

MATTHEW DEGENNARO  
Florida International University  
Department of Biological Sciences & Biomolecular Sciences Institute  
11200 SW 8<sup>th</sup> Street, AHC4 211, Miami, FL 33199  
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## Education

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New York University School of Medicine, New York, New York  
**Ph.D.**, Developmental Genetics, May 2008

Bard College, Annandale-on-Hudson, New York  
**B.A.**, History and Philosophy of Science & Gender Studies, May 1996

Bard College at Simon's Rock, Great Barrington, Massachusetts  
**A.A.**, Natural Sciences, May 1993

## Research Positions

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*Biomolecular Sciences Institute*  
**Director**, August 2023 to present

*Florida International University*  
**Associate Professor**, August 2021 to present

*Florida International University*  
**Assistant Professor**, August 2014 to July 2021

*The Rockefeller University, HHMI*  
**Postdoctoral Research Associate**, January 2009 to June 2014  
Mentor: Leslie Vosshall

*New York University School of Medicine, HHMI*  
**Doctoral Student**, August 2002 to December 2008  
Mentor: Ruth Lehmann

*New York University School of Medicine, HHMI*  
**Lab Manager**, August 2000 to July 2002  
Lab head: Dan Littman

*Columbia University*  
**Research Associate**, April 2000 to August 2000  
Lab head: Gareth Tibbs

*Columbia University, HHMI*  
**Research Technician II**, September 1998 to April 2000  
Lab head: Steven Siegelbaum

*University of California, San Francisco*  
**Staff Research Associate I**, June 1996 to August 1998  
Lab head: Joel Palefsky

*New York University School of Medicine*  
**Research Associate**, June 1992 to August 1992  
Lab head: Seymour Garte

## Publications

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1. Costa-da-Silva, A.L., Cabal, S., Lopez, K., Boloix, J., Garcia, B.R., Marrero, K.M., Bellantuono, A.J. & **DeGennaro, M.** (2024) Female *Aedes aegypti* mosquitoes use communal cues to manage population density at breeding sites. **Communications Biology**. 7, 143. doi:10.1038/s42003-024-05830-5.
2. Mappin, F., Bellantuono A.J., Ebrahimi, B., & **DeGennaro, M.** (2023) Odor-evoked transcriptomics of *Aedes aegypti* mosquitoes. **PLoS ONE** 18(10): e0293018. doi:10.1371/journal.pone.0293018.
3. Ray, G., Huff, R.M., Castillo, J.S., Bellantuono, A.J., **DeGennaro, M.**, & Pitts, J.R. (2023) Carboxylic Acids that Drive Mosquito Attraction to Humans Activate Ionotropic Receptors. **PLoS Neglected Tropical Diseases**. 17(6): e0011402. doi:10.1371/journal.pntd.0011402.
4. David, O.G., Sanchez, K.M., Arce, A.V., Costa-da-Silva, A.L., Bellantuono, A.J., & **DeGennaro, M.** (2023) Fertility decline in female mosquitoes is regulated by the *orco* olfactory co-receptor. **iScience**. 26, 6. 106883. doi:10.1016/j.isci.2023.106883.
5. Lucas-Barbosa, D., Balvers, C., Bellantuono, A.J., Castillo, J.S., Costa-da-Silva, A.L., De Moraes, C.M., **DeGennaro, M.**, & Verhulst, N. (2023) Competition matters: using *in vitro* community models to study the impact of human skin bacteria on mosquito attraction. **Frontiers in Ecology and Evolution**. 11, 1156311. doi:10.3389/fevo.2023.115631.
6. Castillo J.S., Bellantuono A.J., & **DeGennaro M.** (2023) Quantifying Mosquito Attraction Behavior Using Olfactometry. **Cold Spring Harbor Protocols** doi:10.1101/pdb.top107660.
7. Castillo J.S., Bellantuono A.J., & **DeGennaro M.** (2023) Building a uniport olfactometer to assess mosquito responses to odors. **Cold Spring Harbor Protocols** doi:10.1101/pdb.prot108174.
8. Castillo J.S., Bellantuono A.J., & **DeGennaro M.** (2023) Quantifying mosquito attraction using a uniport olfactometer. **Cold Spring Harbor Protocols** doi:10.1101/pdb.prot108175.
9. Benoit, J.B., McCluney, K.E., **DeGennaro, M.**, & Dow, J.A.T. (2023) Dehydration Dynamics in Terrestrial Arthropods: From Water Sensing to Trophic Interactions. **Annual Review of Entomology** 68:1, 129-149. doi:10.1146/annurev-ento-120120-091609.
10. Chu, E., Chakraborty, S., Benoit, J.B. & **DeGennaro, M.** (2022) “Water homeostasis and hygrosensation in mosquitoes.” in *Sensory Ecology of Disease Vectors*, edited by Ignell, R., Lazzari, M.G., & Hill, S.R. **Wageningen Academic Publishers**, Chapter 25, pp. 655–682. DOI:10.3920/978-90-8686-932-9\_25.
11. Nouzova, M., Edwards, M.J., **DeGennaro, M.**, Leyva, D., Lilian V., Tose, L.V., Fernandez-Lima, F., & Noriega, F.G. (2022) Genetics tools for *corpora allata* specific gene expression in *Aedes aegypti* mosquitoes. **Scientific Reports** 12, 20426. doi:10.1038/s41598-022-25009-4
12. Barredo, E., Raji, J.I., Ramon, M., **DeGennaro, M.**,\* & Theobald, J.C.\* (2022) Carbon dioxide and blood-feeding shift visual cue tracking during navigation in *Aedes aegypti* mosquitoes. **Biology Letters**. 18: 20220270. doi:10.1098/rsbl.2022.0270
13. Sondhi, Y., Jo, N. J., Alpizar, B., Markee, A., Dansby, H. E., Currea, J.P., Fabian, S.T., Ruiz, C., Barredo, E., Allen, P., **DeGennaro, M.**, Kawahara, A.Y. & Theobald, J.C. (2022) Portable locomotion activity monitor (pLAM): A cost-effective setup for robust activity tracking in small animals. **Methods in Ecology and Evolution**, 13; 805-812. doi:10.1111/2041-210X.13809.
14. Mappin, F., & **DeGennaro, M.** (2022) “Multimodal mechanisms of repellency in arthropods.” *Advances in Arthropod Repellents*, edited by Coats, J., Corona, C. & Debboun, M. **Elsevier**, Chapter 7, pp. 113-129.

15. Nouzova, M., Edwards, M.J., Michalkova, V., Ramirez, C.E., Ruiz, M., Areiza, M., **DeGennaro, M.**, Fernandez-Lima, F., Feyereisen, R., Jindra, M., Noriega, F. G. (2021) Epoxidation of juvenile hormone was a key innovation improving insect reproductive fitness. **Proceedings of the National Academy of Sciences** 118 (45) e2109381118. doi:10.1073/pnas.2109381118 (**Cover article**)
16. Lucas-Barbosa, D., **DeGennaro, M.**, Mathis, A., & Verhulst, N.O. (2021) Skin bacterial volatiles: propelling the future of vector control. **Trends in Parasitology** Sep 18:S1471-4922(21)00208-7.
17. Medina, M., Sharp, V., Ohdera, A., Bellantuono, A., Dalrymple, J., Gamero-Mora, E., Steinworth, B., Hofmann, D. K., Martindale, M. Q., Morandini, A. C., **DeGennaro, M.**, & Fitt, W. K. (2021) “The Upside-Down Jellyfish *Cassiopea xamachana* as an Emerging Model System to Study Cnidarian–Algal Symbiosis.” *Handbook of Marine Model Organisms in Experimental Biology Established and Emerging*, edited by Agnès Boutet & Bernd Schierwater **CRC Press**, Chapter 9, pp. 149-171.
18. Melo, N., Wolff, G.H., Costa-da-Silva, A.L., Arribas, R., Triana, M.F., Gugger, M., Riffell, J.A., **DeGennaro, M.**, & Stensmyr, M.C. (2020) Geosmin attracts *Aedes aegypti* mosquitoes to oviposition sites. **Current Biology** 30; 1-8.
19. Barredo, E. & **DeGennaro, M.** (2020) Not just from blood: Mosquito nutrient acquisition from nectar sources. **Trends in Parasitology** 36:5; 473-484.
20. Onyango, M., Payne, A., Mathias, N., Kuo, L., Vigneron, A., **DeGennaro, M.**, Ciota, A., & Kramer, L. (2020) Increased temperatures reduce the vectorial capacity of *Aedes* mosquitoes for Zika virus. **Emerging Microbes & Infections** 9 (1); 67-77.
21. Robbins, J., Cunningham, C., Dankers, R., **DeGennaro, M.**, Dolif, G., Duell, R. Marchenzini, V., Mills, B., Sarmiento, J. P., Silver, A., Trajber, R. & Watkins, A. (2019) “Communication and Dissemination of Forecasts and Engaging User Communities.” *SUB-SEASONAL TO SEASONAL PREDICTION: The Gap Between Weather and Climate Forecasting*, edited by Robertson, A.W. & Vitart, F. **Elsevier**, Chapter 19, pp. 400-418.
22. Raji, J.I., Gonzalez, S., & **DeGennaro, M.** (2019) *Aedes aegypti* *Ir8a* mutant mosquitoes show increased attraction to standing water. **Communicative & Integrative Biology** 12:1, 181-186.
23. Raji, J.I., Melo, N., Castillo, J.S., Gonzalez, S., Saldana, V., Stensmyr, M. C., & **DeGennaro M.** (2019) *Aedes aegypti* mosquitoes detect acidic volatiles found in human odor. **Current Biology** 29; 1253–1262. (**Cover article**)
24. Flora, P., Schowalter S., Wong-Deyrup, S., **DeGennaro M.**, Ali Nasrallah M., & Rangan P. (2018) Transient transcriptional silencing alters the cell cycle to promote germline stem cell differentiation in *Drosophila*. **Developmental Biology** 434; 84-95.
25. Raji, J.I., & **DeGennaro, M.** (2017) Genetic analysis of mosquito detection of humans. **Current Opinion in Insect Science** 20, 34-38.
26. Matthews, B. J., McBride C.S., **DeGennaro M.**, Despo O., Vosshall L.B. (2016) The neurotranscriptome of the *Aedes aegypti* mosquito. **BMC Genomics** 17:32.
27. **DeGennaro, M.** (2015) The mysterious multi-modal repellency of DEET. **Fly**. 9:1, 45-51. (**Cover article**)
28. **DeGennaro, M.**, McBride, C., Seeholzer, L., Nakagawa, T., Dennis, E.J., Goldman, C., Jasinskiene, N., James, A.A., & Vosshall, L.B. (2013) *orco* mutant mosquitoes lose strong preference for humans and are not repelled by volatile DEET. **Nature** 498; 487-491.
29. Hurd, T., Leblanc, M., Jones, L., **DeGennaro, M.**, & Lehmann, R. (2013) Genetic modifier screens to identify components of a H<sub>2</sub>O<sub>2</sub>-regulated cell adhesion and migration pathway. **Methods in Enzymology** 528; 197-215.

30. Hurd, T., **DeGennaro, M.**, & Lehmann, R. (2012) Redox regulation of cell migration and adhesion. **Trends in Cell Biology**. 22; 107-115.
31. **DeGennaro, M.\***, Hurd, T.\*, Siekhaus, D., Biteau, B., Jasper, H., & Lehmann, R. (2011) Peroxiredoxin stabilization of DE-cadherin promotes primordial germ cell adhesion. **Developmental Cell** 20; 233-243.
32. Biteau, B., Karpac, J., Supoyo, S., **DeGennaro, M.**, Lehmann, R. & Jasper, H. (2010) Lifespan extension by preserving proliferative homeostasis in *Drosophila*. **PLoS Genetics** 6(10).
33. Rangan, P., **DeGennaro, M.**, Jaime-Bustamante, K., Coux R.X., Martinho R.G., & Lehmann, R. (2009) Temporal and spatial control of germ plasm RNAs. **Current Biology** 19; 72-77.
34. Rangan, P., **DeGennaro, M.**, & Lehmann, R. (2008) Regulating gene expression in the *Drosophila* germ line. **Cold Spring Harbor Symposium on Quantitative Biology** CSHL press. 73; 1-8.
35. Li, Y., Soos, T.J., Xinghai, L., Wu, J., **DeGennaro, M.**, Sun, X., Littman, D.R., Birnbaum, M.J., & Polakiewicz, R.D. (2004) Protein Kinase C theta inhibits insulin signaling by phosphorylating IRS1 at ser1101. **Journal of Biological Chemistry** 279; 45304-45307.
36. Wainger, B.J., **DeGennaro, M.**, Santoro, B., Siegelbaum, S.A., & Tibbs, G.R. (2001) Molecular mechanism of cAMP-modulation of HCN pacemaker channels. **Nature** 411; 805-810.

### Publications (non-peer reviewed)

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1. Castillo, J.S. & **DeGennaro, M.** (2019) The taste for human sweat. **TheScienceBreaker**. doi:10.25250/thescbr.brk280.
2. **DeGennaro, M.**, Stoddard, P. & Beier, J. (2017) Recommendation to establish a Mosquito Control District in Miami-Dade County submitted on behalf of the Environmental Committee to Miami-Dade County's Metrolab Fight the Bite Initiative: A collaborative initiative between local government and the academic institutions of Miami-Dade County. **White Paper**
3. **DeGennaro, M.** (2016) With genetically modified mosquitoes, spraying is no longer needed. **Miami Herald, OP-ED section**, September 8, 2016.

### Preprints

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1. Ortega-Insaurralde, I., Latorre-Estivalis, J.M., Costa-da-Silva, A.L., Cano, A., Insausti, T.C., Morales, H.S., Pontes, G., Berón de Astrada, M., Ons, S., **DeGennaro, M.**, & Barrozo, R.B. (2022) Food recognition in a blood-feeding insect: characterization of the pharyngeal taste organ. **bioRxiv** 2022.11.15.516640; doi: <https://doi.org/10.1101/2022.11.15.516640>.
2. Ohdera, A.H., Dalrymple, J., Avila-Magaña, V., Sharp, V., Watson, K., McCauley, M., Steinworth, B., Diaz-Almeyda, E.M., Kitchen, S.A., Poole, A.Z., Bellantuono, A.J., Haridas, S., Grigoriev, I.V., Goentoro, L., Vallen, E., Baker, D.M., LaJeunesse, T.C., Loesgen, S., Martindale, M.Q., **DeGennaro, M.**, Fitt, W.K., & Medina, M. (2022) Symbiosis-driven development in an early branching metazoan. **bioRxiv** 2022.07.21.500558; doi: <https://doi.org/10.1101/2022.07.21.500558>.
3. Morita, T., Lyn, N.G., von Heynitz, R.K., Goldman, O.V., Sorrells, T.R., **DeGennaro, M.**, Matthews, B.J, Hourri-Zeevi, L., & Vosshall, L.B. (2023) Cross-modal sensory compensation increases mosquito attraction to humans. **bioRxiv** 2023.10.10.561721; doi: <https://doi.org/10.1101/2023.10.10.561721>
4. David, O.G., Arce, A.V., Costa-da-Silva, A.L., Bellantuono, A.J., & **DeGennaro, M.** (2023) Fertility decline in *Aedes* mosquitoes is associated with reduced maternal transcript deposition and does not depend on female age. **bioRxiv** 2023.12.05.570316; doi: <https://doi.org/10.1101/2023.12.05.570316>

## Selected Press

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- Wall Street Journal & National Geographic
  - **Human host odors, personal care products, & mosquito attraction, May 2023**
- Consumer Reports
  - **“What’s Really in Your Insect Repellent,” July 2022**
- Panther Personalities Podcast
  - **Episode 10, “The real vampires who want to suck your blood”, 2021**
- Forbes, Neo.Life, New Atlas, CBS 4 News Miami
  - **DARPA Revector Launch, December 2020**
- Miami Herald
  - **Publication of Geosmin paper in Current Biology, 2020**
- Minor Tweets, Major Impacts Podcast, Protocols.io
  - **Episode 15: Dr. Matthew DeGennaro, Florida International University, 2020**
- New York Times, Le Monde, The Times of London, La Repubblica, Los Angeles Times, NPR: All Things Considered
  - **Publication of IR8a paper in Current Biology, 2019**
- NPR, CBS News, ABC World News Tonight, Univision, PBS Newshour, Miami Herald, Al Jazeera America, Voice of America
  - **Zika virus epidemic, 2015-16**

## Presentations

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### *Invited Talks*

- 2023 American Mosquito Control Association, Webinar  
Miami, FL  
*“Oviposition attractants in mosquito surveillance and control”*
- 2023 University of Cincinnati, Biological Sciences Seminar Speaker  
Cincinnati, OH  
*“A mosquito’s perspective on what makes us different”*
- 2022 17<sup>th</sup> European Symposium for Insect Taste and Olfaction (ESITO 2022)  
Bäckaskog Castle, Sweden  
*“Attractive and repellent social cues are used during mosquito oviposition-site seeking”*
- 2021 Entomological Society of America (ESA) Annual meeting 2021  
Denver, CO  
*“The human microbiome and mosquito host preference”*
- 2021 CSHL Neurobiology of Drosophila 2021  
Cold Spring Harbor, NY  
*“Attractive and repellent social cues are used during mosquito oviposition-site seeking”*
- 2020 Entomological Society of America (ESA) Annual meeting, 2020  
Virtual meeting  
*“Odor-evoked transcriptomics in Aedes aegypti”*
- 2019 Molecular and Population Biology of Mosquitoes and Other Disease Vectors  
Kolymbari, Crete, Greece  
*“Aedes aegypti mosquitoes detect acidic volatiles found in human odor using the IR8a pathway”*

- 2019 New avenues for the behavioral manipulation of disease vectors 2019  
Tours, France  
*“Understanding mosquito olfactory behavior in the laboratory and the field”*
- 2019 ReVector Proposer’s Day, DARPA  
Arlington, VA  
*“Eliminating acidic volatiles from human sweat to reduce mosquito attraction”*
- 2019 3<sup>rd</sup> International Cassiopea Workshop  
Key Largo, FL  
*“Genetic analysis of cnidarian symbiosis and dysbiosis”*
- 2019 University of South Carolina, Department of Epidemiology and Biostatistics’ research seminar series  
Columbia, SC  
*“A mosquito olfactory receptor for human sweat”*
- 2018 Florida International University, Bioseminar series  
Miami, FL  
*“A mosquito receptor for human scent”*
- 2018 University of Miami, Biology Departmental Seminar  
Miami, FL  
*“A mosquito receptor for human sweat”*
- 2018 5<sup>th</sup> Congress of the Latin American Association of Chemical Ecology  
Valparaiso, Chile  
*“Aedes aegypti mosquitoes the IR8a olfactory receptor pathway to detect human odor”*
- 2018 48<sup>th</sup> Annual Society for Vector Ecology Meeting  
Yosemite, California  
*“Southeastern Center of Excellence in VBD-Gateway Program: Molecular approaches to enhance mosquito surveillance”*
- 2018 Coral Genetics Workshop  
Corvallis, Oregon  
*“Genome editing: making new model organisms genetically accessible”*
- 2018 3<sup>rd</sup> Annual FIU/Santa Fe College Faculty Seminar: Critical Cooperation: Latin America and the US  
Gainesville, Florida  
*“Combating Infectious Diseases across Borders”*
- 2018 The 15th Arbovirus Surveillance and Mosquito Control Workshop  
Saint Augustine, Florida  
*“Identifying odors and olfactory receptors that attract mosquitoes”*
- 2018 Molecular and Cellular Pharmacology Seminar Series, University of Miami, Miller School of Medicine  
Miami, Florida  
*“Identifying odors and olfactory receptors that attract and repel mosquitoes”*
- 2017 1<sup>st</sup> International Workshop on Insect Genome Editing  
Shanghai, China  
*“Aedes aegypti Ir8a can detect human hosts”*
- 2017 Molecular and Population Biology of Mosquitoes and Other Disease Vectors  
Kolymbari, Crete, Greece  
*“Aedes aegypti Ir8a can detect human hosts”*
- 2017 Society of Neuroscientists of Africa, 13<sup>th</sup> International Meeting  
Entebbe, Uganda  
*“Aedes aegypti Ir8a can detect human hosts”*
- 2017 German Neuroscience Society, 12<sup>th</sup> Annual Meeting  
Göttingen, Germany  
*“Aedes aegypti Ir8a detects humans”*
- 2016 TEDx at FIU, Florida International University  
Miami, Florida  
*“A Life-saving Perfume”*
- 2016 Deering Estate, Speaking Sustainably Seminar Series  
Miami, Florida  
*“Blood Theft: A Mosquito’s Obsession with Humans”*

- 2016 Sea and Learn  
Saba, Dutch Antilles  
“*The Blood Thief: A Mosquito’s Obsession with Humans*”
- 2016 International Congress of Entomology 2016, Orlando, Florida  
Speaker and Organizer of symposium “*Mosquito Host Detection*”
- 2015 University of Florida, TREC  
Homestead, Florida  
“Genetic analysis of mosquito host detection”
- 2015 Biomolecular Sciences Institute, Florida International University  
Miami, Florida  
“Genome editing in the mosquito: a case study”
- 2013 Bard College  
Annandale-on-Hudson, New York  
“Genetic analysis of mosquito attraction and repulsion”
- 2013 Institute for Science and Technology Austria  
Klosterneuberg, Austria  
“Genetic analysis of mosquito attraction and repulsion”
- 2012 Trends in Molecular Insect Science & Biotechnology, Seoul National University  
Seoul, Korea  
“Disrupting mosquito attraction to host odor using targeted mutagenesis”
- 2012 International Congress of Entomology  
Daegu, Korea  
“Disrupting mosquito attraction to host cues by targeted mutagenesis of the *orco* olfactory co-receptor”
- 2011 Molecular and Population Biology of Disease Vectors,  
Kolymbari, Greece  
“Disrupting mosquito attraction to host odor using targeted mutagenesis”
- 2010 Grand Challenges in Global Health, Bill and Melinda Gates Foundation,  
Seattle, Washington  
“Chemical approaches to alter olfactory-driven behaviors of insect disease vectors: validating new targets for control of vector behavior”
- 2007 New York Academy of Sciences, New York Fly Club  
New York, NY  
“Redox regulation of germ cell adhesion in *Drosophila*”

### **Posters**

- 2015 Molecular and Population Biology of Mosquitoes, Kolymbari, Greece  
“Genetic analysis of ionotropic receptor function in *Aedes aegypti*”
- 2012 Pels Family Chemical & Structural Biology Retreat, Briarcliff Manor, NY  
“*orco* mutant mosquitoes lose strong preference for humans and are not repelled by volatile DEET”
- 2012 International Symposium on Olfaction and Taste, Stockholm, Sweden  
“Disruption of mosquito preference for humans and DEET sensitivity through targeted mutagenesis of the *orco* olfactory co-receptor”
- 2010 HHMI Scientific Meeting: Neurons, Systems, & Neural Disease, Janelia Farm, VA  
“Mosquito attraction to host odor requires *Aedes aegypti* Orco”
- 2010 Biology of Mosquito Vectors, Johns Hopkins Malaria Research Institute  
“Targeted mutagenesis of an olfactory co-receptor in *Aedes aegypti*”
- 2009 Grand Challenges in Global Health, Bill and Melinda Gates Foundation, Tanzania  
“Molecular genetic analysis of host-seeking behavior in *Aedes aegypti*”
- 2008 Thiol-based Redox Regulation & Signaling, Gordon Conference, Il Ciocco, Italy  
“Redox regulation of germ cell migration in *Drosophila*”
- 2007 Society for Developmental Biology, Cancun, Mexico  
“Redox regulation of germ cell migration in *Drosophila*”
- 2006 Germ Cell Meeting, Cold Spring Harbor Laboratory

“A Thioredoxin peroxidase regulates germ cell migration in *Drosophila*”

2004 Germ Cell Meeting, Cold Spring Harbor Laboratory  
 “Germ genes: using reverse genetics to understand germ plasm formation and function in *Drosophila*”

## Awards

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College of Arts, Science, and Education Award for Research, 2021, *Florida International University*

College of Arts, Science, and Education Award for Research, 2020, *Florida International University*

College of Arts, Science, and Education Award for Research, 2019, *Florida International University*

College of Arts, Science, and Education Award for Teaching, 2019, *Florida International University*

FIU-HHMI Faculty Scholar 2018-19, *Florida International University & Howard Hughes Medical Institute*

FIU-HHMI Faculty Scholar 2017-18, *Florida International University & Howard Hughes Medical Institute*

Top Scholar Award, 2017, *Florida International University*

Community Engagement Award, 2017, *Florida International University, College of Arts, Sciences & Education*

Community Engagement Award, 2016, *Florida International University, College of Arts, Sciences & Education*

Career Development Award, 2012, *The Rockefeller University*

Gender Studies Award, 1996, *Bard College*

## Funding

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### Current

2023 – 2024 National Institutes of Health - T32GM132054  
 “Transdisciplinary Training in Biomolecular and Biomedical Sciences”  
 M. DeGennaro (Co-PI)

2022 – 2027 The Centers for Disease Control and Prevention - U01CK000662  
 Subcontract amount from University of Florida: \$293,000  
 “Southeastern Regional Center of Excellence in Vector-Borne Diseases: The Gateway Program”  
 M. DeGennaro (PI)

2021 – 2026 NIH/NIAID R01 subcontract from University of South Carolina - 1R01AI165560-01: \$789,373  
 “Next generation mosquito control through technology-driven trap development and artificial intelligence guided detection of mosquito breeding habitats”  
 M. DeGennaro (PI)

2020 – 2024 NIH/NIAID R01 subcontract from University of Cincinnati - 1R01AI148551-01A1: \$358,452  
 “Mosquito hydration status as a mechanism that alters pre-feeding host interactions and post-feeding physiology”  
 M. DeGennaro (PI)

### Completed

2020 – 2022 DARPA Revector subcontract from Ginkgo Bioworks - HR0011-20-C-0073: \$1,002,756  
 “Microbiome-based vector control” M. DeGennaro (PI)

2020 – 2022 National Institute of Justice - 2019-DU-BX-0013: \$279,983  
 “Germ-Line Transformation of Forensically Important Flies”  
 J. Wells (PI) & M. DeGennaro (PI)

2018 – 2022 NIH/NIAID R21 Exploratory Grant - R21AI142140-01: \$393,748  
 “Identifying mosquito olfactory receptors for human odor by measuring mRNA expression levels”  
 M. DeGennaro (PI)



- 2017 – 2021 National Science Foundation, IOS EDGE  
Subcontract amount from Oregon State University: \$650,410  
“IOS EDGE: Functional-genomics tools for Cnidarian-dinoflagellate symbiosis”  
M. DeGennaro (PI) & M. Rodriguez-Lanetty (PI)
- 2017 – 2018 Florida Department of Health, Zika Grant Initiative: \$198,468  
“Identifying Molecular Targets for Spatial Mosquito Repellent Design”  
M. DeGennaro (PI)
- 2016 – 2021 The Centers for Disease Control and Prevention - U01CK000510  
Subcontract amount from University of Florida: \$1,218,448  
“Southeastern Regional Center of Excellence in Vector-Borne Diseases: The Gateway Program”  
M. DeGennaro (PI)
- 2016 – 2017 FDACS Mosquito Control Grant: \$92,702  
“Highly Attractive Biological Insecticide Trap (HABIT) to Reduce *Aedes* Mosquito Populations”  
M. DeGennaro (PI), B. Ebrahimi (Co-PI)
- 2016 – 2017 FIU Biomolecular Sciences Institute Seed Grant: \$10,000  
“A Genetic Toolkit for Analyzing Mosquito Reproduction and Behavior”  
M. DeGennaro (PI), F. Noriega & F. Leng (Co-PIs)
- 2015 – 2017 NIH/NIAID K22 Career Transition Award - K22 AI AI112585-01: \$267,600  
“Identifying Mosquito Receptors that Detect Human Odor”  
M. DeGennaro (PI)
- 2014 – 2018 Florida International University startup funds: \$320,000  
M. DeGennaro (PI)
- 2010 – 2012 Vectorbase DBP Subcontract (NIH/NIAID): \$300,000  
“Comparative neurotranscriptome of *Aedes aegypti*”  
L. B. Vosshall (PI), C. McBride & M. DeGennaro (Co-PIs)
- 2009 – 2014 Postdoctoral Research Associate, Howard Hughes Medical Institute

## University and Professional Service

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### *FIU committees*

- IBC, Spring 2018 to present
- IACUC, Summer 2019 to present
- Department of Biological Sciences, Diversity Committee, Fall 2020 to present
- Department of Biological Sciences, Honors Committee, Fall 2023 to present
- Glaser seminar, MMC coordinator, 2018

### *Graduate committees*

- Steele Martin, FIU Biological Sciences PhD
- Victoria Eggers, FIU Biological Sciences PhD
- Ana Perez Sanchez, FIU Biological Sciences PhD
- Rafiu Adebayo Adeyemo, FIU Biological Sciences PhD
- Maria Areiza, FIU Biological Sciences PhD (Graduated 2018)
- Moises Camacho, FIU Biological Sciences PhD (Graduated 2022)
- Logan Cummings, FIU Psychology PhD
- Ellen Dow, FIU Biological Sciences PhD (Graduated 2019)
- Cara Giordano, FIU Biological Sciences PhD
- Adam Kimbler, FIU Psychology PhD
- Amber MacInnis, FIU Biological Sciences PhD (Graduated 2023)
- Zehadee Momtaz, FIU Biological Sciences PhD (Graduated 2022)
- Janelle Nunez-Castilla, FIU Biological Sciences PhD (Graduated 2022)
- Nicholas Palermo, FIU Biological Sciences PhD (Graduated 2021)

- Zinat Sharmin, FIU Biological Sciences PhD (Graduated 2021)
- Helen Wagner, FIU Biological Sciences PhD (Graduated 2023)
- Tanja Zerulla, FIU Biological Sciences PhD (Graduated 2023)
- Devin Kepchia, outside reader, University of Miami PhD (Graduated 2017)
- Danielle Johnson, outside reader, University of South Carolina MS (Graduated 2021)

#### *Symposia & Meeting organization*

- Flies on the Beach 2018, co-organized with Dr. Grace Zhai, at FIU
  - 1 day meeting, 15 speakers, poster session
- Mosquito Host Detection Symposium, International Congress of Entomology, Orlando, FL 2016
  - Speakers: Ulrich Bernier, Conor McMenemy, Woodbridge Foster, Jamie Theobald, Carolyn McBride, Laura Harrington, Laurence Zwiebel, & myself

#### *Community Outreach*

- Metrolab Fight the Bite Initiative: a collaborative initiative between local government and the academic institutions of Miami-Dade County
  - Environment Chair (2016-18)
- FIU Zika Teach-in, February 3, 2016
- Meeting with Congressman Carlos Curbelo, Zika Roundtable, August 18, 2016
- Engagement with Miami-Dade Mosquito Control Division (2016 to present)

#### *Editorial, grant, and manuscript review*

- Associate Editor, *Frontiers in Insect Science*, 2023 to present
- *Scientific Reports*, editorial board member since 2019
- NIH/NIAID study section, USA, grant review, 2017, 2022
- NIH/NIDCD study section, USA, fellowship review, 2020
- Israeli Science Foundation, Israel, grant review, 2021
- Institute Pasteur, France, grant review, 2021
- Medical Research Council, United Kingdom, grant review, 2016
- Selected manuscript review: *Science*, *Current Biology*, *eLife*, *PNAS*, *PLoS Biology*, *PLoS Genetics*, *PLoS Neglected Tropical Diseases*, *Scientific Reports*, *Journal of Medical Entomology*, *Current Opinion in Insect Science*, *Trends in Parasitology*, *Insect Molecular Biology*

## **Teaching**

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### Undergraduate courses PCB 3063 Genetics

- Reformed course to a “flipped” format with online lectures
- Interactive in-class lectures reinforce key concepts
- Organized students in the course into theoretical labs to make a scientific poster
- Poster presentation at the end of course where students both present and provide feedback to their colleagues
- ~200 students per semester

### PCB 4133 Topics in Structure/Development: Molecular Genetics

- Created course
- Seminar style course with a few introductory lectures
- Students present papers in pairs and molecular genetic concepts are discussed
- ~15 to 20 undergraduate students per semester

### PCB 3063L Genetics Lab

- Instructor of record for 8 to 14 sections of 24 students
- Genetic analysis of coral symbiosis and dysbiosis using Cnidarian model systems: *Aiptasia* and *Cassiopea*
- A course-based undergraduate research experience (CURE)

- Course reform was funded by HHMI

## Graduate courses

## BSC 6457 Introduction to Biological Research

- Required course for incoming Biological Sciences graduate students
- Course reformed to be based on scientific literature discussion, experimental design, figure design, ethics, as well as scientific writing and presentation skills
- Students create and present their first lab meeting
- Students write a 5000-word literature review designed to be published
- Reformed course so it could be taught by a single instructor
- ~25 students per semester

## BSC 6936 Topics in Biology: Molecular Genetics

- Created course
- Students presented papers in pairs and molecular genetic concepts were discussed
- Graduate students usually paired with undergraduates to complete course goals
- ~5 graduate students per semester

## Guest lecturer

## BSC4443 Functional genomics and proteomics (Instructor: Fernando Noriega)

- Lecture: Genomic modification
- Lecture: Olfaction

## Graduate workshops

BSC6926-U02 Genome Editing  
BSC6926-U03 Embryo Microinjection

## Mentoring

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### Current

André Luis da Costa da Silva, Ph.D.	Research Assistant Professor
John Castillo	Postdoctoral Fellow
Fredis Mappin	Postdoctoral Fellow
Justin Dalrymple	FIU Biological Sciences Ph.D. student
Sheng-Hao Lin	FIU Biological Sciences Ph.D. student (Co-advised with Dr. Jeffery Wells)
Elaine Chu	FIU Biological Sciences Ph.D. student
Daniel Morales	FIU Biological Sciences Ph.D. student
Kaylee Marrero	FIU Biological Sciences Ph.D. student
Matthew Rodman	FIU Biological Sciences Ph.D. student (Co-advised with Dr. Phillip Stoddard)
Andrea Arce	FIU Biological Sciences Ph.D. student
Elliott Baca	Postbaccalaureate researcher
Nathan Yapaolo	FIU Undergraduate student
Maria Andrade	FIU Undergraduate student
Natasha Silva	FIU Undergraduate student
Leah Smith	FIU Undergraduate student
Luke Kolinsky	FIU Undergraduate student
Hannan Shabaan	FIU Undergraduate student

### Former

Joshua Raji	FIU Biological Sciences Ph.D. student (HHMI-Hanna Gray Fellow, Johns Hopkins)
Elina Barredo	FIU Biological Sciences Ph.D. student (Postdoctoral fellow, FIU, Theobald lab)
John Castillo	FIU Biological Sciences Ph.D. student (Graduated Summer 2023)
Fredis Mappin	FIU Biological Sciences Ph.D. student (Graduated Summer 2023)
David Olayinka George	FIU Biological Sciences Ph.D. student (Graduated Fall 2023)
Anthony Bellantuono, Ph.D.	Research Assistant Professor
André Luis da Costa da Silva, Ph.D.	Postdoctoral Fellow
Anthony Bellantuono, Ph.D.	Postdoctoral Fellow
Babak Ebrahimi, Ph.D.	Postdoctoral Fellow
John Parkinson, Ph.D.	Postdoctoral Fellow (adjunct)
Sergio Norat	FIU Undergraduate student
Lilia Curbelo Jalil	FIU Undergraduate student

Wissam Khalaf	FIU Undergraduate student
Brian Garcia Rodriguez	FIU Undergraduate student
Grace Munoz	FIU Undergraduate student
Valeria Saldana	FIU Undergraduate student
Blake Prieto	FIU Undergraduate student
Robert Arribas	FIU Undergraduate student
Paola Martinez	FIU Undergraduate student
Benjamin Obando	FIU Undergraduate student
Demitri Rodriguez	FIU Undergraduate student
Renata Gallegos	FIU Undergraduate student (McNair fellow)
Hans Lapica	FIU Undergraduate student
Kevin Cabrera	FIU Undergraduate student (Undergraduate Honors Thesis)
Malik Saaka	FIU Undergraduate student
Olivia Wills	FIU Undergraduate student
Reinier Alvarez	FIU Undergraduate student
Ileana Corsi	FIU Undergraduate student (Undergraduate Honors Thesis)
John Castillo	FIU Undergraduate student (Undergraduate Honors Thesis)
Elina Barredo	FIU Undergraduate student (McNair fellow)
Fredis Mappin	FIU Undergraduate student
Sheyla Gonzalez	FIU Undergraduate student
Marni Ruiz	FIU Undergraduate student
Nicholas Ramos	FIU Undergraduate student
Priscilla Polo	FIU Undergraduate student
George Davis	FIU Undergraduate student
Sergio Aymat	FIU Undergraduate student
Jean Boloix	FIU Undergraduate student
Samantha Fernandes	FIU Undergraduate student (McNair fellow)
Jessica Quinones	FIU Undergraduate student (Undergraduate Honors Thesis)
Brenda Hidalgo	FIU Undergraduate student
Grecia Rodriguez	FIU Undergraduate student (Undergraduate Honors Thesis)
Kevin Sanchez	FIU Undergraduate student (Undergraduate Honors Thesis)
Luciano Simonetta	FIU Undergraduate student
Michael Ramon	FIU Undergraduate student (Undergraduate Honors Thesis)
Dariel Cid	FIU Undergraduate student (Undergraduate Honors Thesis)
Woodny Lazarre	FIU Master's student
Sean Boyles	Postbaccalaureate researcher
Silvia Cabal	Postbaccalaureate researcher
Carlos Marmolejo	Postbaccalaureate researcher
Maraiyah Baksh	Postbaccalaureate researcher
Kristian Lopez	Postbaccalaureate researcher
Andrea Arce	Postbaccalaureate researcher
Alejandro Casas	FIU Research Technician
Heather Schneider	RU Summer Undergraduate Research Fellow
Emily Dennis	RU Ph.D. Candidate
Felix Baier	RU Summer Undergraduate Research Fellow
Emma Schatoff	RU Undergraduate student
Louise Malle	RU Summer High School Outreach Student
Nareh Marukian	RU Summer Undergraduate Research Fellow
Ryan Cinalli	NYUMC Graduate rotation student
Ronald Totong	NYUMC Graduate rotation student

## Memberships

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Genetics Society of America  
Entomological Society of America  
Latin American Association of Chemical Ecology (ALAEQ)  
Society for Vector Ecology