CURRICULUM VITAE

MARIANA FEDERICA WOLFNER

POSITION:

Distinguished Professor of Arts and Sciences in Molecular Biology & Genetics
Stephen H. Weiss Presidential Fellow
Department of Molecular Biology and Genetics
423 Biotechnology Building
Cornell University
Ithaca, New York 14853-2703
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EDUCATION:

Undergraduate	Cornell University Ithaca, New York 14853 B.A., summa cum laude & with distinction, 1974 Majors: Biology (Genetics), Chemistry
Graduate	Stanford University Stanford, CA 94305 Department of Biochemistry Ph.D., January 1981, Biochemistry
Postdoctoral	Department of Biology University of California, San Diego La Jolla, CA 92093 1981-1983

POSITIONS:

2021-present	Associate Chair, Dept. of Molecular Biology and Genetics, Cornell
2013-present	Distinguished Professor of Arts and Sciences in Molecular Biology & Genetics, Cornell (title renamed in 2021, from the original Goldwin Smith Professor title)
2014	Interim Director, NIH Training Grant in Genetics and Development, Cornell
2010	Lady Davis Fellow, Hebrew University of Jerusalem
2003- present	Stephen H. Weiss Presidential Fellow, Cornell
2001-2005	Associate Chair, Dept. of Molecular Biology and Genetics, Cornell
1998	Visiting Professor, UCSD
1995	Visiting Associate Professor, Univ. of Washington
1995-2013	Professor of Developmental Biology, Cornell University, Ithaca NY

1994-1996	Director of Graduate Study, Field of Genetics and Development, Cornell University, Ithaca NY
1991-1992	Director of Graduate Study, Field of Genetics and Development, Cornell University, Ithaca NY
1990	Visiting Asst. Professor, Princeton University
1989-1995	Associate Professor of Developmental Biology, Cornell University, Ithaca NY
1983-1989	Assistant Professor of Developmental Biology, Cornell University, Ithaca NY
1981-1983	Postdoctoral Fellow, UCSD (mentor Dr. B.S. Baker)
1974-1981	Ph.D. Student, Stanford University (mentor: Dr. D.S. Hogness)
1972-1974	Undergraduate Researcher, Cornell University (mentor: Dr. G.R. Fink) and Cold Spring Harbor Laboratory (mentor: Dr. R.F. Gesteland)

PH.D. DISSERTATION:

1981 Ecdysone-responsive genes of the salivary gland of *D. melanogaster*.

HONORS AND AWARDS:

Faculty Champion Award, Graduate Diversity and Inclusion, Cornell University	2022
Merrill Outstanding Educator Award Cornell University	2021, 2000, 1992, 1986
MERIT Award, NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development	2020
Member, National Academy of Sciences	Elected 2019
Certificate of Distinction, from the Council of the International Congress of Entomology	2019 (to be presented at ICE 2022)
2018 GSA Medal, Genetics Society of America	2018
2017 Recognition Award in Physiology, Biochemistry and Toxicology, Entomological Society of America	2017
Distinguished Professor of Arts & Sciences In Molecular Biology and Genetics	2013-present
Kendall S. Carpenter Memorial Award for Distinguished Advising Cornell University	2012
Lady Davis Fellow, Hebrew University of Jerusalem, Israel	2010
Stephen and Margery Russell Award for Distinguished Teaching Cornell, College of Arts and Sciences	2009
Fellow, American Association for the Advancement of Science	Elected 2006
Robert A. and Donna B. Paul Award for excellence in advising Cornell, College of Arts and Sciences	2006
Stephen H. Weiss Presidential Fellow	2003-present

Cornell University
POWRE Award, National Science Foundation 1997-1998
Faculty Research Award, 1989-1994
American Cancer Society
Career Advancement Award, 1988-1989
National Science Foundation
Basil O'Connor Research Scholar 1985
March of Dimes
Cornell Biotechnology Institute 1983
Young Investigator Grant
DuPont Young Faculty Award 1983
Senior Postdoctoral Fellow 1983
American Cancer Society
California Division
Postdoctoral Fellow 1981- 1982
Damon Runyon-Walter Winchell
Cancer Fund
Predoctoral fellow 1974-1977
National Science Foundation
Phi Beta Kappa and Phi Kappa Phi Elected 1974
Honor Societies

Named, Distinguished, and Keynote lectures:

Benchmark Lecture 2022
North American Testis Workshop
Distinguished Lecture in Biochemistry 2022
Villanova University
M.C. Chang Memorial Lecture (virtual) 2021
Univ. of Massachusetts Medical School
Kathleen M. Osborn Memorial Lecture (virtual) 2021
University of Kansas Medical Center
Christianna Smith Lecture (virtual) 2020
Mount Holyoke College
Distinguished Women in Science Lecture 2020
Monash University,
Melbourne Australia
[Distinguished Speaker, Claremont Colleges 2020; cancelled due to pandemic]
Distinguished Lecture, Tigers-ADVANCE and 2019
Department of Genetics and Biochemistry
Clemson University, South Carolina
"BIG" Lecture, University of Lausanne 2019
Lausanne Switzerland
Keynote speaker, Annual Drosophila Research 2019
Conference (Genetics Society of
America), Dallas Texas
Keynote speaker, Academic Days, Mexican 2018
National Laboratory for the Genomics
of Biodiversity, Guanajuato, Mexico

Keynote speaker, EMBO Conference on Molecular and Population Biology of Mosquitoes and other Disease Vectors, Kolymbari, Greece 2017

Keynote speaker, Science Research Symposium Hunter College High School, New York City, New York 2017

Al Downe Lecturer, Queen's University Kingston, Canada 2016

Distinguished Lecture, Huck Institutes, Penn State University 2012

Keynote speaker, Drosophila Species Workshop University of California, San Diego 2012

Wilhelmine Key Lecturer, American Genetics Association 2008

Nelson Lecturer, University of Missouri, Columbia, Missouri 2010

SPECIAL APPOINTMENTS:

A. EDITORIAL BOARDS (past 10 years)

PLoS Biology
- Editorial Board 2014-present

Proceedings of the National Academy of Sciences
- Editorial Board 2021-present

GENETICS
- Associate Editor 2010-2019
- Consulting Editor 2020-present

Molecular Reproduction and Development
- Reviews Editor 2011-2017
- Editor 2018
- Editorial Advisory Board 2019-present

Insect Biochemistry and Molecular Biology
- Editorial Board 2001-present

Current Opinion in Insect Science
- Editorial Board 2019-present

Current Research in Insect Science
- *Editorial Board* 2020-present

FLY
- Editorial Board 2006-present
- Associate Editor 2016-present
- Acting Editor-in-Chief 2019

Frontiers in Cellular and Developmenal Biology
- Review Editor (Mol.Cell.Repro) 2021-present

Insects
- Editorial Board 2020-present

J. of Insect Sci.
- Editorial Board 2003-2019
- Associate Editor, Subject-Editor 2007-2019

Spermatogenesis
Associate Editor 2010-2017

B. SELECTED OTHER MAJOR PROFESSIONAL SERVICE AND FEDERAL GOVERNMENT PANELS (past 10 years, and selected earlier)

Organizer, Sociogenomics Research Collaboration Network, Final Annual Meeting for RCN and 'friends', Ithaca NY 2019

Scientific Advisory Council, Frontiers in Reproduction Course, Woods Hole Marine Biological Laboratory 2018-2021

Member, Cornell University Faculty Committee (elected by the Faculty); 2 terms 2018-2024

Member, Cornell Board of Trustees (Faculty-elected Trustee) 2014-2018

Co-organizer, Male Fertility workshop, at 55th Annual Drosophila Research Conference 2014

National Judge, Siemens Competition 2014, 2011, 2005

Chair (2017) and Vice-Chair (2015), Gordon Conference on Fertilization and Activation of Development Elected 2013

Organizer, International Meeting on Insect Reproductive Molecules 2014, 2006, 2000, 1997, 1993
co-organizer 2016, 2012, 2022
and, anticipatory Zoom seminar-series 2020-2022

Co-organizer, Cornell-Stockholm U. conference on Insect Biology 2013

Co-organizer, Cornell inter-campus meeting on insect-vector-based diseases 2022

Co-organizer, *Molecular Reproduction and Development*-sponsored conference on Reproductive and Developmental Genomics 2012

Blavatnick Awards Selections Panel New York Academy of Sciences 2011

Genetics Society of America Board of Directors
Director; Secretary 2006-2009; 2010-2013 (resp.)

Biological Sciences Section, American Association for the Advancement of Science: Chair-Elect, Chair, Past-Chair 2007-2010

NIH and NSF panels; examples include:

NIH ZHD SEP Grants-Review Panel	2022
NIH ZHD SEP Grants-Review Panel	2021
NIH VB Study Section	2019
NIH ZCA SEP Grants-Review Panel	2018
NIH ZRG SEP Grants-Review Panel (Transformative Research Awards)	2018
NIH F-05D/U (Cell, Devel. Biol.	2016, 2017, 2018

and Bioengineering Fellowships)
NSF-IOS PMB Grants-panel 2016
Chair of ZRG SEP Grants-Review Panel 2015
NIH ZRG SEP Grants-Review Panel 2014
NIH/Center for Scientific Review 2014
grants-ranking pilot panel
NIH CMIR Study Section 2008-2014; Vice-Chair 2010, 2013
Beckman Young Investigator Selections Panel 2021-2023
Arthur and Mabel Beckman Foundation
International Fellowships Panel 2022
American Assoc. of University Women
Reviewer, scientific sessions proposals for 2007-present
American Association for the
Advancement of Science, annual meetings
4nd, 5th International Symposia on Molecular 2001-2, 2005-6
Insect Science: member of organizing
committees
42nd Annual Drosophila Research Conference: 2001
Program Co-Chair and member of
organizing committee
National Drosophila Board:
Great Lakes Rep. 1990-1993
Board President 1993-1994
President-Elect, President, Past Pres. 2019-2022
Larry Sandler Lectureship Committee, Chair 1994, 2007
Member 1991-1994, 2006-2008
Mentor, Undergraduate Summer Research
Genetics Society of America, NSF/EDEN
RCN, Society for Developmental Biology
("Choose Development!") (as well as through
several programs administered at Cornell:
HHMI, MARC, NASA/SharpPlus, MBG/NSF REU)

PUBLICATIONS (full articles only):
(equal contributions have the same number of "*", including co-corresponding authorships)

xx. Delbare, S.Y.N., Venkatraman, S., Scuderi, K., Wells, M.T., Wolfner, M.F., Basu, S. and Clark, A.G. Time series transcriptome analysis uncovers regulatory networks and a role for the circadian clock in the *Drosophila melanogaster* female's response to Sex Peptide. Submitted.

xx. Wolfner, M.F., Suarez, S.S. and Dorus, S. Suspension of hostility: positive interactions between female reproductive tracts and sperm. Andrology, submitted (invited article).

xx. Misra, S., Singh, A., and Wolfner, M.F. Female factors are important for the seminal Sex Peptide's association with sperm in mated *D. melanogaster.* Submitted.

226. White, M.A. and Wolfner, M.F. (2022) Male seminal fluid proteins' effects on gut/gonad interactions in Drosophila. Insects, in press.

225. Gordon, K.E., Wolfner, M.F., and Lazzaro, B.P. (2022) A single mating is sufficient to induce persistent reduction of immune defense in mated female *Drosophila melanogaster.* J. Insect Physiol., 140, 104414 (online ahead of print).

224. Chen, D.S., Clark, A.G.*, and Wolfner, M.F.* (2022) Octopaminergic/tyraminergic Tdc2 neurons regulate biased sperm usage in female *Drosophila melanogaster*. Genetics, Jul9:iyac096 (online ahead of print).

223. Wigby, S., Brown, N.C., Sepil, I. and Wolfner, M.F. (2022) On how to identify a seminal fluid protein: a commentary on Hurtado et al. Ins.Bioch.Mol.Biol., in press.

222. McQueen, E.W., Afkhami, M., Agoli, E., Atallah, J., Belote, J.M., Nunes M.D., David, J.R., Gompel, N., Heifetz, Y., Kamimura, Y., Masly, J.P., McGregor, A., O'Grady, P., Pelaez, J., Prud'homme, B., Rice, G. , Sanchez-Herrero, E., Santos Rampasso, A., Siegal, M.L., Takahaski, A., Tanaka, K.M., Turetzek, N., Courtier-Orgogozo, V.*, Rebeiz, M.*, Toda, M.J.*, Wolfner, M.F.*, Yassin, A.* (2022) A standardized nomenclature and atlas of the female terminalia of *Drosophila melanogaster*. Fly, 16, 128-151.

221. McCullough, E.L.*, Whittington, E.*, Singh, A.*, Pitnick, S.**, Wolfner, M.F.** and Dorus, S.** (2022) The life history of *Drosophila* sperm involves molecular continuity between male and female reproductive tracts. Proc. Natl. Acad. Sci., 119(11):e2119899119.

220. Li et al. {*Drosophila* FCA consortium} (2022) FlyCell Atlas: a single cell transcriptomic atlas of the adult fruit fly. Science, 375(6584):eabk2432.

219. Amaro, I.A., Ahmed-Braimah, Y., League, G.P., Pitcher, S., Avila, F.W., Cruz, P.C., Harrington, L.C.*, and Wolfner, M.F.* (2021) Seminal fluid proteins induce transcriptome changes in the *Aedes aegypti* female lower reproductive tract, including up-regulation of immunity-related RNAs. BMC Genomics, 22(1):896.

218. League, G.P. Degner, E.C., Pitcher, S.A., Hafezi, Y., Tennant, E., Cruz, P.C., Krishnan, R.S., Garcia Castillo, S.S., Alfonso-Parra, C., Avila, F.W., Wolfner, M.F.*, and Harrington, L.C.* (2021) The impact of mating and sugar feeding on blood-feeding physiology and behavior in the arbovirus vector mosquito *Aedes aegypti.* PLoS Neglected Tropical Diseases, 15(9):e0009815.

217. Meyer, H., Buhr, A., Callaerts, P., Scheimann, R., Wolfner, M.F., Marygold, S.J. (2021) Identification and bioinformatic analysis of neprilysin and neprilysin-like metalloendopeptidases in *Drosophila melanogaster*. microPublication Biology. 10.17912/micropub.biology.000410.

216. Suarez, S.S. and Wolfner, M.F. Cilia take the egg on a magic carpet ride. (2021) Proc. Natl. Acad. Sci. USA, 118(27):e2108887118 (Commentary).

215. Koreman, G.T.*, Xu, Y.*, Hu, Q.*, Zhang, Z., Allen, S.E., Wolfner, M.F., Wang, B. and Han, C. (2021) Upgraded CRISPR/Cas9 Tools for Tissue-Specific Mutagenesis in Drosophila. Proc. Natl. Acad. Sci. USA, 118(14):e2014255118. [In BioRXiv as doi: https://doi.org/10.1101/2020.07.02.185652]

214. Immarigeon, C., Frei, Y. Delbare, S.Y., Gligorov, D., Machado Almeida, P., Grey, J., Nagoshi, E., Billeter, J.-C., Wolfner, M.F., Karch, F. and Maeda, R.K. (2021) Identification of a novel micro peptide and multiple secondary cell genes that modulate *Drosophila* male reproductive success. Proc. Natl. Acad. Sci. USA, 118(15):e2001897118.

213. Allen, S.E.*, Koreman, G.T.*, Sarkar, A.*, Wang, B., Wolfner, M.F.**, and Han, C.** (2021) Versatile CRISPR/Cas9-mediated mosaic analysis by gRNA- induced crossing - over for unmodified genomes. PLoS Biology, 19(1):e3001061. [also in BioRXiv as doi: https://doi.org/10.1101/2020.06.26.174045]

212. White, M.A.*, Chen, D.S.*, and Wolfner, M.F. (2021) She's got nerve: roles of octopamine in insect female reproduction. J. Neurogenet., 28, 1-22.

211. Hu, Q., Antipova, O.A., O'Halloran, T.V. and Wolfner, M.F. (2020) X-ray fluorescence microscopy scanning of Drosophila oocytes and eggs. STAR Protocols, 2(1):100247.

210. White, M.A., Bonfini, A., Wolfner, M.F.* and Buchon, N.* (2021) *Drosophila* melanogaster sex peptide is a key regulator of female midgut morphology and physiology. Proc. Natl. Acad. Sci. USA, 118(1):e2018112118.

209. Delbare, S.Y.N.*, Ahmed-Braimah, Y.H.*, Wolfner, M.F., Clark, A.G. (2020) Interactions between the microbiome and mating influence the female's transcriptional profile in *Drosophila melanogaster*. Scientific Reports, 10(1):18168. [also in BioRXiv: https://doi.org/10.1101/2020.05.30.125427]

208. Ahmed-Braimah, Y.H., Wolfner, M.F., and Clark, A.G. (2021) Differences in post-mating transcriptional responses between conspecific and heterospecific matings in Drosophila. Mol. Bio. Evoln, 38, 986-999. [also in BioRXiv: https://doi.org/10.1101/2020.03.25.009068]

207. Allen, S.E.*, Chen, D.*, Misra, S.* and Wolfner, M.F. (2022) Seminal Metalloprotease-1. Handbook of Proteolytic Enzymes, 4th edition. Vol. 1 Metalloproteases. N. Rawlings, editor. Elsevier. In press.

206. Camargo, C., Ahmed-Braimah, Y., Amaro, I.A., Harrington, L.C., Wolfner, M.F. and Avila, F. W. (2020) Mating and blood-feeding induce transcriptome changes in the female sperm storage organs of the yellow fever mosquito *Aedes aegypti*. Scientific Reports, 10(1): 14899.

205. Misra, S. and Wolfner, M.F. (2020) *Drosophila* seminal Sex Peptide associates with rival as well as own sperm, providing SP function in polyandrous females. eLife, 9:e58322. [also in BioRXiv: https://doi.org/10.1101/2020.02.20.958108]

204. Wigby, S.*, Brown, N.C.*, Allen, S.E., Misra, S., Sepil, I., Sitnik, J.L., Clark, A.G., and Wolfner, M.F. (2020) The *Drosophila* seminal proteome and its role in sperm competition. Phil. Trans. Roy. Soc., 375(1813):20200072.

203. Hu, Q. and Wolfner, M.F. (2020) Regulation of TRPM activation and calcium wave initiation during *Drosophila* egg activation. Mol. Repro. Dev., 87(8) 880-886.

202. Hu, Q., Duncan, F.E., Nowakowski, A.B., Antipova, O.A., Woodruff, T.K., O'Halloran, T.V., Wolfner, M.F. (2020) Zinc dynamics during Drosophila oocyte maturation and egg activation. iScience, 23(7):101275.

201. Sinha, S., Jones, B. Traniello, I. Bukhari, S.A., Halfon, M.S., Hofmann, H.A., Huang, S., Katz, P., Keagy, J., Lynch, V.J., Sokolowski, M.B., Stubbs, L.J., Tabe-Bordbar, S., Wolfner, M.F., and Robinson, G.E. (2020) Behavior-Related Gene Regulatory Networks: A New Level of Organization in the Brain. Proc. Natl. Acad. Sci., 117(38): 23270-23279.

200. Sepil, I. Hopkins, B. Dean, R., Friedman, S., Bath, E., Swanson, B. Sandham, E., Ostridge, H., Buehner, N., Wolfner, M.F., Konietzny, R., Thezenas, M-L., Charles, P.D., Fischer, R., Steinhauer, J., Kessler, B.M., and Wigby, S. (2020) Ejaculate deterioration with male age

and its amelioration in Drosophila. Proc. Natl. Acad. Sci., 117(29): 17094-17103. [also in BioRXiv as doi:10.1101/624734]

199. Hu, Q., Aviles-Velez, A., and Wolfner, M.F. Drosophila (2020) Plc21C is involved in calcium wave propagation during egg activation. Micropublications Biology 2020:10.17912/micropub.biology.000235.

198. Sirot, L.K.* and Wolfner, M.F. (2020) "Call and response": a case of behavioral-molecular copulatory dialogue? Bioessays, 42(11):e2000248. (Commentary ("Ideas to Watch"))

197. Orr, T.J., Burns, M., Hawkes, K., Holekamp, K.E., Kimmitt, A.A., Lewis, K.S., Lipshutz, S.E., Stadmauer, D., S, N.L., Wolfner, M.F. and Hayssen,V. (2020) It takes two to tango: including a female perspective in reproductive biology. Integrative Compar. Biol., 60(3):796-813.

196. Hafezi, Y., Sruba, S.R., Tarrash, S.R., Wolfner, M.F. and Clark, A.G. (2020) CRISPR mutants of three Y chromosome genes suggest gradual evolution of fertility functions in *Drosophila melanogaster.* Genetics, 214(4): 977-990.

195. York-Andersen, A.H.*, Hu, Q.*, Wood, B.W., Wolfner, M.F.** and Weil, T.T.** (2020) A calcium mediated actin redistribution at egg activation in *Drosophila*, Mol. Repro. Dev., 87(2): 293-304.

194. Anholt, R.R.H., O'Grady, P. Wolfner, M.F. and Harbison, S.T. (2019) Evolution of Reproductive Behavior. Genetics (Flybook), 214(1): 49-73.

193. Pitnick, S., Wolfner, M.F., and Dorus, S. (2019) PEMS: post-ejaculation modifications to sperm. Biological Reviews, 95(2) 365-392.

192. Chen, D.S.*, Delbare, S.Y.N.*, White, S.L.*, Sitnik, J.L., Chatterjee, M., Dobell, E.L., Weiss, O.D., Clark, A.G.**, and Wolfner, M.F.** (2019) Female genetic contributions to sperm competition in *Drosophila melanogaster*. Genetics 212: 789-800. [Also in BioRXiv: https://doi.org/10.1101/500546]

191. Hu, Q. and Wolfner, M.F. (2019) *Drosophila* Trpm mediates calcium influx during egg activation. Proc. Natl. Acad. Sci. USA 116:18994-19000. [Also in BioRXiv as doi: https://doi.org/10.1101/663682]

190. Wigby, S., Lazzaro, B.P., Suarez, S.S., Pizzari, T., and Wolfner, M.F. (2019) Reproductive/immunity effects on sperm success. Current Topics in Developmental Biology, 135:287-313.

189. Hoke, K., Bass, A., McCune, A., Regan, E., and Wolfner, M.F. (2019) Co-opting Evo-Devo concepts for new insights into behavioural and neural diversity. J. Exp. Bio. 222(Pt 8). pii: jeb190058.

188. League, G.P., Baxter, L.L., Wolfner, M.F.* and Harrington, L.C.* (2019) Male accessory gland molecules inhibit harmonic convergence during courtship flight in the mosquito *Aedes aegypti*. Current Biology 29(6):R196-R197.

187. Zhang, Z., Ahmed-Braimah, Y.H., Goldberg, M.L., and Wolfner, M.F. (2019) Calcineurin dependent protein phosphorylation changes during egg activation in *Drosophila melanogaster*. Mol. Cell. Proteomics 18(Suppl 1):S145-S158.

186. Degner, E.C.*, Ahmed-Braimah, Y.H.*, Borziak, K., Wolfner, M.F.**, Harrington, L.C.**, and Dorus, S.** (2019) Reproductive functions and genetic architecture of the seminal fluid and sperm proteomes of the mosquito *Aedes aegypti*. Mol. Cell. Proteomics 18(Suppl 1):S6-S22. [Also in BioRXiv: https://doi.org/10.1101/405431]

185. Singh, A., Buehner, N.A., Lin, H., Baranowski, K., Findlay, G.D. and Wolfner, M.F. (2018) Long-term interaction between *Drosophila* sperm and sex peptide is mediated by other seminal proteins that bind only transiently to sperm. Ins. Bioch. Mol. Bio. 102:43-51.

184. Zhang, Z., Krauchunas, A.R., Huang, S. and Wolfner, M.F. (2018) Maternal proteins that are phospho-regulated upon egg activation include crucial factors for oogenesis, egg activation and embryogenesis in *Drosophila melanogaster*. G3, 8:3005-3018. [Also in BioRXiv: https://doi.org/10.1101/218925].

183. Maeda, R.K., Sitnik, J.L., Frei, Y., Prince, E., Gligorov, D., Wolfner, M.F., and Karch F. (2018) The lncRNA male-specific abdominal plays a critical role in *Drosophila* accessory gland development and male fertility. PLoS Genetics, 14(7):e1007519.

182. Villarreal, S.M., Pitcher, S., Helinski, M., Johnson, L., Wolfner, M.F., and Harrington, L.C. (2018) Male contributions during mating increase female survival in the disease vector mosquito *Aedes aegypti*. J. Ins. Physiol. 108:1-9.

181. Cohen, A.B. and Wolfner, M.F. (2018) Dynamic changes in ejaculatory bulb size during *Drosophila melanogaster* aging and mating. J. Ins. Physiol. 107:152-156.

180. Billeter, J-C. and Wolfner, M.F. (2018) Chemical cues that guide female reproduction in *Drosophila melanogaster*. J. Chem. Ecology, https://doi.org/10.1007/s10886-018-0947-z.

179. Ruhmann, H., Koppik, M., Wolfner, M.F., and Fricke, C. (2017) The impact of ageing on male reproductive success in *Drosophila melanogaster.* Exptl. Gerontology, 103:1-10.

178. Zhang, Z., Wolfner, M.F.* and Williams, C.* (2017) Egg Activation. In Encyclopedia of Life Science, C. Tickle, ed., Wiley Inc., https://doi.org/10.1002/9780470015902.a0003300.pub2.

177. Hopkins, B., Avila, F.W.*, and Wolfner, M.F.* (2017) Insect Male Reproductive Glands and their Products. In Encyclopedia of Reproduction. 2nd Edition, B. Jégou and M. Skinner, eds., Elsevier. pp. 137-144.

176. Delbare, S.Y.N., Chow, C.Y., Wolfner, M.F.* and Clark, A.G.* (2017) Roles of female and male genotype in post-mating responses in *Drosophila melanogaster*. J. Hered., 8:740-753.

175. Avila, F.W. and Wolfner, M.F. (2017) Cleavage of the *Drosophila* seminal protein Acp36DE in mated females enhances its sperm storage activity. J. Ins. Physiol., 101: 66-72.

174. Gubala, A., Schmitz, J., Kearns, M., Vinh, T., Bornberg-Bauer, E., Wolfner, M.F. and Findlay, G.D. (2017) Two putative *de novo* evolved genes are essential for male fertility in *Drosophila melanogaster*. Molecular Biology and Evolution, 34: 1066-1082.

173. Wolfner, M.F.* and Chapman, T.* (2017) "Semen Toxicity". Encyclopedia of Evolutionary Psychological Science, T.K. Shackelford and V.A. Weekes-Shackelford, eds. Springer Verlag, DOI: 10.1007/978-3-319-16999-6_3081-1.

172. Chapman, T.* and Wolfner, M.F.* (2017) Reproductive behaviour: make love, then war. Nature Ecology & Evolution, 1: 174 (News and Views).

171. Avila, F.W.*, Sánchez-López*, J. McLaughon, J.L.**, Raman, S.**, Heifetz, Y.*** and Wolfner, M.F.*** (2016) Secretory tissues and their functions in the *Drosophila* reproductive tract. In: "Extracellular Composite Matrices in Arthropods", E. Cohen and B. Moussian, eds.; Springer Verlag. P. 411-444.

170. Cui, J., Lai, Y.W., Sartain, C.V., Zuckerman, R.M. and Wolfner, M.F. (2016) The Drosophila prage gene, required for maternal transcript destabilization in embryos, encodes a predicted RNA exonuclease. G3 g3.116.028415.

169. Wolfner, M.F. and Miller, D.E. (2016) Alfred H. Sturtevant walks into a *Bar*: studies of gene dosage, gene position, and unequal crossing over in Drosophila. Perspective on Sturtevant (1925) for the "Classic papers in Genetics" series. Genetics, 204, 833-835.

168. Wolfner, M.F. (2016) Lindsley and Sandler, et al. on gene dosage and the Drosophila genome. Perspective on Lindsley, Sandler et al. (1972) for the "Classic papers in Genetics" series. Genetics 202:1247-9.

167. Suarez, S.* and Wolfner, M.F.* (2016) Seminal plasma plays important roles in fertility. in: "The Sperm Cell: Production, Maturation, Fertilization, Regeneration" 2nd Edition, C. DeJonge and C. Barratt, eds.; Cambridge University Press, Ch. 6 (pp. 88-108).

166. Alfonso-Parra, C., Ahmed-Braimah, Y.H., Degner, E.C., Avila, F.W., Villarreal, S.M., Pleiss, J.A., Wolfner, M.F. and Harrington, L.C. (2016) Mating-induced transcriptome changes in the reproductive tract of female *Aedes aegypti*. PLoS Neglected Tropical Diseases 10:e0004451.

165. Chow, C.Y., Kelsey, K., Wolfner, M.F. and Clark, A.G. (2016) Candidate genetic modifiers of retinitis pigmentosa identified by exploiting natural variation in *Drosophila*. Human Molecular Genetics, 25: 651-9.

164. Avila, F.W., Wong, A., Sitnik, J.L. and Wolfner, M.F. (2015) Don't pull the plug! The *Drosophila* mating plug preserves fertility. FLY 9: 62-7.

163. Sitnik, J.L.*, Gligorov, D., Maeda, R., Karch, F.**, Wolfner, M.F.** (2015) Secondary cell expressed genes in the male accessory gland are needed for female post-mating responses in *Drosophila melanogaster*. Genetics 202: 1029-41.

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Other (selected):

Lee, S., Chen, Y-C, FCA consortium, Gillen, A.E., Taliaferro, J.M., Deplancke, B, Li, H., and Lai, E.C. (2022) Diverse cell-specific patterns of alternative polyadenylation in Drosophila. Nature Communications https://doi.org/10.1038/s41467-022-32305-0. [I list this here, rather than in the list above, because my lab and I are co-authors because we were part of the FCA consortium and FCA data were used in this paper, but we were not directly involved in this paper beyond that.]

Yan, W. (2020) An Interview with Dr. Mariana Wolfner. Biology of Reproduction, 1-3.

Burtis, K.C. and Wolfner, M.F. (2020) In memory of David Hogness. Guest post on the Genes to Genomes blog of the Genetics Society of America. http://genestogenomes.org/in-memory-of-david-hogness/

Interviewed for: Swanson, W.J. and Findlay, G.D. (2019) A conversation with Mariana Wolfner, newly inducted member of the National Academy of Sciences. Mol.Repro.Devt., 87(1):3-6.

Heifetz, Y. and Wolfner, M.F. (2019) Networks, phase transitions, sociality, and reproduction: Inter-insect interactions that change molecular physiological state. Curr. Opin. in Ins. Sci., 35:vii-ix. [this article introduces a special-issue that was edited by Dr. Heifetz and me].

Mattei, A.L., and Wolfner, M.F. Meroistic oogenesis, in section in situ. (2018) in VISIONS, the art of science, Mol. Repro. Devt. 85:287.

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Our micro-CT scan images of mating flies were selected as the badge-logo for the 14th Biology of Sperm meeting, Sheffield, United Kingdom, September 2017

Wong, J.L. and Wolfner, M.F. (2017) Is gender just a category? The two-plus sex advantage. Mol. Reprod. Devt., 84: 275. [This article is an introduction to a journal-issue on hermaphroditism, that Dr. Wong and I co-edited.]

At the request of FlyBase, in 2016 I (collaborating with G. Findlay in a few cases) wrote summaries of the molecular and biological functions of 33 Drosophila genes, including the Sex Peptide and other reproductive genes. These are posted on the gene-pages at FlyBase.

Mattei, A.L. and Wolfner, M.F. (2016) *Drosophila* mating, inside and out. in VISIONS, the art of science, Mol. Repro. Devt., 83: 653.

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Our (Mattei et al.'s) Mating Drosophila CT scan image chosen as one of the "Illuminating Images" for Cornell's Sesquicentennial Celebration, April 2015 and as image for the CornellResearch website (July 2015)

Heifetz, Y. and Wolfner, M.F. (2015) Neuronal nitric oxide synthase in the lower reproductive tract of female Drosophila. in VISIONS, the art of science, Mol. Repro. Devt., 82, 265.

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Wolfner, M.F. and Banerjee, U. (2013) The 2013 George M. Beadle Awardee: R. Scott Hawley. Genetics, 194, 9-10.

Brill, J.A.* and Wolfner, M.F.* (2012) Overview: Special issue on *Drosophila* spermatogenesis. Spermatogenesis, 2,127-128. [this article introduced an issue of review articles on *Drosophila* spermatogenesis that was edited by Dr. Brill and me].

Sartain C.V. and Wolfner, M.F. (2012) The Spermatid individualization complex of *Drosophila melanogaster*. in VISIONS, the art of science, Mol. Repro. Devt., 79, 367.

Hawley, R.S. and Wolfner, M.F. (2012) Therese Markow and the George M. Beadle Award. Genetics, 191, 299-300.

Wolfner, M.F. and Schedl, T. (2012) The 2012 Thomas Hunt Morgan Award: Kathryn V. Anderson. Genetics, 191, 293-5.

Wolfner, M.F. (2011) Meet the Editors. Mol. Repro. Devt. 78(7): Fmi

Co-author (with Kemphues & MacIntyre) of memorial statement about Dr. S.L. Leonard, Cornell U., 2008

A video of a lecture I gave in my Fertilization & Early Embryo course was featured online in Cornell's (CornellCast) "In the Classroom" Series http://www.cornell.edu/video/details.cfm?vidID=206

Written (and panel) contributor to "The current status of Evolutionary Biology" In "Darwin @ Cornell 2006", Paleontological Research Institute, Ithaca NY (2006)

Wolfner, M.F., Rothenberg, M., Rothenberg, J. and Rothenberg, J. (2003) Raising Rosa: bananas in a toad's tank? NOAH (Northern Ohio Assn. of Herpetologists) Newsletter 30, 10. [This is a brief description of tritrophic interaction between Drosophila, toads and bananas.]

US Patents #6380159 (issued 4/30/02) and 6,955,897, issued 10/18/05; Genes for Male Accessory Gland Proteins in *Drosophila melanogaster*, with O. Lung, U. Tram, K. Kraus.

Wolfner, M.F. How to organize a flymeeting. A guide for flymeeting organizers, submitted to the FlyBoard in 2001/2002. The Board passes it along to each year's flymeeting organizers.

Bloch Qazi, M.C., Tram, U., Lung, O. and Wolfner, M.F. (2001) Fluorescing flies: examining protein targeting and insect reproductive behavior using Green Fluorescent Protein. Drosophila Inform. Service. This article describes a lab-exercise for students in introductory biology courses.

Wolfner, M.F. and Wilson, K.L. (2001) The nuclear envelope: emerging roles in development and disease. Cell Mol Life Sci. 58, 1737-40. [this article introduces an issue of review articles on the nuclear envelope that was edited by Dr. Wilson and me].

Goldberg, M.L. and Wolfner, M.F. (2001) Another Thing They Never Taught You in Grad School: How to Organize a Scientific Meeting. Invited article, Science's Next Wave, http://nextwave.sciencemag.org/cgi/content/full/2001/05/10/2.

Wolfner, M.F. (1994) The mysteries of development. (Book review of Wilkins' Genetic Analysis of Animal Development). J. Hered. 86, 323-4.

OTHER IMPACT, KNOWLEDGE MOBILIZATION, RESEARCH RECOGNITION (partial list)

Specific papers:
Chapman et al. 2003: cover article in PNAS
Ravi Ram et al. 2005: in top-10 cited papers in IBMB in 2006 (and in top-10 for its year-quarter)
Heifetz et al. 2005 was selected as press-release by PNAS
Ravi Ram et al. 2006 was selected by Faculty of 1000
Mueller et al. 2007 was selected by Faculty of 1000
Mueller et al. 2007 was selected as Issue Highlight by Genetics
Cui et al 2008 was selected as Issue Highlight by Genetics
Wong,Albright et al. 2008 was selected as Issue Highlight by Genetics
McGraw et al. 2009 was selected for press release by Genetics/FASEB 2009
Chow et al 2010 was selected as Issue Highlight by Genetics
Rubinstein and Wolfner 2013 led to an invitation to write an "ExtraView" about this paper, for FLY
Cui et al. 2013 was selected by Faculty of 1000
Findlay et al. 2014 was selected by Faculty of 1000
McGraw et al. 2014 was chosen as Issue Highlight by Bioessays
Graduate students from our lab have received poster awards (D. Neubaum ~1999 Dev. Bio,), from conferences, and awards for "best paper of the year" from their graduate programs (O. Lung 2001, B. LaFlamme 2012, C. Sartain 2012, 2016, Z. Zhang 2019)
Avila et al. 2015 (Genetics) led to an invitation to write an "ExtraView" about this paper, for FLY
my Symposium talk on Egg Activation at the 2015 SSR meeting was chosen for a Continuing Medical Education (CME) question
Mattei et al. 2015 (PNAS) was selected for a Commentary by Proc. Natl. Acad. Sci. USA
Avila et al. 2015: cover article in FLY.
Sitnik et al. 2015 was selected for publicity on Facebook by the Genetics Society
https://www.facebook.com/GeneticsGSA/posts/971038866284645
and an image associated with this article was selected for the "carousel" of 4 images on the Genetics journal website; readers clicking on the image were directed to Sitnik et al.
Delbare et al. 2017 was selected as an "Editor's Choice" by J. Heredity.
Billeter, J-C. and Wolfner, M.F. 2018: cover article in J. Chemical Ecology.
Chen et al 2019 was selected as Issue Highlight by Genetics.
Hu and Wolfner 2019 (PNAS) was selected for a Commentary by PNAS
The work in Hu & Wolfner, 2019 is presented in a video narrated by the first-author, at:
https://jrnlclub.org/
McCullough, et al. 2022: cover article in PNAS

Our work has been written up in the popular or science press:
(German newspaper, 1995) (about seminal proteins)
New Scientist (11/95) about Herndon & Wolfner, 1995
The New York Times Science times (1/24/1995; Angier) about Chapman et al 1995
New Scientist (11/22/97) about Chapman et al 1995, and Wolfner et al. 1997
Human Frontier News (1996) about Chapman et al. 1995
The Economist (12/20/97-1/2/98; Dr. Tatiana column; Judson) (about seminal proteins)
The New York Times Science times (2/27/01; Angier) about Swanson et al. 2001 on ZP protein evolution)
HHMI news Jan 2001 about innovations in teaching for our EvoDevo course.
Trends in Genetics 118 (April 2002) about Lung et al 2002)

The Scientist (4/1/02) about Wolfner, 2002

Sirot et al. 2008 was picked up by:

http://www.sciencedaily.com/releases/2008/04/080410124650.htm
http://www.biologynews.net/archives/2008/04/11/mosquito_mating_mechanism_could_lead_to_new_attack_on_dengue_and_yellow_fever.html
and mentioned in Discover magazine 2008

Toxic fly seminal proteins (the finding reported in Chapman et al. 1995) were mentioned in an episode of the television series *House* (May 11, 2009)

McGraw et al. 2009 was highlighted in: ABC news ("DyeHard" http://abcnews.go.com/Technology/DyeHard/story?id=7337194&page=1) and (LiveScience http://www.livescience.com/culture/090408-genetic-love.html) and KDKA Radio, and Medill News services.

Wigby, Sirot et al. 2009 highlighted in The Telegraph (a British newspaper):

http://www.telegraph.co.uk/scienceandtechnology/science/sciencenews/5132587/Flies-engage-in-chemical-warfare-to-control-mates-sex-drive.html
Our work on the molecular "Battles and Ballets" between the sexes (via seminal proteins) was picked up by:
http://www.myscience.us/wire/molecular_ballets_and_microscopic_battle_of_the_sexes_boost_mating_success-2011-cornell
http://www.newswise.com/articles/molecular-ballets-and-microscopic-battle-of-the-sexes-boost-mating-success?ret=/articles/channels&channel=132&category=feature&page=1&search[status]=3&search[sort]=date+desc&search[channel_id]=132
http://www.innovations-report.com/html/reports/life_sciences/molecular_ballets_microscopic_battle_sexes_boost_170518.html
http://www.dnaindia.com/scitech/report_study-could-lead-to-new-ways-of-curtailing-reproduction-in-harmful-insects_1513270
http://www.medindia.net/news/Study-Sheds-Light-on-New-Ways-of-Reducing-Reproduction-in-Harmful-Insects-81569-1.htm

Sirot et al. 2011 was picked up by:

http://www.the-scientist.com/news/display/58052/
http://www.medicalnewstoday.com/articles/218654.php

Mattei et al. 2015: its video was chosen as a Featured Video, by PNAS

http://www.pnas.org/site/media/videolibrary.xhtml
http://www.pnas.org/site/misc/15-05797.mp4
The work was also picked up by:
http://www.popsci.com/frozen-fruit-fly-sex-freaky-it-looks
and Guoker in China, and a Finnish television station.

Sitnik, Gligorov et al. (2015) selected for highlighting in its issue's image-Carousel by Genetics.

Zhang et al. (2018) selected for highlighting in its issue's image-Carousel by G3.

Sepil et al. (2020) was highlighted by Oxford University and Liverpool University:http://www.ox.ac.uk/news/2020-07-06-male-fruit-flies-decline-fertility-age-not-only-driven-changes-sperm and https://news.liverpool.ac.uk/2020/07/07/fertility-decline-in-ageing-fruit-flies-is-about-more-than-just-sperm/

Cornell Chronicle has highlighted several of our studies – on seminal proteins in flies and in mosquitoes, on calcium waves in egg activation, and on cellular stress protein pathways, on

seminal proteins and gut growth in insects, on a new CRISPR-based method for generating genetic mosaics, on seminal and female proteins binding to sperm.

I've been quoted in updates on how the pandemic has affected researchers, in the Cornell Chronicle and in the Genetics Society's blog, both in 2020.

Interviewed about our work on public radio station KTEP's "Science Studio" (2014): http://ktep.org/programs/science-studio

Interviewed for podcast on Marie McNeely's "People Behind the Science" series (2015), http://www.peoplebehindthescience.com/dr-mariana-wolfner/

McCullough et al. (2020) was picked up by: https://phys.org/news/2022-03-biologists-molecular-hand-off-key-role.html and the Cornell Sun (https://cornellsun.com/2022/05/04/female-proteins-found-essential-for-sperm-survival-in-fruit-flies/) and also spoofed in another Cornell Sun article 😊 (https://cornellsun.com/2022/05/04/research-in-fruit-fly-mating-highlights-a-joint-effort-in-understanding-asexual-human-procreation/)

Our work on seminal proteins and evolutionary arms races was described in part of an article in Salon: https://www.salon.com/2022/06/19/fathers-day-sperm-evolution/

OVERVIEW OF RESEARCH FOCUS:

My lab focuses on two major questions in reproductive developmental biology: (a) the roles of seminal proteins in fertility and (b) the events that transition a mature oocyte to the start of embryogenesis. These fundamental processes are conserved across all animals, including humans. Our discoveries of the nature, functions, and evolution of critical reproductive proteins and processes use the *Drosophila* model for its speed and technical simplicity, and *Aedes* mosquitoes because of the applications to control of these disease vectors.

(a) Seminal proteins induce changes in mated females that lead to efficient production of high-quality progeny. They are now recognized as important regulators of fertility in all animals, including humans. Seminal protein types are broadly conserved. Our work established *Drosophila* as a great model for dissecting the functions of seminal proteins. We used, or developed, and combined new methods in an approach that integrates mutational, RNAi, genome editing, 'omic, ectopic expression, biochemical, and physiological analyses including micro-CT scanning. We identified the spectrum of seminal proteins and functions for specific ones, including molecular and neural mechanisms by which they impact female physiology and behaviors. For example, we showed that a specific seminal protein modulates synapses by neurons that innervate the oviduct (thereby stimulating ovulation), another alters the transcriptome and growth of the gut, others alter uterine muscle contraction, and still others affect sperm storage or release of sperm from storage. We identified, or are working to identify, the molecular pathways through which these seminal proteins act. We also characterized, with our collaborators the Karch lab, the cellular organization and specialization of the tissue that makes seminal proteins, and is the Drosophila analog of human prostate and/or seminal vesicles. Finally, the rapid evolutionary dynamics of seminal proteins that we and others identified enabled us to develop and/or exploit 'omic methods such as evolutionary rate covariation and association methods to identify new seminal proteins or members of their pathways. These studies also provided molecular data that test theories of sexual selection and sexually-antagonistic co-evolution. In a collaborative project with A. Clark, we study how *Drosophila* male and female genotypes interact in sperm competition (a seminal protein-promoted process), with a focus on the female genes and neurons that mediate sperm precedence. We also collaborate with L. Harrington to identify the critical seminal proteins in *Aedes* mosquitoes, with the goal of developing strategies to control the reproduction of these vectors of human diseases such as dengue fever, Zika, and Chikungunya.

Our work on seminal proteins has uncovered the critical importance of this previously-overlooked set of reproductive regulators. We have shown that seminal proteins are essential for fertility, and that they play important roles in chemical communication between animals, in reproductive physiology and (in insects) behavior, and evolutionary phenomena such as sexual selection and "arms races". These findings also suggest important applications for seminal proteins in control of insect vectors of disease, and potentially for optimizing outcomes of assisted reproductive technologies.

(b) Egg activation, the transition from egg to embryo, takes a highly differentiated mature oocyte to the ultimate stem cell: the zygote. This process involves restarting and completing meiosis, initiating translation of some stored maternal mRNAs and degrading others, and changes in egg envelopes to block polyspermy. Despite the importance and universality of egg activation, its mechanisms and molecules are not understood, largely for technical reasons (small oocytes, rapid transition, etc.). My lab developed *Drosophila* as a model to study the triggers and the molecules that mediate this critical transition, allowing us to exploit its large egg size and excellent genetics. We showed that egg activation in *Drosophila* requires a rise in the oocyte's intracellular calcium levels, analogous what occurs in vertebrates including humans, and in marine invertebrates. However, unlike the situation in these organisms, where the fertilizing sperm activates the egg, we found that the calcium rise in *Drosophila* is triggered by ovulation. This process places the oocyte under mechanical pressure, which opens mechanically-gated TRPM ion channels in the oocyte's plasma membrane, letting in calcium ions from the environment. The orthologs of these channels have been shown to mediate calcium influx during mouse egg activation. We also found that zinc-level changes in *Drosophila* oocytes parallel those seen in human and mouse oocytes as they activate, further validating *Drosophila* as a model for discovering mechanisms during egg activation. Looking downstream of the calcium rise, we discovered that the oocyte proteome is phospho-modulated during egg activation, a phenomenon now also seen in frogs and sea urchin. This phosphomodulation can activate or inactivate the regulated proteins, which include cell-cycle regulators and translation factors that act to transition the oocyte to embryo. Our genetic experiments showed that phosphomodulation of these proteins requires the action of the calcium-regulated phosphatase calcineurin, thus providing the mechanism for how egg activation events are triggered by the calcium rise. In collaboration with John Schimenti, we are examining whether similar effects happen in activating mouse oocytes. We identified additional conserved molecules essential for egg activation, including modulators of the maternally-loaded transcriptome, including a GLD2 cytoplasmic poly-A polymerase and a predicted exonuclease. As with our studies of seminal proteins, the *Drosophila* system has given us the opportunity to dissect egg activation regulators and pathways mechanistically; these have direct parallels to such pathways in all animals. This is of relevance to understanding mechanisms of early infertilities in humans, and optimizing ART conditions.

CURRENT FUNDING

ACTIVE

1. R37-HD038921-20 (Wolfner) 09/18/2020 - 06/30/2025
NIH/NICHD $250,000 annual direct costs

Actions of seminal proteins in mated Drosophila females

To investigate how seminal proteins interact with molecules in the female to alter her physiology to the mated state, we focus on (1) identifying the receptor for the ovulation-inducer ovulin, its

site of action, and its evolution and (2) the function of sperm-bound seminal proteins, and how evolution has impacted those roles.

2. R03-HD101732-01 (Wolfner) 09/26/2020-08/31/2022
NIH/NICHD $50,000
Determining the Role of the Conserved TRPM Ion Channel in Egg Activation, Using the Drosophila Model
Calcium entry into Drosophila and mammalian oocytes through conserved TRPM channels initiates the transition to embryogenesis. Exploiting the Drosophila model's powerful tools, we will determine whether (1) local calcium entry is due to localized TRPM channels or to local activation of ubiquitously localized TRPM channels and (2) whether TRPM is required for the calcium-dependent phosphomodifications to the oocyte proteome.

3. R01-HD059060-11 (Clark, Wolfner) 05/01/2022 – 04/30/2027
NIH/NICHD $210,000 annual direct costs [Funds and personnel shared equally between Clark and Wolfner labs.]
Regulation of gamete use and neural pathways in reproduction
Using *Drosophila melanogaster* as a model for male x female interactions that impact fertility, this project is to analyze: 1) heterospecific vs. conspecific sperm precedence, 2) the role of the octopamine pathway in sperm precedence, and 3) variation in sperm-competition roles of seminal fluid exosomes that carry RNA and proteins and fuse with sperm and with cells in the female reproductive tract.

4. R01-AI095491-09 (Harrington, Wolfner) 02/01/2017 – 01/31/2022
NIH/NIAID $287,942 annual direct costs [all funds and personnel are based entirely in the Harrington lab in Cornell's Entomology Dept., though both PIs participate equally in the experimental design, interpretation, supervision, mentoring, etc.]
New targets for reproductive control of mosquito vectors
This grant is to identify and study targets for reproductive control of the major mosquito vector of Dengue, Zika and Chikungunya (*Aedes aegypti*). The first aim is to identify the seminal proteins that regulate egg production and blood feeding. The second aim is to identify gene expression changes in the female, in response to seminal proteins. Finally, we aim to characterize natural variation in refractory behavior and the genes associated with this in wild populations.

5. R21 HD105230-01 (Wolfner, Schimenti) 04/01/2021 - 03/31/2023
NIH/NICHD $137,500 annual direct costs [Funds and personnel shared equally between Wolfner and Schimenti labs.]
Genetics and proteomics of mouse egg activation
The molecular mechanism by which the calcium rise upon fertilization transitions the oocyte to embryogenesis is unknown in vertebrates. We will test whether mouse egg activation follows the Drosophila paradigm, that calcium induces changes to the phosphostate of the proteome, including to cell cycle- and translation-regulators, and whether CamKII mediates these changes.

6. Intercampus Grant, Cornell University Stuhlmann (contact) and Wolfner (PIs)
01/01/2020-08/10/2020 but deferred to 2022.
$25,000 total direct costs
Impacts of mosquitoes and vector-borne diseases on reproductive health.

This small internal grant was to fund a 1.5-day conference in June 2020, to spur inter-campus collaboration between Cornell/Ithaca and Cornell-Weill/Medical School researchers who study vector-borne diseases. The meeting was postponed due to Covid-19, and funds were deferred to pay for a conference in 2021.

7. BARD and Katzir grants for a total of $44,000 were awarded to Dr. Yael Heifetz (Hebrew University of Jerusalem) and me (joint-PIs), to fund an international meeting on Insect Reproductive Molecules, scheduled for September 2022 in Israel, Covid-willing.

RECENTLY COMPLETED, past 3 years:

Subcontract:
NSF/DEB Evol.Genetics 1655840 (Dorus) 08/15/2017 – 07/31/2020
Subcontract through Syracuse University $92,040 to Wolfner/Cornell for total project period (includes funds to pay for proteomics in Cornell's proteomics facility)
Sperm-female interactions and the molecular life history of sperm.
This project identifies molecular changes in the sperm proteome and in sperm-associated proteins across three Drosophila species. It includes heterospecific crosses to investigate differences in these changes and in their effects. Our role is as collaborator for identifying the molecular changes and the sperm-associated SFPs. male and female proteins that associate with them, and their reproductive function.

Seed Grant (Clark, Wolfner) 01/01/2021-12/31/2021
Cornell Center for Vertebrate Genomics $20,000
Characterizing the transcriptional regulation of single-copy protein-coding genes on the *Drosophila* Y chromosome.
This internal grant funds studies of genes on the Drosophila Y-chromosome, as a model for genes that are embedded in heterochromatin. We will determine their patterns of expression, whether that expression is heterochromatin-dependent, and what factors regulate their expression.

Other:
We were members of the NSF-funded Sociogenomics Research Collaboration Network (http://www.sociogenomicsrcn.com/). This network of 25 research labs worked together to understand the mechanisms that result in complex social behaviors. The RCN was supported by an NSF grant (2013-2019, including its NCE) whose P.I. was W. Wilczynski, Georgia State University. The grant funds were entirely for annual joint-meetings of the 25 labs, and short-term student visits among labs to exchange techniques and expertise. No funding to the lab.

GUP-60317 Beamtime allocation (2018-2019), Argonne National Laboratories
Beamtime at Argonne National Laboratories with which we discovered the zinc-spark in Drosophila egg activation, analogous to that seen in mice and humans. Co-Investigators are Drs. Duncan, Nowakowski, O'Halloran, and Woodruff at Northwestern University. No funding to the lab.

INVITED SEMINARS PRESENTED AT THE FOLLOWING (past 10 years; lifetime total talks to date ~350:

Binational Agricultural Research and Development-sponsored conference on "Insect Reproductive molecules: from model systems to agricultural applications", Rehovot Israel, 2012
Symposium speaker, Hebrew U. Jerusalem, Faculty of Agriculture, Rehovot Israel, 2012
"inSPIRED Teaching: Top 5 Successes I've Had in (Re)designing My Courses", Course-design institute of Cornell's Center for Teaching Excellence, 2012
Huck Institutes' Distinguished Lecture in the Life Sciences, Penn State University 2012
Biology Dept., Washington State University, 2012
Gordon Conference on Genes and Behavior, 2012
Conference on Reproductive and Developmental Genomics, *Molecular Reproduction and Development*/Cornell Vertebrate and Reproductive Genomics joint meeting
Dept. of Ecology and Evolutionary Biology, University of Toronto, 2012
Keynote speaker, *Drosophila* Species Workshop, University of California San Diego, 2012
Gordon Conference on Fertilization and Activation of Development, 2013
Biology Dept., Ithaca College, 2012
Patton Symposium on "Genomics: Transforming the Disciplines of Chemical Ecology and Insect Behavior" Cornell University, 2013
Triangle Consortium for Reproductive Biology's Conference on "Model Systems in Reproductive Biology", Duke University, 2013
Plenary speaker, Session for Undergraduate Researchers, 54th Annual *Drosophila* meeting, 2013
EMBO Workshop on "Oocyte maturation and fertilization meeting: Lessons from canonical and emerging models", Banyuls France 2013
Symposium on "Sex, Proteomics & Evolution", Society for Molecular Biology and Evolution annual meeting, 2013
Discussion Leader, Gordon Research Seminars for the GRC on Fertilization and Activation of Development, 2013
Plenary speaker, 12th conference on Biology of Sperm, United Kingdom, 2013
Invited participant, Provost's Inaugural Seminar/Workshop on teaching agenda, 2013
Biology Dept. Wells College, 2013
2nd Cornell-Stockholm University meeting on Insect Science 2013
"Everything you always wanted to know about sex" workshop, 55th Annual *Drosophila* meeting, 2014
Evo Day on "Sexual Selection", Cornell University, 2014
American Association for the Advancement of Science, Pacific-region annual meeting, 2014
International meeting on Insect Reproductive Molecules, 2014
"Principals in Population Genetics", a scientific symposium in honor of A.G. Clark, Cornell University, Ithaca New York 2014
Symposium on "Ejaculate mediated behaviors and evolution", International Society for Behavioral Ecology, New York City, 2014
Dept. of Cell/Developmental Biology, University of Connecticut Medical School, Storrs, 2014
Dept. of Biology, Williams College, 2014
Dept. of Biology, University of Texas in El Paso, 2014
Dept. of Molecular Biology and Genetics, Cornell, faculty seminar 2014
Co-chair, platform session on Evolution and Quantitative Genetics, 55th *Drosophila* Conference, Chicago Illinois, 2015
Speaker and/or panelist on "Peer Review", GSA Trainee Bootcamp, 2015 *Drosophila* Conference, Chicago Illinois
Dept. of Molecular and Cell Biology, Brown University, 2015

Cornell Center for Vertebrate Genomics, 2015
Panelist, undergraduate symposium on Responsible Conduct in Research, Cornell Summer Institute for Life Sciences, 2015
Symposium on Egg Activation, Society for the Study of Reproduction annual meeting, Puerto Rico, 2015
Chair, Evolution & Sperm Competition session, Gordon Conference on Fertilization & Activation of Development, 2015
13th conference on Biology of Spermatozoa, United Kingdom, 2015
Field of Molecular and Integrative Physiology, Cornell Veterinary College, 2015
Depts. of Ecology and Evolutionary Biology and Cell and Systems Biology, University of Toronto, Canada, 2015
Al Downe Lecture, Queen's University, Kingston Ontario Canada, 2016
Cornell Center for Reproductive Genomics Symposium, Ithaca New York 2016
KemphuesFest, Cornell University, Ithaca New York, 2016
Institut für Populationsgenetik, Vienna, 2016
Symposium on "Mechanisms of Transcription: pausing to honor John Lis", Cornell University Ithaca New York, 2016
Biology Department, College of the Holy Cross, Worcester Massachusetts 2016
Frontiers in Genomics 2016, National University of México (UNAM)
University of Groeningen, Netherlands, 2016
Jackson Labs, Bar Harbor Maine, 2016
Biology Department, North Carolina State University, Raleigh North Carolina 2017
Center for Behavioral Neuroscience Symposium on Social Neuroscience (Male-Female Interactions from Molecules to Behavior), University of Georgia, Atlanta Georgia 2017
Frontiers in Reproduction Course, Woods Hole, Massachusetts: instructor (class lecture, research seminar, and lab), reproductive biology of Drosophila (and selected other insects), 2017
Keynote speaker, Science Research Symposium, Hunter College High School, New York City, New York, 2017
Department of Evolutionary Biology, Uppsala University, Sweden, 2017
REU Program, Department of Molecular Biology and Genetics, Cornell University, Ithaca NY, 2017
Keynote speaker, EMBO Conference on "Molecular and population biology of mosquitoes and other disease vectors", Kolymbari Crete, Greece 2017
Symposium on Animal Development and its Evolutionary Variation (in honor of Michael Akam), Cambridge University, Cambridge, United Kingdom, 2017
Department of Human Genetics, University of Michigan Medical School, Ann Arbor Michigan, 2017
Translational Lectures in Reproductive Science, Feinberg School of Medicine, Northwestern University, Chicago Illinois 2018
Department of Biology, University of Pittsburgh, Pittsburgh Pennsylvania, 2018
NICHD National Centers for Translational Research in Reproduction and Infertility, Symposium: male research focus group. Magee Research Institute, Pittsburgh Pennsylvania 2018
Frontiers in Reproduction Course, Woods Hole, Massachusetts: instructor (class lecture, research seminar, and lab), reproductive biology of Drosophila (and selected other insects), 2018
Invited Workshop Participant, cis-Regulatory Evolution in Development and Behavior (REDB), Carl Woese Inst. For Genome Biology, University of Illinois @ Champaigh-Urbana, 2018
Speaker and Session Chair, Insect Reproductive Molecules meeting, Groeningen Netherlands,

2018
Plenary Speaker, German Zoological Society, Greifswald Germany 2018
"Appreciation" talk for Harvey Lecture by Professor John Lis, Harvey Society, New York City, New York, 2018
Department of Molecular, Cellular, and Developmental Biology, Yale University, New Haven, Connecticut, 2018.
Keynote speaker, Academic Days, Mexican National Laboratory for the Genomics of Biodiversity, Guanajuato Mexico, 2018
Cornell Center for Vertebrate Genomics, Cornell University, Ithaca NY 2018
Faculty speaker, Cornell University Department of Molecular Biology and Genetics, Ithaca NY 2018
Keynote speaker, Annual Drosophila Research Conference, Dallas TX 2019
Speaker/panelist on "Peer Review", GSA Trainee Bootcamp, 2019 *Drosophila* Conference, Dallas Texas
Phi Beta Kappa Distinguished Faculty Lecture, Cornell University, Ithaca NY, 2019
Invited Speaker, 2019 EMBO Conference on the Maternal-Zygotic Transition, Prague, Czechia, 2019
Frontiers in Reproduction Course, Woods Hole, Massachusetts: instructor (class lecture, research seminar, and lab), reproductive biology of Drosophila (and selected other insects), 2019
From Genes to Development, a symposium in honor of François Karch, University of Geneva, Geneva Switzerland, 2019
Invited Speaker, 2019 Gordon Research Conference on Fertilization and the Activation of Development, Holderness NH 2019
Plenary Speaker, 2019 European Drosophila Research Conference, Lausanne Switzerland 2019
Speaker, Biology of Sperm (BoS), Stockholm, Sweden 2019
Speaker, "KarrFest", a symposium in honor of Tim Karr, University of California San Francisco, San Francisco California
Department of Cell and Developmental Biology, Weill-Cornell Medical Center, New York City, New York 2019
Department of Cell Biology, University of Connecticut, Storrs Connecticut 2019
"BIG" Seminar (Biology and Integrative Genetics, cross-departmental seminar), University of Lausanne, Lausanne Switzerland, 2019
Distinguished Lecture, Clemson Tigers-ADVANCE and Departments of Genetics and Biochemistry, Clemson University, Clemson South Carolina 2019
Center for Reproductive Health Sciences, Washington University School of Medicine, St. Louis Missouri 2019
Invited speaker, Symposium on "Reproduction: the female perspective from an integrative and comparative framework", 2020 meeting of the Society for Integrative and Comparative Biology, Austin Texas, 2020
Distinguished Women in Science Lecture, Monash University, Melbourne Australia, 2020
Invited Speaker, Frontiers in Biology Series, Stanford University, Stanford California, (presented virtually) 2020
Invited Speaker, Eco-Evo online seminar series, organized by U. of East Anglia, and U. of British Columbia. (presented virtually) 2020
Invited speaker, Germ Cells meeting (virtual), Cold Spring Harbor Laboratory, New York, 2020
Invited speaker, Keck Science Department, the Claremont Colleges (virtual), Nov. 2020; [replaced invited talk in their Biological Sciences Distinguished Speaker Series in Spring 2020; series was cancelled due to Covid-19.]

Christianna Smith Lecture (virtual), Mount Holyoke College, MA Nov. 2020
Invited course-lecturer (virtual), Masters Course in Conflict & Cooperation, Department of Ecology, Vrije Universiteit , Amsterdam, Netherlands, Nov. 2020
Molecular and Cell Biology Dept. (virtual), SUNY-Buffalo, NY Dec. 2020
Plenary Lecture (virtual), Pop Group54, a Genetics Society UK meeting, Liverpool UK Jan. 2021
Kathleen M. Osborn Memorial Lecture (virtual), Department of Molecular and Integrative Biology, University of Kansas Medical Center, Apr. 2021
Keynote speaker (virtual), University of Utah Genetics Training Grant Retreat, Salt Lake City May Utah, 2021
co-presenter, Workshop (virtual) on mentoring diverse REU students in research, Society for Developmental Biology, May 2021
M.C. Chang Memorial Lecture, University of Massachusetts Medical School, Worcester Massachusetts June 2021 (virtual)
Invited speaker, REU program, Department of Molecular Biology and Genetics, Cornell University, Ithaca NY July 2021
Invited speaker, Applied Biosciences, Macquarie University, New South Wales, Australia, July 2021 (virtual)
Invited speaker, colloquium zooming Molecular and Cellular Biology, SBA School of Science & Engineering at Lahore University of Management Sciences (LUMS), Lahore, Pakistan (virtual)
Invited speaker, Ecology and Evolution seminar series, UC Davis October 2021 (virtual)
Invited speaker, Cornell Vertebrate Genomics Center (VERGE), Ithaca NY, November 2021
Distinguished Lecture in Biochemistry, Villanova University, Philadelphia PA, April 2022
Benchmark Lecture, 2022 North American Testis Workshop, La Jolla California May 2022
Frontiers in Reproduction Course, Woods Hole, Massachusetts: instructor (class lecture, research seminar, and lab), reproductive biology of Drosophila (and selected other insects), June 2022 (2020 and 2021 courses were cancelled due to Covid-19)
Invited Session Chair, “Pioneers in Genomics”, Cornell University, Ithaca New York, June 2022
Department of Biological Sciences, National University of Singapore, June 2022 (virtual)
EMBO meeting on the Developmental and Molecular Biology of Drosophila, Crete, Greece June 2022

upcoming:
Insect Reproductive Molecules meeting, Jerusalem Israel, October 2022
Cornell intercampus meeting on vector-borne diseases, New York City, NY, November 2022
Molecular Biology Program, University of Colorado School of Medicine, November 2022 (graduate student-invited speaker)
Center for Cell Plasticity and Organ Design (CPOD), University of Michigan Medical School, Ann Arbor Michigan, November 2022
Keynote speaker, Triangle Consortium for Reproductive Biology, North Carolina 2023
Keynote speaker, Gordon Research Seminar on Fertilization and the Activation of Development, Holderness School, New Hampshire, 2023 (postponed from 2021 conference, which was cancelled due to Covid-19)
Discussion Leader, Gordon Research Conference on Fertilization and the Activation of Development, Holderness School, New Hampshire, 2023

TEACHING:
CURRENT:
Sole-instructor:

BioMG4610/6610: Development and Evolution (~25-30 students, 3 credits).
Alternate Spring Semesters (most recent: Spring 2021)

BioMG6870/4940: Tricks of the Trade: how to use genetics to dissect cell, molecular, and developmental pathways (~25-40 students, 3 credits)
Alternate Spring Semesters (most recent: Spring 2022); in 2018 and 2020 I co-taught this course with Dr. M.L. Goldberg
This course developed from BioMG6870 (Developmental Genetics; ~15-20 students; 2 credits) which I sole-taught in alternate years from 2010 through 2016).

BioMG1320: Orientation Lectures in Molecular Biology and Genetics (~100 students, 0 credits)
Lead Instructor/Coordinator, every Spring, starting 2023

BioG2990/4990 Independent undergraduate research (3-5 students/semester, 3-5 credits each)
Every semester

Member of instructional team of the following team-taught courses:

Annual (1-2 lectures and discussion sessions, plus associated testing/grading):

BioMG7510: Ethical issues and professional responsibilities; (~50-75 students)

BioMG8370: Frontiers and Foundations in Biochemistry, Cell and Molecular Biology (12-20 students) [this course replaced BioMG8380 (Methods and Logic in Biochemistry, Cell and Molecular Biology)

BioMG7810: Problems in Genetics and Development (5-12 students) (also was coordinator ~1992-1996, 1998)

BioMG7800/7940: Research-proposal writing: mentor to 1-2 students/year (and classroom instructor in 2016; lead instructor in 2017; ~30 students/year).

Occasional (every several years):

BioMG7800: Current Topics in Genetics and Development (~14 students, 1 credit). Most recently 2021 (with Drs. Liu and Smolka).

BioMG1320: Orientation Lectures in Molecular Biology and Genetics (~40 students; 1 class session, before 2023, when I took over annual running of the course)

Biol 12100 (Ithaca College) Principles of Biology, Cell and Molecular Biology (~10-15 students; 1 class session)

PREVIOUS:

BioGD483 (Molecular Aspects of Development, later called Advanced Developmental Biology; ~25-30 students, 3 credits, sole instructor).
Alternate Springs 1985-2003

BioGD682: Fertilization and the Early Embryo (~15-20 students, sole instructor).
Alternate Springs 1987-2008:

One lab session annually in introductory Biology (Bio101-102; usually a student or postdoc in my lab was co-presenter/co-instructor)

BioES464: MacroEvolution (1-2 lectures year (~25 students)
Alternate Spring Semesters until 2018

Full courses taught, other than the above; one time each:

HUJI 71154/71156/71994/73511/73530 “Workshop on Reproductive Proteins” taught at Hebrew University of Jerusalem’s Faculty of Agriculture in Rehovot; Dec. 2010 (2 credits; 16 registered students and ~16 auditors)
BioBM7350, Fall 2009: “The Molecules of Fertilization”.
BioGD780, Fall 2008: “Sperm Use Patterns”; jointly taught with Drs. L. Sirot and A. Clark (MBG)
BioGD780/480, Fall 2005: “Genomics of Nonmodel Systems”; joint with Drs. A. Clark (MBG) and A. McCune & D. Winkler (Ecol. Evol. Bio.)
BioBM735/435, Fall 2000: “Molecular Neurobiology”; joint with Dr. R. Harris-Warrick (Neurobio. & Behavior)
BioGD780/480, Fall 1999: “Development and Evolution”; joint with Dr. A. McCune (Ecol. Evol. Bio.)
BioG400, Spring 1994 Research Seminar for Advanced Biology Students, joint with Dr. G. Hess.
BioGD687, Fall 1994: “Developmental Genetics”; joint with Drs. Kemphues and Mark (Genet. & Devel.)
BioGD683, Spring ~1990: “Molecular development”; joint with Dr. Kemphues (Genet. & Devel.)
BioBM735 ~1988: "Developmental Genes (Graduate Minicourse in Biochem. Molecular and Cell Bio.)
BioGD780 ~1987: "Genetic Suppression" ("Special Topics in Genetics and Development")
BioGD480 1984: “*Drosophila* developmental genetics”

Occasional lectures in other courses (examples):
Bio101 (Introductory Biology), BioBM232 (Applications of Molecular Biology), BioGD385 (Developmental Biology), BioG200 and 400 (Undergraduate seminar in Biology), BioGD612 (Genomics of Model Organisms; annual lecture), BioNB623 (Chemical Communication), Bio6120 (Model Organisms); one lecture every other year; Weill/Cornell Medicine; BioAP 7570 (Reproductive Biology); BioAP4450 (Lab and Companion Animal Reproduction); Masters Course in Conflict & Cooperation, Ecology Department, Vrije Universiteit , Amsterdam, Netherlands (2020), Biology of Pest Insects, Hebrew University of Jerusalem (2021). I led discussion groups on Guns Germs and Steel, Frankenstein, Antigone, The Trial, Things Fall Apart, The Great Gatsby, The Pickup, Do Androids Dream of Electric Sheep?, Homer and Langley, The Life Before Us, When the Emperor Was Divine, Clash of Civilizations over an Elevator in the Piazza Vittorio for annual Freshman Reading Projects (2001-2007, 2010-2014). I have given one or more lay-level scientific talks or presentations a year (approx.) to High School Biology Teachers (through Cornell Institute for Biology Teachers), Expanding Your Horizons, Cornell Bioethics Society, Cornell Women in Science and Engineering, 4H club, students in West-Campus or North-Campus dorms, to faculty through Cornell Center for Teaching Excellence, and other groups.

MENTORING:
Graduate students [current position in brackets]
At Cornell, major-advisees:
Shannon Albright PhD 2003 [was postdoc, Umea Sweden; now on family leave]
Robert Ard, MS 1990 [deceased; worked in Pharma before that]
Cindy Berman, MS 2000 [middle school teacher]
Michael Bertram, PhD 1994 [Associate Director, University of Alabama Comprehensive Cancer Center]

Dawn Shengxi Chen, PhD 2022 (co-mentored with Andy Clark) [postdoc at University of Pennsylvania]
Jun Cui, PhD 2010 [postdoc, Stanford University, then University of Montana (same lab)]
Sofie Delbare PhD 2020 [postdoc, Cornell University]
Angela DiBenedetto, PhD 1989 [Associate Professor, Biology Villanova]
Dorina Frasheri, MS 2013 [high school teacher, Switzerland]
Laura Herndon, PhD 1998 [Editor, WormAtlas]
Vanessa Horner, PhD 2007 [Associate Director, Clinical Genetics Laboratories, Wisconsin State Laboratory of Hygiene, and Assistant Professor, University of Wisconsin]
Qinan Hu PhD 2020 [Research Assistant Professor, Southern University of Science and Technology, Shengzhen China]
John Kalb, PhD 1994 [was Prof., Canisius College; deceased 2010]
Amber Krauchunas, PhD 2012 [Assistant Professor, University of Delaware]
Brooke LaFlamme, PhD 2012 [Editor, Nature Communications Biology]
Yun Wei (Carey) Lai, MS 2010 [technician, Scripps Inst.]
Haifan Lin, PhD 1990 [Professor and Director of Stem Cell Institute, Yale University Medical School]
Jun "Kelly" Liu, PhD 1996 [Professor, Molecular Biology and Genetics, Cornell]
Jacqueline Lopez, PhD 1996 [was postdoc, MIT, then lecturer at Cornell, now on family leave]
Huihua Lu, MS 1997 [became grad student in bioinformatics, UCLA; current position not known]
Oliver Lung, PhD 2000 [Research Scientist, Canadian Food Inspection Agency, Winnipeg, Canada]
Lisa McGraw, PhD 2006 [Assistant Professor, Biology, NCSU; current position not known]
Jennifer Apger-McGlaughon, PhD 2016 [Clinical Genome Scientist, Invitae]
Scott Monsma, PhD 1990 [was Senior Director of R&D, Primorigen; current position not known]
Jacob Mueller, PhD 2005 [Associate Professor, Human Genetics, University of Michigan Medical School]
Deborah Neubaum Garrity, PhD 1999 [Professor and Director, Center for Cardiovascular Research, Colorado State University]
Morgan Park, PhD 1994 [Staff member, NHGRI]
Katharine Sackton PhD 2008 [Research Scientist, Akrivis Inc.]
Caroline Sartain PhD 2013 [Research Scientist, Fulcrum Therapeutics]
Jessica Sitnik PhD 2013 [Assistant Professor, Biology, Northern Virginia Community College]
Kiwon Song, PhD 1994 [Professor, Developmental Biology, Yonsei University, Seoul Korea]
Khanh-Uyen Tram, PhD 2000 [Research Associate, Ohio State University]
Scott Turner, MS 1996 [physician]
Melissa White PhD 2021 [postdoc, Baker Inst., Cornell University College of Veterinary Medicine]
Simone White, MS 2017 [was co-mentored with Andy Clark; current position not known]
Alex Wong PhD 2008, [was co-mentored w/ Chip Aquadro]; [Associate Professor and Banting Fellow, Carleton University, Ontario Canada]
Jing Yu, PhD 2001 [Associate Professor, Cell Biology, University of Virginia Medical School]
Zijing Zhang, PhD 2018 [postdoc, University of Arkansas Medical Center]

Sarah Allen (currently in lab)
Nora Brown (currently in lab; co-mentored with Andy Clark)
Katie Gordon (currently in lab; co-mentored with Brian Lazzaro)
Jonathon Thomalla (currently in lab; co-mentored with John Schimenti)
Yoko Takashima (currently in lab; co-mentored with Andy Clark)
Shuran Wang (currently in lab)
Mengye Yang (currently in lab)

I'm minor-advisor to ~15-20 Cornell graduate students at any given time.

Visiting graduate-students
Damian Smith, University of Exeter at Cornwall, United Kingdom (2008)
Geoff Findlay, University of Washington (2009)
Misato Okajima, Tokyo Metropolitan University, Japan (2012)
Kohei Ohnuma, Tokyo Metropolitan University, Japan (2016)
Hanna Ruhrmann, University of Muenster, Germany (2014)
Oscar Vasquez, University of Toronto, Canada (Sociogenomics RCN fellow) (2015)
Ben Hopkins, Oxford University, United Kingdom (2017)

Postdoctoral mentees (dates in lab) [current position in brackets]
Erika Adams (2004-2005) [current position unknown]
Frank Avila (2007-2015) [Group Leader, Max Planck Institute, Medellín Columbia]
Margaret Bloch Qazi (2000-2003) [Associate Professor, Biology Gustavus Adolphus College, Minnesota]
Clement Chow (2008-2015) (co-mentored with Andy Clark) [Assistant Professor, Human Genetics, University of Utah Medical Schoo]
David DeVol (~1990-1991) [became high school teacher; current position unknown]
Geoffrey Findlay (2010-2013) [Associate Professor, Biology, College of Holy Cross, Massachusetts]
Yael Heifetz (1997-2001) [Dept. Head and Associate Professor, Entomology, Hebrew University of Jerusalem, Rehovot, Israel]
Kevin Kraus (1989-1991) (co-mentored with John Lis) [Associate Professor, Biology, and Vice President for Academic Affairs, and Dean, Luther College.]
Phanidar Kukutla (2015-2016; co-mentored with Laura Harrington) [postdoctoral researcher, Harvard University]
G. League (2017-2022; co-mentored with Laura Harrington)
Younghoon Lee (1986-1988) (co-mentored with John Lis) [Professor, Chemistry, Korea Advanced Institute of Science and Technology]
Shobana Mani (1998-2000) [become Research Assistant Professor, Syracuse University Medical School, but currently not employed in science]
Snigdha Misra (2018-2021) [Assistant Professor, University of Petroleum and Energy Studies, Dehradun, India]
K. Ravi Ram (2002-2007) [Senior Scientist, Indian Institute of Toxicology Research, Lucknow India]
R. Guy Reeves (2001-2003) (co-mentored w/ Chip Aquadro) [postdoc, Max-Planck Institute, Germany]
Dustin Rubinstein (2009-2012) [head of CRISPR facility, University of Wisconsin]
Akanksha Singh (2015-2018) [Assistant Professor, Mahindra University, Hyderabad, India]
Laura Sirot (2005-2010) [Associate Professor, College of Wooster, Ohio]
Jessica Sitnik (2013-2015) [Assistant Professor, Northern Virginia Community College]
Willie Swanson (1998-2001) co-mentored with Chip Aquadro) [Professor, Genome Sciences, University of Washington]
Susan Villarreal (2013-2017; co-mentored with Laura Harrington) [Assistant Professor, Dennison College]
Andrea Vogel (2017-2018) [Health and Safety Specialist at Duke University Health System]
Stuart Wigby, HFSP short-term Fellow (2008, 2010, 2018) [Senior Lecturer, University of Liverpool]
Amber Krauchunas (2012-2013) (co-mentored with Laura Harrington) [Assistant Professor, Biology, University of Delaware)

I. Alex Amaro (2016-present; co-mentored with Laura Harrington)
Yassi Hafezi (2016-present; co-mentored with Andrew Clark and, previously, with Laura Harrington)

Jolie Carlisle (2022-present)

Postdocs for whom I was informal co-mentor with Laura Harrington:
C. Alfonso [Asst. Prof., U. of Medellín, Colombia]
M. Kimura [AAAS Policy Fellow; now Program review officer, Patient Centered Outcomes Research Institute, Washington DC]
M. Hardstone Yoshimizu [Scientist, California Department of Public Health]
M. Helinski [Officer, European & Developing Countries Clinical Trials Partnership]

Undergraduates and High School Students:
I've mentored >90 undergraduates, and 6 high school students in research; names can be provided, if needed. Most of the undergrads are Cornell students but ~15% have come from other universities to do summer research, under the auspices of MARC, REU, Sociogenomics RCN, EDEN RCN, Society for Developmental Biology "Choose Development!" REU and other programs. Many of my undergraduate mentees have received Biology-Honors for their research; >25 are authors on peer-reviewed papers from our lab. Most of my undergraduate mentees have gone on to careers related to science and/or medicine.

Informal Mentoring:
I regularly and eagerly participate in Mentor/Trainee lunches at meetings including ones sponsored by GSA and SSR, present talks at Trainee-Bootcamps such as at the annual *Drosophila* meeting, act as trainee-poster judge at GSA, AAAS, and ABRCMS meetings, and enjoy talking about science, careers, etc. one-on-one with students, postdocs, junior faculty (Cornell and other universities, at meetings, by email, at poster sessions etc.). At Cornell, I mentor junior faculty through several formal programs, such as the Circle-of-Mentoring for female faculty in the College of Arts and Sciences (my "portfolio" is the junior Life Sciences faculty), the Teaching Partnerships to mentor any junior faculty in Life Sciences, and as one of Cornell's grantwriting-mentors for female junior-faculty (1/year). I work to find opportunities for students and postdocs to get scientific exposure, for example having them be session chairs at meetings I organize, or give platform talks when I'm chairing sessions etc. I strive to connect them with each other and with senior researchers in the field with whom they have scientific commonalities. I like to work with more junior colleagues to co-review manuscripts, co-chair conference sessions etc. Officially this is for me to mentor them, but I actually think that I learn more from them and their ideas and approaches than they do from me.

Cornell faculty, formal junior-faculty mentees:
Andrew Grimson (Assistant Professor, Molecular Biology and Genetics); 2009-2017, when he received tenure.
Chun Han (Assistant Professor, Molecular Biology and Genetics); 2013-2020, when he received tenure.
Fenghua Hu (Research Scientist; now Assistant Professor, Molecular Biology and Genetics); 2008-2019, when she received tenure.
Carrie Adler (Research Scientist; now Assistant Professor, Molecular Medicine); 2015-present
Ikhide Imumorin (Assistant Professor, Animal Science): Teaching- Partnership mentee; 2011
Angela Poole (Assistant Professor, Nutritional Sciences); 2019-present
Liz Johnson (Assistant Professor, Nutritional Sciences); 2018-present
Leslie Babonis (Assistant Professor, Ecology and Evolutionary Biology); 2021-present
Joyce Chery Onyenedum (Assistant Professor, Plant Sciences); 2021-present

Remote mentor to Juliano Morimoto, U. of Aberdeen Scotland, 8/20-present

Faculty visitors to my lab (sabbatic or shorter research-visits):
Margaret Bloch Qazi (Gustavus Adolphus College)
Rich Cardullo, University of California at Riverside
Adam Chippindale (with members of his lab), Toronto
Lin He, East China Normal University
Kim Hoke, Colorado State University
Eric Kubli, University of Zürich, Switzerland
Don Ready, Purdue University
Marc Servetnick, Ithaca College
Eric Siggia, Rockefeller University
Rhonda Snook, Sheffield University, United Kingdom
Stuart Wigby, Oxford University, United Kingdom

TRAINING FOR, and EFFORTS TO PROMOTE DIVERSITY (partial list, past 10 years)
As much as I love science and discovery, I am equally committed to supporting all people in their quest to understand the biology around them. To this end, I apply training I obtained in numerous training workshops, including Faculty Institute for Diversity, Intergroup Dialogue Project, My Voice My Story discussions to my lab, my classes, and my mentoring.
I am a member of my department's Diversity, Equity, and Inclusion Committee, and our Diversity Council. I chaired our department's committee on diversity in hiring for several years.
Attended ABRCMS 2017, 2018 to recruit for Cornell
I mentor REU students for several Diversity-focused programs such as MBG-REU, Society for Developmental Biology's Choose Development! program, and have conducted training for other faculty in the latter program.
I have given many talks about women-in-sciences to Cornell students and other audiences
Life Sciences Diversity Grad-Recruitment Weekend, Faculty interviewer (2021)

SELECTED ADDITIONAL SERVICE (past 10 years)
Reviewer of articles (in addition to those handled as Editor or Associate Editor for the journals on whose editorial boards I serve (above)); average ~30 (25-41)/year. In 2012-2017, I reviewed for the following journals, often several papers for a given journal:
Anim. Repro., Biol. Bull., Biol. of Reproduction, Biol. Lett., BMC/Image, Cambridge University Press (book-prospectus), Cell Calcium, Cell Tiss. Res. Comp. Bioch. and Physiol., Current Biology, Devel., Genes & Evol., eLife, Ethol., Ecol & Evo, FLY, G3, Gene, Genes, Brains & Behavior, Genetics, Genome Bio, Ins. Bioch. & Mol. Bio., Intl J. Evol Bio., Israel J. of Entomology, J. Evo. Bio., J. Exp. Bio, J. Mollusc. Studies, J.Ins.Physio., JoVE, Mol. Bio. Evoln, Mol. Repro. Devt, Nature Commun., Nature EcoEvo, Nature Sci. Reports, Naturewissenschaften, Open Bio., Oxford U. press (book prospectus), PLoS Biology (including as Academic-Editor), PLoS Genet. (as reviewer and, separately, as guest-editor), PLoS-ONE, Proc. Natl. Acad. Sci. USA, Proc. Roy. Soc, Proteomics, Science, Sci. ReportsSpermatogenesis, Trends Ecol & Evoln Bio, Trends Genet.
In addition I've previously for the following additional journals (partial list): Biochemical Genetics, Bioessays, Biol. Lett. of the Royal Society, BMC Genetics, BMC Genomics, BMC Devel. Biol., Cell. & Mol. Biology Letters, Development, Devel. Biol., Devel. Genet., Devel. Dynam., Evolution, Exper. Cell Res., Genes, Brains & Behav., Genes and Devel., genesis, Genet. Res., Genetics, Genome Biology, Heredity, Insect Mol. Biol., J. Biol. Chem., J. Cell

Biol., J. Cell Physiol., J. Cell Science, J. Exp. Biol., J. Ins. Behavior, J. Insect Physiol., J. Insect Sci., J. Neurobiol., J. Neurogenet., J. Proteomics & Bioinformatics, Mechs. Devel., Microbes and Infection, Mol. Cell. Biol., Mol. Ecol., Mol. Gen. Genet., Mol. Biol. Cell, Nature, Nature Rev. Genet., Open Biology, Phil. Trans. Roy. Soc., Science, Spermatogen. I've also reviewed books or book prospectuses in addition to those above, for presses including Cornell University, Blackwell, Norton-Wiley, Saunders/Elsevier, Academic Press.

Ad Hoc grants- and fellowships-reviewer for (partial list; in addition to NIH reviewing, listed earlier in CV); 4-10/year: US National Science Foundation, Hatch/MacIntyre-Stennis, Binational Agricultural Research and Development Fund (US/Israel), Human Frontiers Science Program, BBSRC (UK), March of Dimes, NSERC (Canada), NERC (UK), Wellcome Trust, Lalor Foundation, Jeffress Foundation, Killam Foundation, Marsden Fund, Canada Foundation for Innovation, Canada Research Chairs, and for French, Israeli, Swiss, Austrian, Dutch, Italian, and Polish National Science Foundations and US-Israel Binational Science Foundation, European Research Council; ad hoc evaluator of applicants for MacArthur Fellowship, Leverhulme Prize, Rothschild Prize, ERC.

Member, international review panel for CIFAR (Canada Institute for Advanced Research – evaluation of program on Experience-based Brain and Biological Development), 2012

Reviewer of dossiers for promotion to Associate Professor, Full Professor, or Staff/Senior Scientist multiple US and international universities, and US Department of Agriculture (~10-15/year)

External Examiner, Ph.D. Theses (1-3/year at US universities and universities in Canada, Switzerland, Australia, India. For example, 2014-2022 included Brown University, MIT, the University of Toronto, Bangalore University, Varanasi Hindu University, Uppsala University, Sweden, University of Groeningen, Netherlands, and University of East Anglia, UK), MIT/Whitehead, Vrije Univ., Amsterdam Netherlands, Monash Univ., Melbourne Australia.

Member, Sociogenomics Research Collaboration Network (NSF-Funded, administered at Georgia State University; 2013-2018)

Genetics Society of America Board of Directors committees including: Publications (2010-~2013, 2019-2021), Nominations, Membership (ex officio), Executive Committee, Women-in-Genetics; Member and Chair of GSA Education committee, Awards Committee (2018-2021), "Blue Sky" committee (2018), Fiscal Strategies group (2018), Nominating Committee (2019)

Program reviewer, including Emory University (Biology Department, 2019), University of Illinois Champaign-Urbana (Gene networks in neural and developmental plasticity; Carl Woese Institute for Genomic Biology, 2019)

Scientific Advisory Council, Frontiers in Reproduction Course, Woods Hole Marine Biological Laboratory (2018-2021)

Liaison between National Academy of Sciences Section 26 (Genetics) and the National Research Council (2020-present)

National Academies Member-reviewer panel (2021-present)

Genetics Society of America committees and task forces on: Conferences, Awards, Award-Audit, Nominations, Publications (2018-present)

Cornell, Cornell-affiliated, or Dept. committees. etc. (past 10 years):

Academic Integrity Hearing Board, Graduate School (2010-2013; elected position)

Advisory Board, CU-CIRTL (Center for Integration of Research, Teaching, and Learning (2012-2015)

Biology Honors Advisory Committee (2015)

Co-Chair, Search committee for Director of Cornell's Weill Institute for Cell and Molecular Biology (2021-present)
Chair or member of several MBG Departmental committees assembling and vetting tenure or Professor-promotion candidates (2012-2015)
Chair, University-level tenure appeal committee, 2018
Co-coordinator, postdoc series, Dept. of MBG, 2011-2013
College of Arts and Sciences "Streamlining Committee" for Biological Sciences (2015)
College of Arts and Sciences Pre-Major Advising Program (member, by Dean's invitation; 2012
College Scholar Board, College of Arts and Sciences (ongoing)
College Scholar Interim Steering Committee, College of Arts and Sciences (2016)
Cornell University Search Committee for Dean of College of Arts and Sciences, 2017
Cornell University Presidential Search Committees, 2014, 2016
Curriculum Committee, Graduate Field of Biochemistry, Cell, and Molecular Biology, Cornell University, 2017-present.
Cornell's Goldwater and Churchill Fellowships nominations committee, 2012-2019 and 2021-present (Goldwater), 2019-2020 (Churchill).
Department of Molecular Biology and Genetics' committee to define tenure requirements/policy (2012)
Department of Molecular Biology and Genetics' Mann Library Liaison (long-term; ongoing)
Department of Molecular Biology and Genetics' Diversity Council, member (2018-present)
Department of Molecular Biology and Genetics Committee on Diversity, Inclusion, and Equity, member (2020-present)) and co-Chair of its Building Community Task Force (2021-present)
Executive Committee, Dept. of MBG (2005-2020)
Executive Committee/Faculty Advisory Board Office of Undergraduate Biology (2008-2015)
Executive Committee, Cornell Center for Reproductive Genomics, 2011-present
Faculty Advisor, Cornell Early-Career Faculty Grants Mentoring Program (2020-present)
Faculty Senator, Dept. of Molecular Biology and Genetics (Spring 2019; as substitute for = Senator L. Nicholson, when she was on sabbatic)
Faculty-elected Trustee, Cornell Board of Trustees (2014-2018))
and member of Board of Trustee's Academic Affairs, Student Life, Trustee Community Communications, Alumni Affairs, University Relations, Buildings & Properties, and Campus Trustee Nominating Committees
Field of Biochemistry, Cell and Molecular Biology, Training Grant Steering Comm. (ongoing)
Field of Genetics, Genomics and Development, Executive (Steering) Comm. (2009- present)
Hunter R. Rawlings III House-Fellow, Alice Cook House (2004-2016)
Interim Director, NIH Training Grant in Genetics & Development, 2014
Invited participant, Provost's Inaugural seminar/workshop on teaching 2013
Member or Chair, ad hoc committees to evaluate promotion to Associate or Full Professor, Cornell College of Veterinary Medicine, College of Agriculture and Life Sciences, College of Arts and Sciences (~1/year)
Member, 3CPG (Cornell Center for Comparative and Population Genomics
Member, C-VERGE (Cornell Vertebrate Genomics)
Member, Cornell Center for Reproductive Genomics
Member, Graduate Fields of Genetics, Genomics and Development; Biochemistry, Cell and Molecular Biology; Ecology and Evolutionary Biology; Comparative Biomedical Sciences; Molecular and Integrative Physiology
Member, Molecular Biology and Genetics, Peer-Support Network (2013- present)

Member, Research-Reactivation Committee, Department of Molecular Biology and Genetics, 2020
Member, Cornell University Faculty Committee (elected by the Faculty) 2018-2024 (2 terms)
Organizer, '15-'16 Seminar series, Cornell Center for Comparative Population Genomics
Organizing Committee, Provost's second seminar/workshop on teaching, 2014
Organizing Committee, Seminar series in Reproductive Biology, 2008-present
Provost's (University) Committee on Curriculum Oversight (2015-2017)
Provost's Faculty Advisory Committee on Tenure and Appointments ("FACTA") (2012-2014))
Research Advisory Committee for the Cornell Vice Provost for Research; 2017-2020 (Chair, 2019-2020)
Review panel, Cornell/ Ithaca-Weill Medical College Seed Grants for Collaborations (twice during the time-period covered in this list)
Reviewer, Klarman Fellowships, College of Arts and Sciences, 2020
Reviewer, 3CPG seed grants (once or twice during 2012-2015)
Search Committee for multiple faculty positions; some of the more recent ones were: in EvoDevo, 2011-2012; in Development or tissue homeostasis, 2015; in Neurobiology and Behavior, 2017, in Ecology and Evolutionary Biology, 2019-2020, in Reproductive Biology, 2021
Search Committee for Director of Mann Library and Science Cluster, 2021
Selections Committee for Cornell Center for Cell/Molecular Biology Fleming postdoctoral fellowships (Vice Provost for Research Office), 2015
Selections Committee for Cornell Presidential Postdoctoral fellowships (Vice Provost for Research Office), 2017-2020
Selections Committee, Carpenter Awards (2013)
Service-equity Task Force, MBG, 2021

Outreach & related (past 10 years):
Expanding Your Horizons: presentations to parents (scientific and/or about careers, support of middle school girls' science interests (I have done this ~annually for over a decade)
National Judge, Siemens Competition 2005, 2011, 2014
Online "WitsOn" mentor for STEM undergraduate and graduate students, (hosted by Harvey Mudd College), 2012
Providing occasional samples for museum exhibits and for high school experiments (*Drosophila* strains), talks to elementary school students in classes and at 4H club, etc.
@ Alice Cook House, Cornell (2004-2016): host Raptor Programs, give programs on how to find a research lab, on career opportunities for biologists, on "stem cell debate" and, with others, on applying to STEM graduate school, on gender and science, on reading-project on "Your Inner Fish"; hosted presentations such as ones by S. Villarreal on Insects in Hollywood.
Cornell Arts & Sciences Diversity hosting, faculty panelist 2104
BioFest (Cornell Office of Undergrad Biology) 2014
Lab Tours/discussions for Cornell Biology Scholars Program: 2012, 2013, 2017, 2018
Organizer, and one of two mentors: A&S and CU-ADVANCE Circle-of-Advising lunch session for junior, female, biology faculty (also, obtained CU-ADVANCE funding for this session).
Panelist on: "How to find undergraduate-research opportunities", Mary Donlon Hall, 2012
Panelist, "Teaching: Strategies for Success", Provost's Orientation for New Faculty Orientation, Cornell 2012
panelist, CU-CIRTL mentoring lunch ("What I wish I'd known about mentoring, when I started my faculty job"), 2013, 2014

Participant Teaching-Partnership lunch 2014 (earlier, was teaching-mentor to one faculty member)
Pre-freshman, and Rawlings Presidential Research Scholars advising dinners to talk with students about career paths, research opportunities, and other undergraduate advising topics.
Invited platform speaker, Cornell's Center For Teaching Excellence "Celebration of Great Teaching", 2015
Seminars and lab-activities for Cornell Institute for Biology teachers, 2012 (and many prior years)
Small-group facilitator, Cornell's Responsible Conduct in Research program 2015, 2016, 2017
Small-group facilitator, and faculty panelist, Responsible Conduct in Research symposium for undergraduates, Cornell SILS (Summer Inst. for Life Sciences) 2015, 2016, 2017
Small-group facilitator, Center for Teaching Excellence grad student and postdoc teaching workshop 2014
Small-group discussion leader, "Get set" symposium on teaching for graduate students and postdocs 2016
Panelist, work-life balance, B. McClintock celebrations day 2016
Cornell Undergraduate Research Board, Fall Dinner Series, speaker/mentor 2016
Faculty speaker, "Getting Started in Research", Office of Undergraduate Biology 2016
Faculty speaker, "Gene editing: how it works, and applications and implications", Hans Bethe House, 2017
Panelist, STEM Women in Leadership series, Cornell University, 2017
Attend ABRCMS with Cornell Graduate School team, for graduate recruitment for GGD and BMCG Fields: 2017, Phoenix Arizona; 2018: Indianapolis Indiana
Speaker on "Why it was wise to give the Nobel Prize for that research on flies. Episode VI, circadian rhythm genes". [This was part of my series on Why it was wise…"; for ex. Episode IV (in 1995) was on patterning genes.], Department of Molecular Biology and Genetics, Cornell University, Ithaca NY, 2017
Panelist, Trustee panel on challenges facing women professionals, sponsored by student organizations in Social Business Consulting, Society for Women in Business, and Forte, Cornell University, Ithaca NY 2018
Discussion leader, Publishing Q&A, Genetics Society of America journals, Philadelphia PA 2018
Faculty Panelist at Cornell's "Future Professors Institute" on "What the (STEM) search committee is looking for".
Discussion leader, GET-SET teaching-workshop for graduate students and postdocs, Cornell Center for Teaching Innovation, 2018
Speaker re grants-materials, Grant-Fellows Session for Early-Career Faculty; Provost's office for Diversity, 2018, 2019, 2021 [2020 session cancelled due to Covid-19], 2022
Grant-writing mentor, Grant-Fellows for Early-Career Women Faculty; Provost's office for Diversity, 2018, 2019
Scientific and careers discussion with Cornell's Presidential Life Sciences Fellows: annually, 2018-present
Scientific and careers discussion with Cornell's undergraduate Biology Scholars 2020
Mentor, trainee-mentor roundtable at SSR meeting (virtual) 2020
Moderator, breakout room for Early-Career faculty mentoring, Annual Drosophila Research Conference, 2021
Panelist, Publishing Q&A mentoring session, Annual Drosophila Research Conference, 2021

Co-Organizer and session co-Chair, The effect of the COVID pandemic on the fly community, Annual Drosophila Research Conference, 2021

Center for Vertebrate Genomics Stories (career history presentation for trainees) 2021

Lab Tour (about 'how to find a research lab') to Cornell PSSP (Pre-collegiate Summer Scholars Program 7/22

Panelist focused on Graduate Student Mentoring, in "Introduction to Teaching and Advising at Cornell" at Cornell New Faculty Orientation, 8/22

Upcoming:

[Panelist, careers panel, Gordon Research Seminar on Fertilization and the Activation of Development, Holderness School, New Hampshire, 2021; conference cancelled due to Covid-19]