

Curriculum Vitae
MANUS M. PATTEN

Department of Biology
Georgetown University
37th and O Streets NW
Washington, DC 20057

phone: 202-687-5731
mmp64@georgetown.edu
www.pattenlab.com
[Google Scholar profile](#)

Academic Appointments

2018- Teaching Professor, Georgetown University, Department of Biology
2015–2018 Associate Teaching Professor, Georgetown University, Department of Biology
2011–2015 Assistant Teaching Professor, Georgetown University, Department of Biology
2008–2010 Preceptor, Harvard University, Department of Organismic and Evolutionary Biology

Education

2002-2008 Harvard University, Ph.D. in Biology
1998-2002 Syracuse University, B.S. in Biomathematics (*magna cum laude*, with honors)

Honors, Awards, Grants

2024-2027 Grant from the John Templeton Foundation (“Internal conflicts and the origins of collective agency in biology and economics” with co-PI J. Arvid Ågren (Cleveland Clinic) and Armin Schulz (University of Kansas); JTF grant #63320 \$880k)
2024-2030 Grant from the European Society for Evolutionary Biology to coordinate a Special Topic Network (~\$30,000)
2021-2024 Grant from the John Templeton Foundation (“The paradox of the organism” with co-PI J. Arvid Ågren, Cleveland Clinic; subaward from JTF grant #62220, \$250k)
2019 Georgetown College Dean’s Award for Excellence in Teaching
2011– Georgetown College Academic Council Honors (Guest of Honor in 2014)
2004–2007 NSF Graduate Research Fellowship
2001 Goldwater Scholarship
2001 American Physiological Society Summer Research fellowship

Peer-reviewed Publications

1. Patten, M. M., Schenkel, M. S., Ågren, and J. A. 2023. Adaptation in the face of internal conflict: the paradox of the organism revisited. *Biological Reviews*. 98: 1796-1811.
2. Ågren, J. A. and M. M. Patten. 2022. Genetic conflicts and the case for licensed anthropomorphizing. *Behavioral Ecology and Sociobiology* 76: 166.
3. Keegan, G.* and M. M. Patten. 2022. Selfish placental hormones. *Evolution, Medicine, and Public Health* 10: 391–397.
4. Patten, M. M. 2021. On being a monkey’s uncle: germline chimerism in the Callitrichinae and the evolution of sibling rivalry. *American Naturalist* 197: 502-508.
5. Frank, S. A. and M. M. Patten. 2020. Sexual antagonism leads to a mosaic of X-autosome conflict. *Evolution* 74: 495–498.
6. Patten, M. M. 2019. The X chromosome favors males under sexually antagonistic selection. *Evolution*. 73: 84-91.

7. Patten, M. M. 2018. Selfish X chromosomes and speciation. *Molecular Ecology* 27: 3772-3782.
 8. Rydzewski, W. T.*, S. A. Carioscia*, G. Liévano*, V. D. Lynch*, and M. M. Patten. 2016. Sexual antagonism and meiotic drive cause stable linkage disequilibrium and favour reduced recombination on the X chromosome. *Journal of Evolutionary Biology* 29: 1247-1256.
 9. Patten, M. M., M. Cowley, R. Oakey, and R. Feil. 2016. Regulatory links between imprinted genes: evolutionary predictions and consequences. *Proceedings of the Royal Society B: Biological Sciences* 283: 20152760.
 10. Patten, M. M., S. A. Carioscia*, and C. R. Linnen. 2015. Biased introgression of mitochondrial and nuclear genes: a comparison of diploid and haplodiploid genetic systems. *Molecular Ecology* 24: 5200-5210.
 11. Úbeda, F., M. M. Patten, and G. Wild. 2015. On the origin of sex chromosomes from meiotic drive. *Proceedings of the Royal Society B: Biological Sciences* 282: 20141932.
 12. Patten, M. M. 2014. Meiotic drive influences the outcome of sexual antagonism at a linked locus. *Journal of Evolutionary Biology* 27: 2360-2370.
 13. Patten M. M., L. Ross, J. P. Curley, D. C. Queller, R. Bonduriansky, J. B. Wolf. 2014. The evolution of genomic imprinting: theories, predictions, and empirical tests. *Heredity* 113: 119-128.
 14. Patten, M. M., F. Úbeda, and D. Haig. 2013. Sexual and parental antagonism shape genomic architecture. *Proceedings of the Royal Society B: Biological Sciences* 280: 20131795.
 15. Úbeda, F., D. Haig, and M. M. Patten. 2011. Stable linkage disequilibrium owing to sexual antagonism. *Proceedings of the Royal Society B: Biological Sciences* 278: 855-862.
 16. Patten, M. M., D. Haig, and F. Úbeda. 2010. Fitness variation due to sexual antagonism and linkage disequilibrium. *Evolution* 64: 3638-3642.
 17. Patten, M. M. and D. Haig. 2009. Maintenance or loss of genetic variation under sexual and parental antagonism at a sex-linked locus. *Evolution* 63: 2888-2895.
 18. Patten, M. M. and D. Haig. 2009. Parental sex discrimination and intralocus sexual conflict. *Biology Letters* 5: 667-670.
 19. Patten, M. M. and D. Haig. 2008. Reciprocally imprinted genes and the response to selection on one sex. *Genetics* 179: 1389-1394.
 20. Quental, T. B., M. M. Patten, and N. E. Pierce. 2007. Host plant specialization by means of sexual selection. *American Naturalist* 169(6): 830-836.
 21. Starmer, W. T., M. Patten, and M. Polak. 2002. The statistics of detecting positional fluctuating asymmetry. *Biological Journal of the Linnean Society* 77(4): 491-498.
- *undergraduate co-author

Other Publications

22. Patten, M. M. 2025. Internal conflicts that organism can live with. In Ågren, J. A. and M. M. Patten (eds.) *The Paradox of the Organism: Adaptation and Internal Conflict*. Harvard University Press, Cambridge, MA.
23. Patten, M. M. 2022. Evolution: various routes to sex determination. *Current Biology* 32: R416-R418.
24. Patten, M. M. 2018. David Haig. *Encyclopedia of Evolutionary Psychological Science*.
25. Patten, M. M. 2017. Levels of selection. In Reference Module in Life Sciences. Elsevier ISBN: 978-0-12-809633-8, <http://dx.doi.org/10.1016/B978-0-12-809633-8.01140-7>
26. Patten, M. M. 2016. Imprinting evolution in Arabidopsis. *Nature Plants* 2:16152.
27. Haig, D., F. Úbeda, and M. M. Patten. 2014. Specialists and generalists: the sexual ecology of the genome. *Cold Spring Harbor Perspectives in Biology* 6(9): a017525.
28. Patten, M. M. 2010. Levels of selection. In Breed, M. and J. Moore (eds.), *Encyclopedia of Animal Behavior*. Academic Press, Oxford, UK.

In Prep & In Review Publications

28. Greenberg, N. L.* and M. M. Patten. Sexual antagonism and skewed X chromosome inactivation: a test of a modifier model. *In review*
29. Schenkel, M. A., M. M. Patten, and J. A. Ågren. Quantifying internal conflicts and their threats to organismal form and fitness. bioRxiv.
30. Ågren, J. A. and M. M. Patten (eds.). 2025. *The Paradox of the Organism: Adaptation and Internal Conflict*. Harvard University Press, Cambridge, MA. *In prep*

Teaching Experience

1. Georgetown University, Department of Biology
Biology 100 Explorations: Biological Chemistry; Biology 103/113 Foundations in Biology I; Biology 104/114 Foundations in Biology II; Biology 152 Genetics; Biology 185 Evolutionary Processes; Biology 203 Seminar: Inquiry into the Foundations of Biology; Biology 340 Research Tutorial; Biology 341-342 Research-Intensive Senior Experience; Biology 360 Molecular Evolution; Biology 387 Genetic Conflicts; Biology 431 Introduction to Computer Programming for Biologists; Biology 447 Advanced Topics in Evolution; Biology 501 Graduate Foundations in Ecology, Evolution, and Behavior; IDST 030 Bridge to Genetics
2. Harvard University, Department of Organismic and Evolutionary Biology (as Preceptor)
OEB 10 Foundations of Biological Diversity; OEB 55 Ecology
3. Harvard University, Department of Organismic and Evolutionary Biology (as Teaching Fellow)
OEB 53 Evolution; BS91r Memes and cultural evolution (tutorial); BS 57 Animal Behavior; OEB 114 Vertebrate Viviparity; BS 50 Genetics and Genomics

Academic Service

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| 2016–2018 | Program Coordinator for REU Site Program: Environmental Science and Policy in the Nation’s Capital |
| 2018– 2012– | Georgetown University Honor Council Committee on undergraduate students and studies (CUSS), Department of Biology, Georgetown University |
| 2014–2015 | Director of the Biology major at Georgetown University |
| <i>ad hoc</i> | Reviewer for American Naturalist, Behavioral Ecology, Biology Letters, Biological Theory, BMC Evolutionary Biology, Current Biology, Current Zoology, European Journal of Medical Genetics, Evolution, Evolution Letters, Evolution Medicine and Public Health, Evolutionary Applications, G3: Genes Genomes Genetics, Genetics, Heredity, Journal of Animal Ecology, Journal of Evolutionary Biology, Journal of Theoretical Biology, Journal of Zoological Systematics and Evolutionary Research, Molecular Biology and Evolution, Nature Ecology and Evolution, Nature Plants, PLoS Biology, PLoS One, Proceedings of the Royal Society B: Biological Sciences, Scientific Reports, textbooks for Roberts & Company and National Geographic, grants for the NSF, ERC, Leverhulme Trust, and Swiss NSF. |

Seminars, Talks, and Posters

- 2024 “Within-organism conflicts and organismal adaptation” w/Martijn Schenkel and J. Arvid Ågren, Evolution meeting Montreal, Canada

- 2024 “Remote-control drive of the sex chromosomes” w/Naomi Greenberg* and Martijn Schenkel, Evolution meeting Montreal, Canada
- 2024 “Chimerism and altruism” w/Thomas Hitchcock, Evolution meeting Montreal, Canada
- 2024 “Major reversions in individuality” w/Martijn Schenkel and J. Arvid Ågren, Philosophy and Biology Shop Talks, Westfield, NC
- 2023 “Can biased X chromosome inactivation be explained by sexual antagonism” w/Naomi Greenberg*, Evolution meeting Albuquerque, NM
- 2023 “Can biased X chromosome inactivation be explained by sexual antagonism” w/Naomi Greenberg*, The Population Genetics Group meeting, a.k.a. PopGroup 56, London, UK
- 2022 “The Paradox of the Organism.” w/J. Arvid Ågren. Biology of Purpose Summit, San Antonio, TX
- 2019 “Sex biases on the X chromosome in the face of sexual antagonism” The Population Genetics Group Meeting, a.k.a., PopGroup 53, Leicester, UK
- 2019 “The X is from Mars—not Venus: male bias in the response to sexually antagonistic selection on the X chromosome” Conflict and Cooperation symposium Uppsala University Evolutionary Biology Centre, Uppsala, Sweden
- 2018 “Genetic conflicts and the evolution of sex chromosomes”, University of Florida Department of Biology, Gainesville FL
- 2015 “The long reach of genetic conflicts” Georgetown University Department of Biology
- 2015 “Biased introgression of mitochondrial and nuclear genes: a comparison of diploid and haplodiploid genetic systems” Nomifest, Museum of Comparative Zoology, Harvard University, Cambridge, MA
- 2013 “Intralocus sexual antagonism and fitness variance” (co-authored with M. C. Cassidy*) Evolution meeting, Snowbird, UT
- 2012 “Conflicting selection pressure: evolution of genes and evolution of genetics” University of Kentucky Biology Department, Lexington KY
- 2012 “Meiotic drive and sexual antagonism” Evolution meeting – Ottawa, ON
- 2010 “Linkage disequilibrium and fitness variation in a two-locus model of sexual antagonism” Evolution meeting – Portland, OR.
- 2008 “Sexual and parental antagonism on the X chromosome” University of Tennessee, Knoxville, theory group.
- 2008 “Evolutionary theories of sexual and parental antagonism.” Syracuse University Biology Department.
- 2008 “Sexual and parental antagonism.” Evolution meeting – Minneapolis, MN.
- 2007 “Imprinted genes and the response to sex-limited selection.” Poster given at NEMEB - New York, NY.
- 2007 “Memes and the levels of selection.” Evolution Group talk - Harvard.
- 2005 “A view of two conflicts from a single gene.” Accepted talk, Harvard Mind/Brain/Behavior grad student symposium – Cambridge, MA.
- 2001 “Time-course for upregulation of Na-H Exchange by Human Cytomegalovirus.” Poster presented at Experimental Biology – Orlando, FL.
- *undergraduate co-author

Affiliations and Memberships

Society for the Study of Evolution (SSE)

International Society for Evolutionary Medicine and Public Health (ISEMPH)