lab)
- Jacob Suissa (Friedman Lab)

- Christopher Tomkins-Tinch (Sabeti Lab)
- Brianna Weir (Haig Lab)
- Denise Yoon (de Bivort Lab)

Undergraduate News

- **Julius Bright Ross** awarded the 2017 Marshall Scholarship
- **Annie Opel** won the 2017 AAAS Student Poster Competition
- **Ezekiel Benshirim** awarded the 119th Jacob Wendell Scholarship Prize

Event Highlights

The OEB Seminar series had a successful 2016-2017 season with an incredible lineup of speakers including: **Nicole King**, University of California, Berkeley; **Sarah Otto**, University of British Columbia; **Laura Katz**, Smith College; **Corrie Moreau**, Field Museum of Natural History; **Richard Lenski**, Michigan State University; **Karen Sears**, University of Illinois; **Casey Dunn**, Brown University; **Zhe Xi Luo**, The University of Chicago; and **Lee Dugatkin**, University of Louisville. The OEB Seminar series also featured Harvard OEB faculty, **Hopi Hoekstra**, **Gonzalo Giribet**, **Benjamin de Bivort**, and **Charles Davis**. As well as Harvard faculty **Matthew Meselson** (MCB) and **Ann Pearson** (EPS).

OEB hosted the [2017 Prather Lecture Series](#) with **Dr. Bonnie L. Bassler**, Squibb Professor in Molecular Biology, Chair, Department of Molecular Biology, Princeton University, March 1-3, 2017. Dr. Bassler delivered three lectures to both the Harvard community and the public. Dr. Bassler’s public lecture, “Tiny Conspiracies: Cell-to-Cell Communication in Bacteria” on March 2nd, was co-sponsored by The Harvard Museum of Natural History. The Departments of OEB and MCB co-sponsor The Prather Lecture Series.

The [12th Annual Plant Biology Initiative Symposium](#), “Stomata: Evolution, Development, and Physiology,” kicked off May 8th with a special lecture by **Lisa Ainsworth**, University of Illinois at Urbana-Champaign. Dr. Ainsworth talk, “Understanding and Improving Crop Responses to Global Atmospheric Change,” was also part of the Harvard University Center for the Environment (HUCE) Lecture Series, [THE FUTURE OF FOOD: Climate, Crops, and Consequences](#). A full-day symposium was held on May 9th

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at the Arnold Arboretum's Weld Hill Research Building featuring speakers: **Charles T. Anderson**, Pennsylvania State University; **Sarah Assmann**, Pennsylvania State University; **Dominique Bergmann**, Stanford University; **Tim Brodribb**, University of Tasmania; **Peter Franks**, The University of Sydney; **David Haig**, OEB, Harvard University; **Tracy Lawson**, University of Essex; and **Julian Schroeder**, University of California, San Diego.

Upcoming Events 2017-2018

OEB Seminar Series

September 7: Scott Edwards, OEB, Harvard University

September 21: Irene Pepperberg, Department of Psychology, Harvard University

October 5: Marlene Zuk, University of Minnesota

October 19: Martin Nowak, Program for Evolutionary Dynamics, Harvard University

November 2: Deborah Gordon, Stanford University

November 9: Detlef Weigel, Max Planck Institute for Developmental Biology

November 16: Nicholas Strausfeld, The University of Arizona

November 30: Sheila Patek, Duke University

January 25: Lacey Knowles, University of Michigan

February 8: Paul Moorcroft, OEB, Harvard University

February 15: Stephanie Pierce, OEB, Harvard University

February 22: Peter Girguis, OEB, Harvard University

March 9: Nitin Phadnis, University of Utah

March 22: Felicity Jones, The Friedrich Miescher Laboratory of the Max Planck Society

April 5: Ian T. Baldwin, Max Planck Institute for Chemical Ecology

April 19: John Wakeley, OEB, Harvard University

PBI Symposium

The 13th Annual Plant Biology Symposium will take place on May 7-8, 2018.

Academic Events

November 1-2: Sharing Science

February 5-7: Graduate Admissions Visit

March 23: Alumni Career Panel

April 26-27: G4 Symposium

Staff News

Welcome New Staff Members

- **Julie Knippa Colby**, Associate Director of Finance and Research Administration, March 2017
- **Aliaksandr Iuleu**, Experimental Research Machinist (Ölveczky Lab), February 2017
- **Rosa Capellan**, Research Lab Coordinator (Extavour & Giribet Labs), November 2016
- **Bridget Chak**, Researcher II Natural Science (Lab), November 2016
- **Melinda Peterson**, Research Lab Coordinator (Pfister & Davis Labs), September 2016
- **Lydia Carmosino**, Senior Academic Programs Administrator, August 2016
- **Maddie Marino**, Faculty Assistant (Edwards & Moorcroft Labs), August 2016
- **Jason Fleming**, Senior Research Administrator, July 2016

Community Outreach

OEB participated in the 2016-2017 School-to-Work (STW) program, a collaboration between the Cambridge Office of Workforce Development and HUCTW. STW works

with students from Cambridge Rindge and Latin High School; OEB Administrative offices hosted Junior, **Rakeyah Ahsan**.

Notable Awards

Damari Rosado, Associate Director of Administration, was awarded the 2017 Harvard Heroes Award.

Wendy Heywood, Communications and Events Coordinator, was awarded the 2017 FAS Dean's Distinction Award.

Milestones in Service

20 Years Service:

Wendy Heywood (OEB Administration) and **Erin Ciccone** (Cavanaugh, Holbrook & Kramer Labs) celebrated 20 years of service.

10 Years Service:

Megan McHugh (OEB Administration) and **Stephanie Hillsgrove** (Girguis and Wakeley Labs) celebrated 10 years of service.

5 Years Service:

Kristin Pennarun (OEB Administration) and **Jennifer Delaney** (Girguis Lab) celebrated 5 years of service.



The Department of Organismic and Evolutionary Biology
26 Oxford Street
Cambridge, MA 02138