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Dear Provost Jon Harbor, Regents Professor Nominating Committee Members and MUS Leadership,

It is with great pleasure that I write in support of **Professor Doug Emlen** for the distinguished honor of Regents Professor at the University of Montana. Professor Emlen fully exemplifies the ideals of a Regents Professor – he is a world-renowned researcher, an engaging teacher, a popular author and a leader who serves his profession, the University, the Division of Biological Sciences and the public. Dr. Emlen has been recognized often for his achievements in these areas. His enthusiasm for science seems unbounded as does his commitment and dedication to the University of Montana.

### Scholarship

Professor Emlen is a prominent scientist, specializing in the development and evolution of animal weapons. He is a prolific writer, having published two major books, a textbook, and authored more than 60 articles. His publications are impactful, appearing in journals such as *Nature* and *Science*, with high impact factors and citation rates. Dr. Emlen is also a successful grant writer, with continuous funding from the National Science foundation over the last two decades. In 2016, he was elected to the American Academy of Arts and Sciences and in 2002 he received the U.S. Presidential Early Career Award in Science and Engineering. These awards are quite prestigious; even more noteworthy is the fact that Dr. Emlen was the first Montanan to receive these honors.

### Teaching and Mentoring

Professor Emlen is a talented expositor who is invited to give lectures all over the world from audiences ranging from specialists in his field to the general public. In the classroom, he teaches at all levels of the curriculum, from specialty courses like “Insect Biology/Entomology” to large lecture undergraduate courses like “Genetics and Evolution”. Students across the board rate his teaching as excellent. Professor Emlen has also mentored and trained scores of students, both at the undergraduate and graduate levels. In 2014 he was awarded UM’s Distinguished Teaching Award, and in 2015 the Carnegie/CASE Professor of the Year Award for the State of Montana.

## Outreach and Service

Dr. Emlen has an impressive record of public service. In his own words he is “committed to educating children and the community about the importance of insects in our lives and the mysteries surrounding them.” To that end, he has written two books, “Animal Weapons” and “Beatle Battles”, with the former receiving the Phi Beta Kappa Award in Science in 2015. Professor Emlen and his lab have spent many hours performing outreach activities. They have participated in MOLLI, First Night Missoula, Bug Days, Spectrum, the Missoula Butterfly House and Insectarium events and the Montana Natural History Center events. He has been interviewed on the radio, including NPR Science Friday and “Fresh Air” with Terry Gross, he has appeared on Hank Green’s SciShow on youtube, has been interviewed in podcasts and has had numerous pieces produced about his work, from PBS Nova to the NY Times. His outreach activities have made science more accessible and more exciting to the public. Dr. Emlen brings excitement and energy to all he does; his outreach activities have made science more accessible, more interesting and more fun to both children and adults alike.

## Conclusion

The current and emerita Regents’ Professors at UM are well-respected faculty members who excel in teaching, research and service, they are also individuals who take the time to do those things that make UM an incredible place. Professor Doug Emlen is one of these special individuals. He possesses not only impeccable credentials in the areas of research, teaching and service, but also the intangible qualities of a Regent’s Professor. I whole-heartedly support this nomination.

Sincerely,

A handwritten signature in black ink that reads "Jenny McNulty". The signature is written in a cursive, flowing style.

Jenny McNulty

Interim Dean, UM College of Humanities and Sciences

April 20, 2020

I write this letter to whole-heartedly support Doug Emlen's nomination for Regents professor at the University of Montana. I am the Associate Dean of the Division of Biological Sciences, so I am very familiar with the broad work Doug is doing with the administration and across the Missoula community; but I have also been a colleague of Doug's in the Ecology and Evolution graduate group since my arrival in 2006, so I have had the opportunity to work with Doug and his lab group scientifically, and as a colleague. My overall message here is that Biology, the University of Montana, and the Missoula community are extraordinarily lucky to count Doug as one of our own.

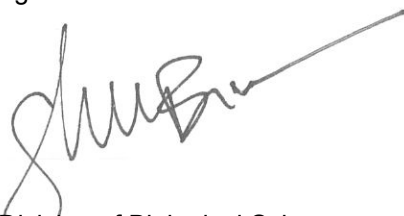
First, Doug is an scientific powerhouse. His research on the evolution of animal weapons has international recognition, and has earned him a place in the American Academy of Sciences, one of the highest scientific honors one can earn in this country. Doug has a strategy of publishing fewer papers, each with much greater impact. As such, he has over 20 articles that have been cited over 100 times, the top 8 have each been cited over 300 times. His work is broadly respected, and has far-reaching influence on research across the globe.

He has boundless energy, and uses that energy to communicate fascinating aspects of science to the broader public. His book 'Animal Weapons' compares the progression of war strategy across the millenia to the evolution of fighting and weaponization in animals. The book won the Phi Beta Kappa Science Book Award in 2015, and led first to a BBC television program and later a NOVA program, both focused on Doug, his work, and the ideas in his book. In 2019 he expanded his audience even further, publishing a book for middle-schoolers on the questions that have kept him fascinated with science across his life.

Doug also uses that boundless energy to promote UM across the Missoula community, with businesses, alumni, and donors. He has worked with the college, the upper administration, and the UM Foundation to connect with folks outside UM's halls and spread his infectious excitement about what we are doing here.

Through his work as an author, educator, and public speaker, Dr. Emlen has been a leading force promoting science, education, and the University of Montana. His international presence, his impressive scientific success, and his dedication translating that science to the broader public make him an ideal candidate for a Regents Professor.

Sincerely,



Creagh Breuner  
Associate Dean, Division of Biological Sciences  
Professor: Ecology and Evolution and The Wildlife Biology Program

**SYRACUSE UNIVERSITY**  
**College of Arts & Sciences**  
**Biology**

April 9, 2020

Dean Jenny McNulty  
College of Humanities and Sciences  
University of Montana  
Liberal Arts 136  
32 Campus Dr.  
Missoula, MT 59812

Dear Dean McNulty:

It is my great pleasure to write this letter in support of Dr. Douglas Emlen's promotion to Regents Professor at the University of Montana. Doug was my PhD advisor from fall 2008 to spring 2014 and continues to be a generous colleague, collaborator, and friend. I am currently a postdoctoral researcher in the Department of Biology at Syracuse University. I can honestly say that Doug is the most supportive and loyal mentor I know, and I attribute much of the success in my scientific career to his guidance. His enthusiasm for biology is contagious; his ability to see the big picture is inspiring.

Doug is a dedicated and constructive mentor who is committed to the success of his students. I was always impressed by the level of detail he gave to each draft of the manuscripts and grant applications that I and my lab mates gave him. He not only let us know when sections were clear (positive feedback is very important to students!), but also gave big conceptual edits on how to make our writing stronger, more exciting, and relevant to a broader audience. Doug does not let his students undersell an argument. Students in Doug's lab have an excellent track record of being awarded funding from the National Science Foundation, including several Graduate Research Fellowships (Christine Miller, Ashley King, and Erin McCullough), Doctoral Dissertation Improvement Grants (Tara McGinnis, Alex Trillo, and Erin McCullough), and Postdoctoral Fellowships (Erin McCullough and Devin O'Brien). Some of this success is attributable to Doug's ability to recruit talented students, but more importantly, it is testament to Doug's strong mentoring and attention to his students' work.

Doug promotes his students' success by challenging them to aim high. The publication of the final chapter of my dissertation is a good example. I am interested in the diversity of animal morphology, and my final dissertation project used engineering tools to model the performance of beetle horns under a range of biologically relevant stresses and strains. I found that the pitchfork-like horns of *Trypoxylus dichotomus* performed especially well when prying and twisting, as occurs routinely during fights in this species, whereas the pincher-like horns of *Dynastes hercules* performed best when squeezing, as is typical in this species' fights. Each of the three horn types that I tested performed best when exposed to forces typically associated with the fights of that species and performed more poorly when faced with forces that were typical of other species. These results provide exciting evidence of the link between weapon form and function and demonstrate how

selection for improved fighting performance can drive the diversification of animal weapons. When I showed Doug the results, I told him that I was planning to write the manuscript for a mid-tier evolution journal. He encouraged me to aim much higher. Thanks to his optimism and help writing a compelling narrative, the study was published in *Proceedings of the National Academy of Sciences*, and highlighted in *National Geographic*, *ScienceNow*, *ScienceDaily*, and *ScienceNews*.

At scientific conferences, Doug is dedicated to introducing his students to other leading researchers to help us network with potential postdoc advisors and foster future collaborations. He is also incredibly generous in sharing the lab's media attention. For example, at the 2012 Joint Congress on Evolutionary Biology, a reporter interviewed Doug to highlight his recent *Science* paper on how insulin may guarantee that the massive horns of male rhinoceros beetles are honest indicators of male quality. Instead of just describing his own study, Doug encouraged the journalist to attend my talk and highlight my research as well. Thanks to this boost, my research received just as much attention as Doug's in the "Meeting Briefs" in *Science*. Doug is clearly proud of his students' accomplishments and is committed to promoting their success wherever possible.

Lastly, Doug is a gifted and charismatic teacher. It was a joy sitting in on his classes because of his master story-telling and relevant real-world examples explaining why the study of evolution is important. He gets students excited about doing science. During my tenure as a graduate student, Doug ended his Evolution course every year with a lecture on the 1918 flu pandemic. I watched it twice, and both times he received a standing ovation. I guarantee that every one of his former students has thought about that lecture during the current coronavirus pandemic.

Doug is a positive role model of how a successful scientist can also be a dedicated mentor, inspiring teacher, and caring human being. In sum, I believe that his promotion to Regents Professor is well deserved.

If I can answer any questions or provide additional information, please feel free to contact me at [mccullough.e@gmail.com](mailto:mccullough.e@gmail.com).

Sincerely,



Erin McCullough  
Postdoctoral Researcher  
Syracuse University

April 3, 2020

Regents Professor Evaluation Committee

Dear Committee Members,

I was pleased to learn of the nomination of my PhD advisor Pr. Doug Emlen for promotion to Regents Professor at the University of Montana. As an international student that came to the University of Montana to be mentored by Pr. Emlen, this letter will be biased but it will honestly relate my experience as his current student. Pr. Emlen's research shines internationally as he is a world renowned evolutionary biologist and expert in animal behavior, behavioral ecology and developmental biology. Pr. Emlen is also an outstandingly dedicated and passionate teacher and mentor who therefore fully deserves this promotion.

I visited Pr. Emlen's lab first in 2015 as part of my Master's program at the *Ecole Normale Supérieure* in Paris. I reached out to him out of the blue and discovered a very humble person that did everything possible to make me feel welcome, not only in his lab but also in the United States in general. What first struck me was how he immediately trusted me and gave me the opportunity to really pursue my ideas instead of simply joining an already running project, even though that implied getting a new insect species, using new methods and establishing new collaborations within a restricted time. I ended up collaborating closely with but also Pr. Bret Tobalske and Pr. Art Woods on different aspects of physiology and biomechanics of the weaponized hind legs of leaf-footed bugs. Two papers came out of this project that I co-lead with Dr. Devin O'Brien, Pr. Emlen's former PhD student. During that time, Pr. Emlen also helped me write papers from my previous unrelated projects and spent countless hours working on my English writing, despite not being involved in those projects. His contribution made a staggering difference for me and considerably improved my scientific writing at a critical stage of my career. When came the time to decide where to pursue my PhD, I was really planning to do it in France but all the PIs and labs that I visited and interviewed with, missed the positivity and ambition that I had tasted in the Emlen lab. Opportunities to build and carry on my own project and ideas were slim. This is exactly what Pr. Emlen offered me and part of why I made the decision to move to Montana for the next five years. My previous advisors also encouraged to go work with Pr. Emlen given his astounding contribution and leadership in the field of evolutionary biology and extreme kindness. One of them, Dr. Greg Holwell from the University of Auckland in New Zealand even referred to him as, and I quote, "the king".

Soon after starting my PhD, Pr. Emlen urged me to design and work on my dream project, whatever it would take. And I did. I now work on the evolution of the differences between males and females in stick insects, an order of insects that has always fascinated me but that has been very poorly studied. Many aspects of my project therefore lie outside what the Emlen lab works on, that is, the evolution of beetle weaponry, but Pr. Emlen has worked with me to build collaborations at the University of Montana but also all around the globe, notably with the world-renowned stick insect expert, Dr. Sven Bradler, at the University of Gottingen in Germany. Pr. Emlen is always incredibly supportive and positive in everything I set about doing. He either urges me to go further in my plans or, when appropriate, helps me redefine my priorities so I do not spread out too much.

Graduate Degree Programs

Biochemistry and Biophysics  
Cellular, Molecular, and Microbial Biology  
Organismal Biology & Ecology  
Systems Ecology  
Wildlife Biology



A very good example is my project on thorny devil stick insects. I quickly identified this species as being an exception among stick insects because males are almost as large as females and are giant relative to males of other species. In contrast, male stick insects are usually much smaller than the females. These giant males also display dramatically enlarged hindlegs that bear an enormous and sharp spine. I set out to discover what the primary function of these legs was and why this species stands out as an exception. After observing these animals in the lab, I quickly discovered that males used these hindlegs as weapons against rival males to monopolize access to females. I showed these first recordings to Pr. Emlen who, being himself, was overjoyed and thrilled. But quickly he mentioned to me that I should really go see this happening in the wild. This was something that, in my mind, was nearly impossible to accomplish given that these animals are only found in Papua New Guinea, a particularly unsafe and dangerous place to work in for scientists. I knew no one there and I had no idea where to even start looking for these insects in the field as this species had never been studied. But Pr. Emlen mobilized all the researchers he knew that work or had worked in PNG. They all were incredibly supportive and were all willing to help me as much as they could. This made me realize how Pr. Emlen is appreciated by his peers. Thanks to all of this, I finally managed to find a research team that knew where to find these insects and who was willing to collaborate and insure my safety. Pr. Emlen and I then spent countless hours crafting grant proposals to get the funding for me to go. He made me reach out to organizations that I had never imagined would be interested in sponsoring my project. Consequently, and largely thanks to his support, I obtained the prestigious early career grant from the National Geographic Society that fully funded my trip to PNG. While in PNG, I could gather extremely valuable data for my PhD and always felt supported by Pr. Emlen who was always checking that everything was going well for me and was always available when I needed advice.

Pr. Emlen's network of friends and colleagues is impressive and is an extremely valuable resource for me as a young researcher. I have attended two international meetings with him, the International Society for Behavioural Ecology meeting in August 2018 in Minneapolis, MN and the Society for the Study of Evolution meeting in June 2019 in Providence, RI. Both times, Pr. Emlen made me meet the most influential researchers in our field in informal settings like dinners that he would coordinate. He would talk to them about my work and really put me forward, which made it very easy for me to engage in conversations with these remarkable people. I always felt extremely proud that he was my advisor. Remarkably, thanks to this, I now have the opportunity to go work in Melbourne, Australia with two of his friends and colleagues on the Lord Howe Island Stick Insect, the rarest insect in the world. This critically endangered species is being bred at the Melbourne zoo for reintroduction. Only a few researchers are able to work on this extremely valuable captive population. I actually just received a grant yesterday from the American Society of Naturalists to pursue this incredible opportunity. Again Pr. Emlen had helped me write a well- thought proposal for this, and has been very involved in getting the collaboration started and going with Dr. Michael Magrath, the curator of the Melbourne zoo in charge of the stick insect population, and Dr. Theresa Jones, a very influential behavioral ecologist at the University of Melbourne.

Pr. Emlen also spends an incredible amount of time sitting down with me or other students (sometimes outside his lab) rehearsing talks and helping reframe them, whether it is for



international conferences or our department seminar series. The same applies to manuscripts and publications. He is an inspiration and model for me in terms of written and oral scientific communication. He is able to explain complex concepts and ideas in very simple, straightforward and exciting ways. These qualities along with a profound dedication and passion for his work, make him an outstanding teacher who shines by his passion for science and the natural world. Sitting in his lectures is always a joy whatever the topic. I have been a teaching assistant for him in his Genetics and Evolution and his Behavior and Evolution classes and I can attest that students loved him as a teacher. As his student, I could also witness “the backstage” and can attest that he takes teaching extremely seriously, always rehearsing his lectures out loud before delivering them and spending entire days and weeks preparing them to keep them up to date and engaging for the students. He is also always willing to share his teaching resources that he built over the years with other professors. For example, this semester I am the instructor for the Entomology class for the first time, covering for Pr. Art Woods who is currently on a sabbatical in Australia. Pr. Emlen has been sharing with me (and Pr. Woods) all his incredibly valuable notes and lectures from a few years ago when he was still teaching this class. Similarly, Pr. Emlen is very dedicated to keeping his very influential textbook *Evolution: making sense of life* up to date and enjoyable to read for biology students. Pr. Emlen also dares tackling controversial topics related to Evolution in his classes and books to challenge the opinion of the students and readers in a very constructive way as they are the next generation of decision makers and citizens. Science is under attack worldwide and especially in the United States and Pr. Emlen is one of its fervent defender. He writes books intended for scientists and the public alike, participates in documentaries and podcasts and communicates with politicians and influential decision makers, just to name of few.

In summary, I am extremely impressed by Pr. Emlen as a researcher but also as a human-being. Pr. Emlen cares about the success and quality of life of his students. He is a hands-off mentor who is always supportive, positive and ready to help with any professional or personal struggle. He never gives up and will go miles to see his students successful with no ego involved. From the four years I have experienced with him, I can say that he has always made sure his lab was a safe environment for every person working in it, from undergraduate to post-doctoral students whatever their origin or gender. He gives a chance to everyone that can show enthusiasm or passion about science. Pr. Emlen is a leader and role model who continues to have a tremendous impact in science and the community around him. He makes the University of Montana and the American academic research in general shine internationally and I can all but guarantee that he will do so even more as a Regents professor.

If I can answer any questions or provide any additional information, please do not hesitate to contact me at [romain.boisseau@umontana.edu](mailto:romain.boisseau@umontana.edu).

Yours sincerely,



Romain Boisseau,  
Emlen lab, Division of Biological Sciences, The University of Montana, Missoula, MT







Department of Ecology and Evolutionary Biology  
106A Guyot Hall  
Princeton, NJ 08544  
609-258-5810

**Peter Grant**  
*Class of 1877 Professor of Zoology, Emeritus; Professor  
of Ecology and Evolutionary Biology, Emeritus*  
105 Eno Hall  
Princeton, NJ 08544  
609-258-5156

1 March 2020

Dear Dr. Calloway,

I am responding to your request for a letter in support of your nomination of Doug Emlen for promotion to the rank of Regent's Professor. There is no question in my mind that he fully deserves this appropriate recognition of his achievements. His research accomplishments are outstanding, he is a well-recognized international leader in his field, and his success as a practicing research biologist in communicating the excitement of evolutionary biology outside academia is second to none.

I have followed his career with great interest since he left Princeton in 1994. He rapidly established himself as an authority on the evolution of sexually selected traits, specifically the development of weapons in males that confer success in fights with other males and is rewarded with attraction of females. This foundational work was constructed by combining a developmental study of how horns were formed and a behavioral study of how they were used and to what effect. He has built a research program on this foundation, into the endocrinological control of horn development in beetles, its molecular genetic basis, and the resulting evolutionary diversification of a trait that is so crucially important to the fitness of males. He is a leader in the field of understanding how exaggerated weapons evolve in nature, from beetles to elk.

His research accomplishments would be enough at many universities to merit recognition with appointment at the highest level of Professorship. Doug has done much, much more. He is a superb communicator, both orally and in writing. In books and public speaking, he has explained that principles which govern animal weapons, their exaggeration, deployment and evolution, are to a large extent the same as the principles of weapon use and development by humans. This is a message of enlightenment and revelation from the world of animals. A second message is the excitement of learning about nature from scientific study. In combination they have been powerful components of one of the most successful outreach programs in recent years

In summary, I consider Doug Emlen to be a distinguished scientist and, for the reasons given above, thoroughly deserving of the rank of Regent's Professor.

Sincerely,

Peter R. Grant



Division of Biological Sciences  
The University of Montana  
Missoula, Montana 59812-4824  
Phone: (406) 243-5122  
FAX: (406) 243-4184

February 17, 2020

Regent's Professor Evaluation Committee  
University of Montana

Dear Colleagues:

I am nominating Dr. Douglas J. Emlen for Regent's professor. Doug studied at Cornell University (B.A. 1989), Princeton University (Ph. D. 1994), and Duke University (Postdoctoral Research Fellow 1994-1997), before joining the faculty at the University of Montana where he is a full professor and recently served as program director for the Graduate Program *Ecology and Evolution* (used to be OBEE), one of UM's three "Programs of National Distinction." He is the first scholar from any Montana institution to be elected to the American Academy of Arts and Sciences (2016) and was the first Montanan to receive the U.S. Presidential Early Career Award in Science and Engineering (2002). Doug has earned more than \$2.5 million in research awards from the National Science Foundation, including their five-year CAREER award, as well as a Young Investigator Prize and the E.O. Wilson Naturalist Award from the American Society of Naturalists. In 2014 he was awarded UM's Distinguished Teaching Award, and in 2015 the Carnegie/CASE Professor of the Year Award for the State of Montana. His book *Animal Weapons: The Evolution of Battle* (Henry Holt, 2014) won the Phi Beta Kappa science book of the year award in 2015, and his textbook *Evolution: Making Sense of Life* (co-authored with award-winning journalist Carl Zimmer, Macmillan Publishing, 3rd edition 2020), is presently used by more than 250 universities and colleges. His research has been featured in outlets including *The New York Times*, National Public Radio's *Fresh Air* and *Science Friday*, and YouTube's *SciShow* and *MeatEater*. He recently starred in documentaries about his work for the BBC (*Nature's Wildest Weapons*) and NOVA (*Extreme Animal Weapons*, now available on Netflix), and his first narrative nonfiction book for middle school readers (*Beetle Battles: One Scientist's Journey of Adventure and Discovery*, Roaring Brook/Macmillan) appeared on shelves this past December. Doug is an incredible representative of the University of Montana and is overwhelmingly qualified to serve as a Regent' Professor.

Sincerely,

Ragan Callaway  
Regent's Professor  
University of Montana

Graduate Degree Programs  
Biochemistry  
Microbiology  
Organismal Biology & Ecology  
Wildlife Biology



## **Douglas J. Emlen**

### **Address:**

Division of Biological Sciences, The University of Montana, Missoula Montana, 59812

Ph: (406) 243-2535; Fax: (406) 243-4184; E-mail: [doug.emlen@mso.umt.edu](mailto:doug.emlen@mso.umt.edu)

Web Page: <http://hs.umt.edu/dbs/labs/emlen/default.php>

### **Education:**

Ph.D. Princeton University, Dept. Ecology and Evolutionary Biology, June 1994

B. A. Cornell University, College of Arts and Sciences, May, 1989

### **Professional Positions:**

Program Director, Organismal Biology, Ecology & Evolution, University of Montana, 2015 – 2017.

Professor, Division of Biological Sciences, University of Montana, 2008 – present.

Associate Professor, Division of Biological Sciences, University of Montana, 2002 – 2007.

Assistant Professor, Division of Biological Sciences, University of Montana, 1996 – 2001.

NSF Environmental Biology Postdoctoral Research Fellow, Dept. Zoology, Duke University, July 1994 -July 1996.

### **Grant History:**

National Science Foundation Program in Animal Behavior. “Collaborative Research: The evolution of extreme trait size” with Laura Corley-Lavine (Washington State University). IOS-1456133, April 2015 – March 2018. \$700,000.

National Science Foundation Program in Organism-Environment Interactions. “Collaborative Research: Genetic mechanisms of conditional-expression and trait exaggeration in weapons of sexual selection” with Laura Corley-Lavine (Washington State University) and Ian Dworkin (Michigan State University). OEI-0919781, August 2009 – July 2014. \$655,452.

National Science Foundation Program in Integrative Organismal Biology, Ecological and Evolutionary Physiology. "Collaborative Research: Insulin and limb-patterning pathway activities in the horns of beetles: An integrative study of the mechanisms of allometry, dimorphism, branching & curves" with Co-PI Laura Corley (Washington State University). IOS-0642409, April 2007–March 2009. \$265,000.

National Science Foundation CAREER Award ("Development and evolution of exaggerated morphologies in insects: An integrated study of beetles with horns"). IBN-0092873, July 2001–June 2006. \$650,000.

National Science Foundation Award Supplement: \$62,429 (July 2003-June 2004)

National Science Foundation Program in Integrative Biology, Ecological and Evolutionary Physiology ("Does development bias the evolution of beetle horns?") IBN-9807932, July 1998-June 2001. \$250,000.

NSF Program in Integrative Biology, Developmental Mechanisms IBN-0078320 ("Insects as models for integrating development with evolution"), Symposium Grant for the International Congress of Entomology at Iguazu Falls, Brazil, August 2000; \$15,700. Co-PI: Jason A. Hodin.

NSF Program in Integrative Biology, Ecological and Evolutionary Physiology IBN-9723637 ("Does development bias the evolution of beetle horns?"), July 1997 - June 1998. \$40,000.

NSF-MONTS Program award #291832 ("Does Development bias the evolution of beetle horns?"), July 1997 - June 1998. \$23,000.

NSF postdoctoral research fellowship in environmental biology DEB-9403323 ("Developmental basis of male dimorphism in the dung beetle *Onthophagus taurus*") July 1994 - June 1996.

NSF dissertation improvement grant DEB-924088 ("Evolution of bimodal male horn length variation in the dung beetle *Onthophagus acuminatus*"), 1993.

Smithsonian Predoctoral Fellowship (July 1992 - January 1993).

Smithsonian Tropical Research Institute short-term fellowship (1991).

Princeton University graduate fellowship (July 1989 -June 1994).

#### **Other Awards/ Honors:**

Elected Vice President, **American Society of Naturalists** (2017-2019).

Elected to the **American Academy of Arts and Sciences** (2016).

University of Montana Faculty Merit Award (2016).

**Phi Beta Kappa book award in Science** (2015), *Animal Weapons: The Evolution of Battle* (Henry Holt).

**Carnegie/CASE Professor of the Year Award for the state of Montana** (2015).

Elected to the Council, International Society for Behavioral Ecology (2015-2017).

**Distinguished Teaching Award**, The University of Montana (2014).

University of Montana Faculty Merit Award (2014).

**E. O. Wilson Naturalist Award**, The American Society of Naturalists (2013).

**G. M. Sutton Lecture**, Sam Noble Museum of Natural History & University of Oklahoma (2013)

University of Montana Faculty Merit Award (2012).

Golden Key Honor Society (2012).

Invited Participant, National Academy of Sciences Kavli Frontiers of Science, German-American Frontiers of Science Conference, Potsdam, Germany, June 2010.

University of Montana Faculty Merit Award (2010).

Invited Speaker, **P. T. Barnum Lecture**, Tufts University, Oct. 2009.

Invited Panelist, Gordon Research Conference: "Genes & Behavior", Lucca, Barga, Italy, Feb. 2008.

Elected to the Council, Society for the Study of Evolution (2007-2009).

Invited Speaker, National Academy of Sciences Sackler Colloquium: "In the light of evolution: Adaptation and complex design" Beckman Center of the National Academies, Irvine CA, November 30 – December 2, 2006.

Invited Speaker, **Atwood Lecture**, University of Toronto. Sept. 2006.

Invited Speaker, **George Williams Lecture**, Stony Brook University, Sept. 2006.

Invited Speaker, Gordon Research Conference: "Genes & Behavior", Irvine CA, Feb. 2006.

University of Montana Faculty Merit Award (2006).

**Presidential Early Career Award**, Office of Science and Technology Policy,  
Executive Office of the President, Washington, D.C. 2002.

Invited Participant, National Academy of Sciences/Beckman Frontiers of Science  
Symposium, Irvine, California, November 14-16, 2002.

University of Montana Faculty Merit Award (2001).

University of Montana Faculty Merit Award (1999).

American Naturalists **Young Investigator Prize** (1997).

### **Publications (Books):**

#### **"Beetle Battles: One Scientist's Journey of Adventure and Discovery"**

by Douglas J Emlen (Roaring Brook Press), December 2019. A 24 chapter (170 page) narrative nonfiction book for young adults that attempts to pull them in to the thrill of science and the process of discovery.

#### **"EVOLUTION: Making Sense of Life"**

by Carl Zimmer & Douglas Emlen  
(Roberts & Company Publishers)

Available in Print and as interactive apps for the ipad, 2012, 2015.

- Now in its third edition (2020) and currently adopted at more than 250 Universities & Colleges

*"Exciting is a word not often used to describe a new textbook. But by using powerful examples, beautiful images, and finely wrought prose, Zimmer and Emlen have produced a book that not only conveys the explanatory power of evolution, but is also permeated with the joy of doing science. Their text can only be described as an exciting moment for our field: it is an important accomplishment for our students and for evolutionary biology at large."*

---Neil Shubin, University of Chicago

*"This is not your grandmother's evolution text. Breathtakingly illustrated, this book covers not only the usual topics in evolution—adaptation, drift, phylogenetic analysis—but also a host of new and exciting areas where groundbreaking research is occurring. It also shows how evolutionary biology is done, with glimpses of the real people behind the discoveries."*

---Marlene Zuk, University of Minnesota

*"If there was ever a book that makes it obvious why evolution is a fascinating topic—and a topic that goes to the core of understanding what biology is about—this is it. It truly makes you better understand and appreciate the biological world around us."*

---Svante Pääbo, Director, Max Planck Institute for Evolutionary Anthropology

“A richly illustrated and very clearly written text, *Evolution: Making Sense of Life* brings forth the excitement, power, and importance of modern evolutionary biology in an accessible, yet sophisticated overview of the field.”

---Sean B. Carroll, University of Wisconsin, Madison

“*Evolution: Making Sense of Life* provides a comprehensive and compelling overview of the field of evolutionary biology. The text contains beautiful illustrations and up-to-date examples from recent research articles. The depth and breadth of the material, ranging from bacteria to humans, will be of interest to students, faculty, and the general public alike.”

---Sarah Tishkoff, University of Pennsylvania

“Two master craftsmen in the art of scientific communication have combined to produce an excellent basic text on *Evolution*: it informs, explains, teaches, and inspires. The illustrations are outstanding.”

---Peter R. Grant, Princeton University

### **"ANIMAL WEAPONS: The Evolution of Battle"**

by Douglas Emlen (Henry Holt, November 2014).

[www.animalweapons.com](http://www.animalweapons.com)

Winner of the Phi Beta Kappa Award in Science (2015), and translated into Chinese, Japanese, Korean, and Italian.

“Outstanding...Emlen’s book on animal warfare reveals a world far more fascinating and intriguing than one we could summon with our imagination.”

—*The Seattle Times*

“Emlen’s excellent writing will draw in readers intrigued by astonishingly powerful weapons, both in the wild and in the military, and how they have evolved owing to selective pressures.”

—*Library Journal*, Starred Review

“Absorbing... Throughout the book, Emlen's demonstrations of the many parallels between human and animal weapons are fascinating, even when the possibilities are frightening... Emlen is not a hurried or simplistic storyteller. He is a writer of nuance, and he traveled to many different environments to get the story.”

—*Kirkus*

“Emlen infuses scientific explanations with entertaining anecdotes from his field research at the University of Montana. Each step of the way, he provides parallels with human weapon development and design, from ancient civilizations to weapons of mass destruction, and the evolutionary process of animals. While his conclusions about the human arms race are dire, it is his description of animal weaponry in action and in evolution that will captivate.”

—*Publishers Weekly*



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**BioScience:** "Evolution's ever changing arms race" By Robert Knell, May 2015: <http://bioscience.oxfordjournals.org/content/65/7/730.full>

**National Center for Science Education:** Reviewed by Rafe Sagarin, May-June 2015: <http://reports.ncse.com/index.php/rncse/article/viewFile/362/676>

**Vice:** "The biological origin of arms races" by Peter Lawrence Kane, Nov 17, 2014: <http://www.vice.com/read/science-has-found-the-biological-origin-of-arms-races-648>

**Shelf Awareness:** Animal Weapons: The Evolution of Battle, Bruce Jacobs, Nov 2014:

<http://www.shelf-awareness.com/readers-issue.html?issue=352#m6209>

**Missoula Independent:** "Crab wars: Emlen's Animal Weapons explores natural arms races" by Kate Whittle, Nov 26, 2014:

<http://missoulanews.bigskypress.com/missoula/crab-wars/Content?oid=2102945>

**Montanan:** "Armed and Advantageous" by Jacob Baynham, Winter 2014-

2015: <http://montanan.umt.edu/issues/winter-2015/doug-emlen/default.php>

**JSTOR Daily:** "Arms races among (other) animals" by Margaret Smith, Dec 4,

2014: <http://daily.jstor.org/arms-races-among-other-animals/>

**Malcolm Avenue Review:** "Animal Weapons", January 20, 2015:

<http://malcolmavenureview.blogspot.com/2015/01/animal-weapons-douglas-j-emlen.html>

**Big Sky Journal:** "Books: Writing the West" by Erin Turner, Feb 2015: <http://bigskyjournal.com/Article/writing-the-west21>

**San Francisco Book Review:** 5/5 stars, March 25, 2015: <http://www.sanfranciscobookreview.com/2015/03/animal-weapons-the-evolution-of-battle/>

#### **Selected articles about Emlen's Research:**

**Science:** "To grow bigger antlers, these elk risk life and limb" Elizabeth Pennisi, September 3, 2018.

**The Economist:** "Deer antlers are a dual-use technology" September 6, 2018.

**New Scientist:** "Elk gamble with their lives in spring to win a mate in autumn" Andy Coghlan, September 3, 2018.

**The Wildlife Society:** "Wolves help shape how long elk keep antlers" David Frey, October 12, 2018.

**Science:** "Beetle horns and book writing" Elizabeth Pennisi, December 18, 2015.

**ScienceShot:** "Dramatic beetle weapons aren't just for show" Viviane Callier, September 8, 2014.

**National Geographic: Weird & Wild:** "Why do males have built-in weapons?," by James Owen, September 8, 2013.

**National Geographic: Phenomena: It's Not Exactly Rocket Science:** "Rhino beetle weapons match their fighting styles" Ed Yong, September 9, 2014.

**Nature World News:** "These beetles are specialized fighters," by Brian Stallard, September 9, 2014.

**IFL Science:** "Beetles brandish the best weapons for their fighting style," by Janet Fang, September 9, 2014.

**Phys Org:** "Study shows rhinoceros beetle horns evolved to accommodate species-specific fighting styles," by Marcia Malory, September 9, 2014.

**The Norman Transcript:** "Emlen makes animal, human parallels," by Katherine Parker, November 14, 2013.

**Nature:** "Big weapons have little downside" Research Highlights, October 11 2013.

**Science News:** "Rhino beetle horns come cheap," by Sarah Zielinski, October 10 2013.

**LiveScience:** "How the rhinoceros beetle got its horns," by Stephanie Pappas, March 12, 2013.

**Science:** "Insulin may guarantee the honesty of beetle's massive horn" by Elizabeth Pennisi, July 26 2012.

**Science Daily:** "Biological mechanism for growing massive animal weapons, ornaments discovered" July 26 2012

**Nature and Planet:** "Insulin controls growth of rhino beetles horn" by Scarlett Snyder, July 29 2012

**Science 2.0:** "The Insulin-Dependent Rules of Beetle Attraction" July 27 2012

**Science in Seconds:** "Nice Rack" by Rheanna Sand, August 31 2012

**American Association for the Advancement of Science:** "In male rhinoceros beetle, horn size signals healthy mate" by Brandon Bryn, July 26 2012

**BBC Nature News:** "Big horned rhinoceros beetles are healthiest" by Ella Davies, July 26 2012

**Discover Magazine:** "How the rhino beetle got its horn (and why it cannot lie)" by Ed Young, July 26 2012

**Discover Magazine (The Loom):** "Why you can't fake a good horn" by Carl Zimmer, July 26 2012

**Science Fair:** "Antlers make the beetle" by Dan Vergao, July 26 2012

**Insects/Sex/Evolution:** "Evolution 2012 review, special Doug Emlen edition" by Tom Houslay, July 2012

**Science News:** "Insulin may be Big Antler hormone" by Susan Milius, July 13, 2012.

**Nature:** "Going Digital: Creating electronic textbooks takes ingenuity, teamwork, and multimedia savvy" by Roberta Kwok, May 2012.

**Current Science:** "Arms Race" by Kirsten Weir, April 2011.

**Africa Geographic:** "Mine are bigger than yours" by John Hanks, September 2010.

**Scarabs**, "Facultative male trimorphism" by Barney Streit, August 2009.

**Research View**, "Heavily horned: Why are beetles the weaponry champs?" by Deborah Richie Oberbillig, July 2009.

**Boing Boing**, "The wonderful world of the beetle on Fresh Air" posted by Mark Frauenfelder, May 2009.

**Akron News Now**, "I heart Terry Gross" by Edward Esposito, May 2009.

**Bug Girl's Blog**, "Are there roaches in your coffee and chocolate?" May 2009.

**Courthouse News Service**, "What biology tells us, or perhaps not" by Robert Kahn, May 2009.

**Tages-Anzeiger**, "Die auffälligsten Waffen töten nicht" von Daniel Bächtold, April 2009.

**NPR "Fresh Air" Interview with Terry Gross** "The fascinating world of the dung beetle" (37 minutes, May 4 2009).

**The New York Times**, "Extravagant results of nature's arms race" by Nicholas Wade, March 2009.

**El Mercurio**, "Arteria natural dissuade a enemigos y atrade a las hembras" March 2009.

**Nature**, Research Highlights, "Horny?" Feb. 2009.

**Odyssey**, "The clean machines, dung beetles at work" by Mikki Sadil, March 2008.

**Science News For Kids**, "Little Beetle, Big Horns" by Roberta Kwok, May 2007

**SEED Magazine**, "On extravagant proportions" by P.Z. Myers, June 2007.

**Pour La Science**, December 2006

**The Telegraph** (India), "Horns of a dilemma:", By Monojit DasGupta, December 4, 2006

**Newsweek** (Poland), November 11, 2006

**SciTini**, " Big Horns or Large Testes: A Beetle's Dilemma:", By Karen Wiens, November 6, 2006

**India News Channel**, "Bigger not necessarily the better when it comes to sexual conquests!", October 25, 2006

**ScienceNOW**, "Horns vs. heredity:", October 24, 2006

**Science News**, "Horns vs. Sperm: Male beetles on tight equipment budget" by Susan Milius, October 21, 2006

**ABC News Online**, "Horny beetles have tiny testes:" By Judy Skatsoon, October 17, 2006

**South Asia News**, (October 17, 2006)

**National Geographic Online**, "Big Testes or Big Horns? It's One or the Other for Male Beetles:" By John Roach, October 16, 2006

**The Why? Files**, Science Behind the News, "Bizarre Beetle Battles" by Paroma Basu, October 14, 2005.

**The Loom** ("An inordinate fondness for beetle horns" by Carl Zimmer, June 2005)

**The Princeton Journal of Science and Technology** ("Digging for answers" by Wenfei Tong, May 2004).

**The New York Times Science Times** ("A lance, a lunch, or a mate: All for the price of a horn" by Donald McNeil Jr., April 27, 2004)

**Smithsonian**: Close Encounters of the Sneaky Kind, by Richard Conniff, July (2003).

**Nature Australia** (Autumn 2002).

**Research View**, Beetle Battles: The strange world of horned combatants, by Cary Shimek, Spring 2001;

**This Week in Science**, by Phil Szuromi, 291: 1443 (2001)

**Science's Compass** Perspectives article: A horn for an eye, by Paul Harvey and Charles Godfray, 291: 1505-1506 (2001)

**USAtoday.com**: Evolution of Dung beetle's horn explained, by Lisa Onaga, Feb. 23 (2001)

**ScienceNow**: On the horns of a dilemma, by Menno Schilthuis, Feb. 28 (2001)



**Science Magazine Online:** Sizing up dung beetle evolution, by Wade Roush, Feb. 28 (2001)

**Study Works! Online:** You can't have your horns and big eyes too, by Rachel Clark, Mar. 30,(2001)

**Geo Magazine:** Auge gegen horn, May, 2001 p. 204.

**Nature Reviews Genetics:** Evo-Devo: The evolution of a new discipline, by Ruddlof A. Raff. Volume 1: 74-79 (October 2000).

**BBC Wildlife** (September 2000, p. 35).

**Trends in Ecology and Evolution:** Using integrative biology to explore constraints on evolution, by Stephen Trumbo. Volume 14: 5-5 (1999).

**Discover Magazine** (September, 1998, p. 18-19).

**Earth Magazine** (August, 1998, p. 11)

**The New York Times** (Science Tuesday, May 5, 1998),

**Science News** (April 1998, p. 231)

**Science Daily**, "Butterfly Wings, Beetle Horns Teach Biologists Basic Lesson In Development's Laws", April 1998

**BBC Wildlife** (December 1997, p. 59) <http://www.wiedzaizycie.pl/97122200.htm>

**Science:** Sizing up dung beetle evolution, by Wade Roush. Volume 277:184.

**Nature**, "News and Views" photo story, 369: 359. (1994)

### Teaching:

Spring 2019 Genetics & Evolution, 4 credits, 240 students  
Instructor Evaluation: **4.1** (5 = perfect, 1 = very poor)

Spring 2018 Genetics & Evolution, 4 credits, 220 students  
Instructor Evaluation: **4.1**

Fall 2017 Behavior and Evolution, 4 credits, 48 students  
Instructor Evaluation: **4.9**

Fall 2016 Behavior and Evolution, 4 credits, 48 students  
Instructor Evaluation: **5.0**

Fall 2015 Behavior and Evolution, 4 credits, 48 students  
Instructor Evaluation: **5.0**

Fall 2014 Behavior and Evolution, 4 credits, 44 students  
Instructor Evaluation: **4.8**

Fall 2014 Genetics and Evolution, 2 credits, 15 students  
(Graduate Core course taught with Lila Fishman)  
Instructor Evaluation: **3.9**

Spring 2014 Insect Biology/Entomology, 4 credits, 47 students  
Instructor Evaluation: **4.9**

Fall 2013 Behavior and Evolution, 4 credits, 40 students  
Instructor Evaluation: **5.0**

Spring 2013 Behavior and Evolution, 4 credits, 48 students  
Instructor Evaluation: **4.9**

Spring 2012 Behavior and Evolution, 4 credits, 45 students  
Instructor Evaluation: **4.9**

Spring 2012 Insect Biology/Entomology, 4 credits, 20 students  
Instructor Evaluation: **4.8**

Behavior and Evolution, 4 credits, 50 students  
Instructor Evaluation: **4.8**

Fall 2011 Genetics and Evolution, 2 credits, 15 students  
(Graduate Core course taught with Jeff Good)  
Instructor Evaluation: **4.3**

Fall 2010 The Art of Writing Grant Proposals, 2 credits, 15 students  
Instructor Evaluation: **4.9**

Spring 2009 Insect Behavior and Evolution, 4 credits, 50 students  
Instructor Evaluation: **5.0**

Development & Evolution, 3 credits, 20 students  
Instructor Evaluation: **4.7**

Fall 2008 The Art of Writing Grant Proposals, 2 credits, 13 students  
Instructor Evaluation: **4.9**

Spring 2008 Insect Biology/Entomology, 4 credits, 20 students  
Instructor Evaluation: **5.0**

Insect Behavior and Evolution, 4 credits, 55 students  
Instructor Evaluation: **4.9**

Fall 2007 The Art of Writing Grant Proposals, 2 credits, 11 students  
Instructor Evaluation: **4.5**

Spring 2007 Insect Biology/Entomology, 4 credits, 25 students  
Instructor Evaluation: **4.9**

Development & Evolution, 3 credits, 15 students  
Instructor Evaluation: **4.8**

Spring 2006 Insect Biology/Entomology, 4 credits, 30 students  
Instructor Evaluation: **4.8**

Insect Behavior and Evolution, 4 credits, 25 students  
Instructor Evaluation: **4.8**

Spring 2005 Insect Biology/Entomology, 4 credits, 30 students  
Instructor Evaluation: **4.8**

Advanced Topics in Evolution, 3 credits, 12 students  
Instructor Evaluation: **4.7**

Spring 2003 Insect Biology/Entomology, 4 credits, 35 students  
Instructor Evaluation: **4.9**

Introductory Biology, 4 credits, 150 students (one of four instructors)  
Instructor Evaluation (Emlen segment of the course): **4.6**

Art of writing grant proposals, 10 students (6 were subsequently awarded  
NSF Dissertation Improvement Grants)  
Instructor Evaluation: **5.0**

Spring 2002 Insect Biology/Entomology, 4 credits, 28 students  
Instructor Evaluation: **4.8**

Insect Behavior and Evolution, 4 credits, 21 students  
Instructor Evaluation: **4.9**

Spring 2001 Insect Behavior and Evolution, 4 credits, 33 students  
Instructor Evaluation: **4.9**

Advanced topics in sexual selection, 2 credits, 12 students  
Instructor Evaluation: **5.0**

Honors Introductory Biology, 3 credits, 60 students,

(one of four instructors)

Instructor Evaluation (Emlen segment of the course): **4.3**

Fall 2000 Insect Biology/Entomology, 4 credits, 30 students  
Instructor Evaluation: **4.9**

Spring 2000 Insect Behavior and Evolution, 4 credits, 30 students  
Instructor Evaluation: **4.9**

Evolution of phenotypic plasticity, 2 credits. 10 students  
Instructor Evaluation: **4.8**

Fall 1999 Insect Biology/Entomology, 4 credits, 35 students  
Instructor Evaluation: **4.6**

Spring 1999 Insect Behavior and Evolution, 4 credits, 30 students  
Instructor Evaluation: **4.9**

Fall 1998 Insect Biology/Entomology, 4 credits, 47 students  
Instructor Evaluation: 1.27 (1 = perfect; 5 = very poor)

Spring 1998 Insect Behavior and Evolution, 3 credits, 35 students  
Instructor Evaluation: 1.13

1996-1997 Introduction to Behavioral Ecology, Fall and Spring, Duke University  
1995 Mentor, Duke University Neuroscience "Mechanisms of Behavior"  
program (funded by a National Science Foundation Research Experience  
for Undergraduates grant)

1993 Evolution (Teaching assistant)

1992 Comparative Physiology (Teaching assistant and guest lecturer)

1989 Field Biology (Teaching assistant)

### **Graduate Advising:**

**Tara Lynne Prestholdt** (Ph.D. awarded Spring 2005) Project: "Linking development with evolution: morphological and ecological consequences associated with walking stick limb regeneration."

Current Position: Associate Professor, Department of Biology, University of Portland, Portland OR.

NSF Dissertation Improvement Grant (DIG) (2003); Sigma Xi Research Award (2003); Phillip L. Wright Research Award (2003).

**Christine Whitney Miller** (Ph.D. awarded September 2007) Project: "The influence of maternal effects on a sexually-selected trait in the leaf-footed bug, *Leptocelis tricolor* (Hemiptera: Coreidae)."

Current position: Associate Professor, Department of Entomology, University of Florida, Gainesville Florida.

NSF Predoctoral Fellowship (2004-2007); NSF EPSCoR Graduate Fellowship (2001-2003); Smithsonian Graduate Student Fellowship (2003); Sigma Xi Research Award (2003); Smithsonian Tropical Research Institute, Short term Fellowship (2005); Smithsonian "Ernst Mayr" Graduate Research Fellowship (2004); Summer Institute in Statistical Genetics Scholarship, NC State University, Raleigh NC (2004);

**Paula "Alex" Trillo** (Ph.D. awarded Fall 2008) Project: "Developmental plasticity, parental care, and the evolution of sexually-selected traits in the tortoise beetle *Acromis sparsa* (Coleoptera: Chrysomelidae)".

Current Position: Assistant Professor, Gettysburg College.

NSF Dissertation Improvement Grant (2004); Smithsonian Institution Predoctoral Fellowship (2004); Animal Behavior Society Student Research Award (2005); Sigma Xi Research Award (2004); Organization of American States Graduate Research Fellowship (2002-2004); PEO International Peace Scholarship (2003, 2004).

**Ashley King** (M.S. awarded Spring 2009) Project: "Sexual selection in the rhinoceros beetle *Allomyrina dichotoma*."

Current Position: Program Coordinator, StreamTeam, Portland OR.

NSF Predoctoral Fellowship (2007-2010); NSF Predoctoral Fellowship Honorable Mention (2004); NSF East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI) award (2006 and 2007).

**Jennifer Smith** (Ph.D. awarded Spring 2014) Project: "Natural selection on *Dictyna* spiders and their prey in native and knapweed-invaded grasslands."

Current Position: Field Operations Manager, National Ecological Observatory Network (NEON) Inc., Manhattan, KS.

Bertha Morton Fellowship (2011); Sigma Xi Research Award (2009)

**Erin McCullough** (Ph.D. awarded Spring 2014) Project: "Aerodynamic costs of exaggerated weapons in rhinoceros beetles"

Current Position: NSF International Postdoctoral Research Fellow, The University of Western Australia, Nedlands, WA.

Warder Clyde Alee Award for best student presentation, Animal Behavior Society Meetings, Princeton N.J. August 2014.

Hamilton Student Talk Award, Honorable Mention, Society for the Study of Evolution conference Ottawa, CA, July 2012.

National Academy of Sciences Ford Foundation Diversity Fellowship (2009-2011); NSF Predoctoral Fellowship (2010-2012); NSF East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI) award (2009); NSF Dissertation Improvement Grant (2012-2013); NSF International Postdoctoral Research Fellowship (2014-2017); Sigma Xi Research Award (2010, 2011)

**Devin O'Brien** (Ph.D. awarded Spring 2018) Project: "Patterns of selection and cost in the frog legged beetle, *S. femorata*"

Current Position: NSF Postdoctoral Research Fellow, Colby College, Maine.

Sigma Xi (2014); NSF East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI) award (2015); NSF Graduate Research Fellowship Honorable Mention (2015); NSF IOE Award (2016); International Society for Behavioral Ecology Travel Award (2016).

**Jillian del Sol** (MS awarded Spring 2019) Project: Shaping the tools of battle: Sexual selection, contest dynamics, and weapon divergence in the Asian rhinoceros beetle *Trypoxylus dichotomus*.

### **Undergraduate Advising:**

I work closely with undergraduates to embed them in all aspects of my research program, guiding them through the process of asking and answering research questions, analyzing results, and preparing and polishing presentations and papers. Undergrads in my lab have secured competitive funding for their independent research projects (Davidson Honors College Research Fellowships: Nikita Cooley; MILES Undergraduate Fellowships: Thomas Bassett, Mary Bruen, Jessica Corean, Demitra Suko; IBS-CoRE Fellowships: Mark Davis, Erin Heydenreich; NSF-Research Experience for Undergraduates: Thomas Bassett, Luke Bloch, Annika Johns), given posters and talks at local and national conferences, and authored peer-reviewed papers in **Behavioral Ecology** (Paul Weingarden), **Proceedings of the National Academy of Sciences** (Ben Ewen-Campen), **Heredity** (Quenna Szafran), and **Science** (Annika Johns). Many have gone on to graduate programs in the Biological Sciences (Luke Bloch [University of California Berkeley]; Ben Ewen-Campen [Harvard University]; Greg Kohn [Indiana University]; Jessica Laskowsky [University of Nebraska]; Bret Robinson [San Jose State University]; Adam Smith [University of Washington]). Others have gone to medical school (Jessica Corean), started a non-profit "Working Dogs for Conservation" (Aimee Hurt), become a high school science teacher

(Mark Davis), gone into medical technology (Kelly Corll), become an ambulance EMT (Mary Bruen), a physical therapist (Tess Kreofsky), and co-founded the “Center for Whale Research” (Erin Heydenreich).

I also work closely with students interested in developing careers as scientific illustrators, providing exciting insect subjects for them to draw and commissioning them to do figures for my grant proposals and papers. One of them subsequently completed a Masters Degree in Medical Illustration at The University of Texas Southwestern (Erin Frederickson); another completed a Masters in Science Illustration at the University of California Santa Cruz, and was subsequently hired as an illustrator for Natural History Magazine (Melissa Beveridge); and a third has completed more than fifty Illustrations for my recent book “*Animal Weapons: The Evolution of Battle*” (David Tuss).

### **Invited Seminars:**

Department of Ecology and Evolutionary Biology, **UCLA**, November 2019.

Department of Earth Sciences, **Montana State University**, April 2019.

Alfred M. Boyce Lecture, **University of California Riverside**, January 2019.

Bugs 'N Brews, Missoula Insectarium, October 2018.

Distinguished Visiting Scientist, Friends Central School, Philadelphia, April 2018.

Grizzly Riders Retreat, E Bar L Ranch, August 2017.

ALPS Corporation Bar Leaders Retreat, Missoula MT July 2017.

President’s Advisory Committee, University of Montana, June 2017.

**Harvard Museum of Natural History**, October 2016.

**Brady Lecture** (invited by the graduate students), Department of Entomology, **University of Georgia**, October 2016.

**TTI/Vanguard Conference on Cybersecurity**, Washington D. C., September 2016.

Department of Zoology, **Cambridge University**, U. K., July 2016.

Indigo Airlines annual meeting, Bigfork Montana, July 2016.

Missoula Sentinel/Kiwanis, June 2016.

Missoula Senior Forum, June 2016.

Provost's Lecture Series, **The University of Montana**, March 2016.

Department of Biology, **Wellesley College**, March 2016

EVoS Program, **SUNY New Paltz**, March 2016

Perspectives in Biology Symposium, Keynote Speaker, **Wake Forest University**,  
November 2015

Department of Biology, **Gettysburg College**, November 2015

Missoula Rotary Club, August 2015

Young President's Organization, Missoula, May 2015

Department of Biology, **University of Nevada at Reno**, March 2015

Department of Ecology, Evolution, and Marine Biology, **University of California  
at Santa Barbara**, March 2015

Institute for Bioinformatics and Evolutionary Studies (IBEST), **University of  
Idaho**, February 2015

Department of Biology, **UMass Amherst**, November 2014

**Smithsonian Tropical Research Institute**, November 2014

**W. M. Keck Distinguished Lecture, North Carolina State University**, October  
2014

Department of Biology, **Duke University**, September 2014  
(invited by the graduate students)

**L. Floyd Clarke Lecture**, University of Wyoming Biodiversity Institute, April 2014

Department of Zoology & Physiology, University of Wyoming, April 2014

Department of Integrative Biology, **University of Texas**, Jan. 2014

**George Miksch Sutton Lecture**, Sam Noble Museum of Natural History,  
Norman Oklahoma, November 2013

Department of Biology, **University of Oklahoma**, November 2013

Department of Biological Sciences, **University of Pittsburgh**, November 2013



Division of Biological Sciences, **University of Montana**, April 2013

Department of Ecology and Evolutionary Biology, **University of Connecticut**,  
March 2013

Department of Organismic and Evolutionary Biology, **Harvard University**,  
February 2013

Department of Entomology & Nematology, **University of Florida**, November  
2012

Department of Neurobiology and Behavior, **Cornell University**, April 2012

Department of Ecology and Evolutionary Biology, **Cornell University**, April 2012

Committee on Evolutionary Biology, **University of Chicago**, November 2011

Department of Zoology, **Oregon State University**, October 2011

School of Life Sciences, **Arizona State University**, September 2011  
(Invited by the graduate students)

Department of Biology, **University of Virginia**, May 2011  
(Invited by the graduate students)

Department of Ecology and Evolutionary Biology, **The University of California  
at Santa Cruz**, Feb 2010

Department of Biology, **Tufts University**, October 2009  
(P. T. Barnum lecture, invited by the graduate students)

Department of Biology, **Northeastern University**, September 2009

Department of Ecology and Evolutionary Biology, **University of Arizona**, March 2009.

Ecology, Evolutionary Biology, and Behavior Program, **Michigan State University**,  
Feb. 2009.

Department of Ecology and Evolutionary Biology, **Princeton University**,  
Princeton NJ, Sept. 2008 (Festschrift to honor Peter & Rosemary Grant).

**Gordon Research Conference**, Genes & Behavior, Lucca, Barga, Italy, February 2008  
(Discussion Leader)

Department of Integrative Biology, **University of Texas**, Sept. 2007

Department of Entomology, **University of Illinois**, Sept. 2007

Department of Biology, **Victoria University**, Wellington New Zealand, June 2007.

**National Academy of Sciences Sackler Colloquium**: “In the light of evolution: Adaptation and complex design” Beckman Center of the National Academies, Irvine, CA, December 2, 2006.

Department of Ecology & Evolutionary Biology, **University of Toronto**. Sept. 2006 (Atwood Lecture; invited by the graduate students)

Department of Ecology & Evolution, **Stony Brook University**, Sept. 2006. (George Williams Lecture; invited by the graduate students)

**Gordon Research Conference**, Genes & Behavior, Irvine CA, February 2006

Division of Biological Sciences, **University of Montana**, October 2005

Evolution Seminar Series, **University of Wisconsin**, October 2005

Department of Zoology, **University of Wisconsin**, October 2005 (J. T. Emlen Distinguished Lecture Series)  
---- Highlighted in [The Why? Files](#) (“Bizarre beetle horns” by Paroma Basu, October 2005)

Progress in Evolutionary Ecology Colloquium: A Celebration of the Research of Peter and Rosemary Grant, **University of British Columbia**, August 2005

Evolution of Sexual Dimorphism Workshop, **Universität Zürich** and Centro de Stefano Franscini, Switzerland, August 2005

Department of Biology, **Florida State University**, April 2005; invited by the graduate students)

Ecology & Evolution Seminar, **Florida State University**, April 2005

Department of Biology, **University of Utah**, December 2004

American Society of Naturalists, Vice-Presidential Symposium, Annual meetings of the SSE, ASN and SSB, Ft. Collins, Colorado, June 2004.

School of Biological, Earth & Environmental Sciences, **University of New South Wales**, Sydney, Australia, March 2004.

Department of Zoology, **University of Western Australia**, Perth, Australia, March 2004

Department of Biology, **Yale University**, New Haven CT, October 2003.

Department of Ecology and Evolutionary Biology, **Princeton University**,  
Princeton NJ, October 2003.

--- Highlighted in The Princeton Journal of Science and Technology ("Digging  
for answers" by Wenfei Tong, May 2004).

Department of Entomology, **Washington State University**, Pullman WA,  
September 2003.

Department of Biology, **Purdue University**, West Lafayette IN, September 2003.

Behavioral Phenotypes in Context Symposium, Animal Behavior Society Conference,  
Boise ID, July 2003.

Physiology of Plasticity Symposium, Society of Integrative & Comparative Biology  
Conference, Toronto, CA, Jan. 2003.

Department of Biology, **Northern Arizona University**, September 2002.

Department of Biology, **Arizona State University**, September 2002.

Undergraduate Research Symposium Plenary Lecture, **University of Montana**, April  
2002.

Sigma Xi Lecture, **University of Montana**, March 2002.

Department of Biology, **University of California at Riverside**, Oct.2001.

Department of Biological Sciences, **Colorado State University**, Fort Collins,  
CO, Oct. 2001.

Department of Biology, **Wake Forest University**, August 2001  
--Graduate Tutorial Speaker (1 week of lectures, plus dept. seminar)

Department of Ecology and Evolutionary Biology, **University of Kansas**, Dec. 2000.

Section of Evolution and Ecology, **University of California at Davis**, Nov. 2000.

Department of Ecology and Evolution, **State University of New York, Stony  
Brook**, Nov. 2000.

Department of Biology, **Montana State University**, Apr. 2000.

Frontiers in Animal Behavior Series, **University of California at Davis**, Apr. 2000.

Department of Biology, **DePauw University**, Greencastle IN, March 2000.

Department of Zoology, **University of Washington**, Seattle WA, Feb. 2000.

Annual address to the Coleopterists Society, Entomological Society of America conference, Atlanta GA, December 1999.

Division of Biological Sciences, **University of Missouri**, Columbia MO, Dec. 99.

Department of Biology, **Indiana University**, March 1999.

Department of Biology, **University of Houston**, Jan. 1999.

Department of Biological Sciences, **University of Nebraska**, Nov. 1998.

Developmental Constraints and Evolution Workshop, **University of Kentucky**, Lexington KY, September 1998.

Hormones and Behavior Symposium, Animal Behavior Society Meetings, Carbondale IL, July 1998.

Dept. of Ecology and Evolutionary Biology, **University of Arizona**, May 1998.

Division of Biological Sciences, **University of Montana**, Feb., 1998.

Department of Zoology, **Duke University**, December 1997.

Department of Zoology, **Cambridge University**, U.K., November 1997.

Wellcome Institute (Michael Akam lab) **Cambridge University**, U.K., Nov. 1997.

Department of Zoology, **University of Maryland**, October 1997.

Young Investigator Symposium, Joint meetings of the Society for the Study of Evolution and the Society of American Naturalists, Boulder Colorado, June 1997.  
--- Selected for "News" article, Science, July 11, p. 184.

Department of Entomology, **North Carolina State University**, February 1997.

Department of Biology, **Wake Forest University**, October 1996.

Department of Zoology and Physiology, **University of Wyoming**, October 1996.

Department of Biology, **University of Montana**, March 1996.

Department of Biology, **University of North Carolina**, Chapel Hill, February 1996.

Department of Biology, **University of Pennsylvania**, January 1996.

Department of Zoology, **University of New Hampshire**, April 1995.

Department of Zoology, **Duke University**, January 1995, February 1995;

### **Editorial / Panel Service:**

#### **Reviewer For:**

American Naturalist, Annals of the Entomological Society of America, Australian Journal of Zoology, BBSRC Research Grant (United Kingdom), Behavioral Ecology, Behavioral Ecology and Sociobiology, Biological Conservation, Biological Journal of the Linnean Society, BioScience, Biotropica, Coleopterists Bulletin, Conservation Biology, Conservation Genetics, Current Biology, Ecological Entomology, Ecology, Evolution, Evolutionary Ecology, Evolution & Development, Functional Ecology, Journal of Ethology, Journal of Insect Science, Journal of Zoology, National Science Foundation (Animal Behavior Program, Ecological and Evolutionary Physiology Program, Evolution of Developmental Mechanisms Program, Population Biology Program), Natural Environment Research Council, Natural History, Nature, Netherlands Organisation for Scientific Research (NWO, the Dutch Research Council), Proceedings of the National Academy of Sciences, Proceedings of the Royal Society of London Series B, Psyche, Quarterly Review of Biology, Science, Zoologica Scripta.

### **Panels & Editorial Boards:**

Phi Beta Kappa Science Book Prize selection committee (2015-2018)

NSF Panel Member (Animal Behavior) 2014, 2016

NSF Panel Member (Integrative Organismal Systems) 2007

NSF Panel Member (Animal Behavior – DDIG) 2007

NSF Panel Member (Ecological and Evolutionary Physiology Panel) 2002.

Editorial Board, Behavioral Ecology (2008-present).

Editorial Board, Journal of Experimental Zoology (Molecular and Developmental Evolution) (2004-present).

### **University Committees:**

College of Humanities and Sciences Advisory Board (2018- )

UM Provost Search Committee (2017- 2018)

UM Presidential Transition Team (2018)

Davidson Honors College Curriculum Committee (2017 - )

UM Strategic Planning & Coordinating Committee (2016- 2018)

Program Director, Organismal Biology, Ecology & Evolution (2015-2017)

Graduate Student Evaluation Committee (Chair) (2014)

Faculty Search Committee (Vertebrate Biologist) (2013)

Graduate Admissions Committee (Chair) (2012, 2013)

Graduate Student Evaluation Committee (Chair) (2012)

Rhodes Scholar Committee (2012)

Curriculum Committee (2012)  
Faculty Search Committee (Evolutionary Geneticist) (Chair) (2008-2009)  
Curriculum Committee (2008, 2009)  
Seminar Committee (2006, 2007, 2008)  
Building Committee (for new BSD/Biology building) (2006, 2007)  
Faculty Search Committee (Structural Biologist) (2006)  
Faculty Search Committee (Associate Dean) (2005, 2006)  
DBS Undergraduate Scholarship Committee (2006, 2007)  
DBS Senior Awards Committee (2006, 2007)  
Graduate Admissions Committee (chair) – successfully recruited 12 new  
graduate students (70% acceptance rate) (2004)  
2003-2004 on sabbatical leave.  
Faculty Search Committee (Plant Evolutionary Biologist) (2002)  
Seminar Committee (2002)  
Graduate Student Admissions Committee (2002)  
Seminar Committee (1998, 1999, 2000, 2001)  
Graduate Student Admissions Committee (1999, 2000).  
Faculty Search Committee, Plant Ecologist position (2001).  
Reviewer for IBS-CORE undergraduate research grants program (1999).  
Reviewer for University Small Grants program, 1998, 1999.  
Grader for Student Evaluation Exams, 1998.  
Faculty Search Committee, Wildlife Quantitative Ecologist position,  
Wildlife Program, (2001).  
NSF-IGERT Grant planning and preparation committee, 2000-2001.  
Murdoch Laboratory, Board Member (1999)