

# Christine Merlin

## *Curriculum vitae*

Updated 06/2021

Department of Biology  
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## Positions and Employment

2019- Associate Professor, Department of Biology, Texas A&M University  
2015- Faculty of Ecology and Evolutionary Biology, Texas A&M University  
2014- Faculty of Neuroscience, Texas A&M University  
2014- Faculty of Genetics, Texas A&M University  
2013- Center for Biological Clocks Research, Texas A&M University, Member  
2013-2019 Assistant Professor, Department of Biology, Texas A&M University  
2007-2013 Postdoctoral Fellow with Dr. Steven Reppert, University of Massachusetts Medical School  
2003-2006 Graduate research with Dr. Emmanuelle Jacquin-Joly and Dr. Martine Maibeche, National Institute of Agronomical Research and University Pierre and Marie Curie, France

## Education

2003-2006 Ph.D., Insect Physiology, University Paris 6 Pierre and Marie Curie, France  
2002-2003 M.S., Invertebrate Physiology, University Paris 6 Pierre and Marie Curie, France  
1998-2002 B.S., Animal Biology, University Paris 6 Pierre and Marie Curie, France

## Honors and Awards

2021 Konopka Research Innovation Award, Texas Society for Circadian Biology and Medicine  
2020 Presidential Impact Fellow (lifetime title), Texas A&M University  
2018 Junior Faculty Research Award, International Society for Research on Biological Rhythms  
2017-2020 Klingenstein-Simons Fellowship Award in Neuroscience  
2011-2013 Charles King Trust Postdoctoral Fellowship, The Medical Foundation  
2003-2006 Graduate fellowship, French National Institute of Agronomical Research  
2002-2003 Fellowship, French Ministry of National Education

## Professional activities

### Boards

2020-2022 Board of Directors, International Society for Research on Biological Rhythms, Member-at-Large

### Memberships

2016- Member of the Genetics Society of America  
2014- Member of the Society for Research on Biological Rhythms  
2014-2019 Member of the NSF Insect Genetic Technology Network

### Editorial activities

2013- Review Editor, *Frontiers in Ecology and Evolutionary Biology*, *Chemical Ecology*  
2009-2013 Associate member of Faculty of 1000 Biology

### Reviewer activities

#### *Grants*

2019 National Science Foundation, Integrative Organismal Systems, *Ad hoc*  
2018 National Science Foundation, Integrative Organismal Systems, *Ad hoc*  
2017 National Science Foundation, Integrative Organismal Systems, *Ad hoc*  
2015 National Science Foundation, Integrative Organismal Systems, *Ad hoc*  
2015 National Science Foundation, Integrative Organismal Systems, Panelist

**Manuscripts** Animal Behavior, Behavior Genetics, Biological Journal of the Linnean Society, Cell Reports, Communications Biology, European Journal of Neuroscience, Frontiers in Behavioral Neuroscience, Frontiers in Ecology and Evolutionary Biology, Gene Technology, Heredity, Insect Molecular Biology, Journal of Biological Rhythms, Journal of Insect Science, Journal of the Lepidopterists' Society, Molecular Ecology, Proceedings of the National Academy of Sciences, PloS One, Scientific Reports, Science.

### **Awards**

2018 International Society for Research on Biological rhythms meeting, Trainee Merit Awards

### **Conference organization**

2020 Symposium Chair, International Society for Research on Biological Rhythms meeting  
2019-2020 Program Committee Member, 2020 International Society for Research on Biological Rhythms  
2019 Co-organizer, Texas Society for Circadian Biology and Medicine meeting  
2018 Session Chair, Trainee Development Day, International Society for Research on Biological Rhythms  
2016 Co-organizer, Texas Society for Circadian Biology and Medicine meeting  
2014 Session Chair, International Society for Research on Biological Rhythms meeting  
2014 Workshop co-organizer, Trainee Development Day, Society for Research on Biological Rhythms

### **Consultant**

2015 Book on Monarch butterflies in a series on Bioindicator animals (Red Line Amiral)

### **Invited Presentations and Seminars**

(\*: Upcoming commitment; \*\*: Commitment postponed to 2022 due to COVID-19)

2022\*\* International Congress of Neuroethology, *Presidential Symposium* (Lisbon, Portugal)  
2022\*\* Gordon Research Conference Photosensory Receptors and Signal Transduction (Ventura, CA)  
2022\*\* XVII European Biological Rhythms Society Congress (Zurich, Switzerland)  
2021\* University of Washington, Neuroscience Graduate Program (Seattle, WA)  
2021 International Behavioural and Neural Genetics Society, Genes, Brain and Behavior, Emergent systems for genetic studies of behavior Symposium (Virtual Conference)  
2021 CINCHRON European Network Seminar series (Virtual Seminar)  
2020 Argentinian Society for Research in Neuroscience (Virtual Conference)  
2019 Molecular Biosystems Conference on Eukaryotic Gene Regulation and Functional Genomics (Puerto Varas, Chile)  
2019 Texas A&M University, Department of Entomology (College Station, TX)  
2019 International Congress of Comparative Physiology and Biochemistry, Invertebrate photoperiodism and seasonality Symposium (Ottawa, Canada)  
2019 Gordon Research Conference Chronobiology (Castelldefels, Spain)  
2019 Texas Society for Circadian Biology and Medicine (College Station, TX)  
2018 Journal of Experimental Biology 2018 Symposium, Linking brain and behavior in animal navigation (Cavo Olympo, Greece)  
2017 8<sup>th</sup> Max Planck Institute-Chinese Academy of Sciences Exploratory Round Table Conference on "Mechanisms of Animal Behavior" (Shanghai, China)  
2017 University of Missouri, Division of Biological Sciences, *Invited by Graduate Students*  
2017 UC Davis, Department of Entomology and Nematology  
2017 Texas Genetics Society meeting (College Station, TX)  
2017 Genetics of Migration Symposium (Plön, Germany)  
2017 Center for Circadian Biology Symposium (UC San Diego, CA)  
2016 Texas A&M University, Department of Entomology, *Invited by Graduate Students*  
2016 International Congress of Entomology, Evolution of biological clocks Symposium (Orlando, FL)  
2016 Virginia Tech University, Department of Biological Sciences  
2016 Society for Research on Biological Rhythms (Tampa, FL)  
2016 Texas A&M University, Department of Horticultural Sciences  
2015 Texas A&M University, Interdisciplinary Program in Genetics  
2015 Insect Genetic Technology Research Coordination Network, Special symposium on Flies, Monarchs, Mosquitoes: Insights using genetic technologies (Rockville, MD)  
2015 Insect Genetic Technology Workshop, Annual Arthropod Genomics Consortium Symposium (Manhattan, KS)

- 2014 Baylor University, Department of Biology  
 2014 APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology (San Diego, CA)  
 2014 Texas A&M University, Zoology Society  
 2014 Southeastern and Central Texas Society for Clocks Meeting (Houston, TX)  
 2013 Texas A&M University, Genetic Graduate Student Association  
 2013 EFOR network, Genomics and Lepidoptera (Paris, France)  
 2013 Behavioural Ecology of Animal Movement, Post-congress Symposium of the 14th International Behavioral Ecology Congress (Lund, Sweden)  
 2010 Society for Research on Biological Rhythms (Sandestin, FL)  
 2009 Hot topic symposium of the XI Congress of the European Biological Rhythms Society (Strasbourg, France; selected on abstract)

## Publications

### *In preparation* (\*: Postdoctoral Associates; \*: Graduate students)

1. Zhang Y\*, liams SE\*, Menet JS, Hardin PE and **Merlin C**. TRITHORAX-dependent arginine methylation of HSP68 mediates circadian repression by PERIOD.

### *Submitted*

1. Beetz J, Kraus C, Franzke M, Dreyer D, Strube-Bloss M, Roessler W, Warrant E, **Merlin C** and El Jundi B. State-dependent egocentric and allocentric heading representation in the monarch butterfly compass. *BioRxiv*, <https://doi.org/10.1101/2021.04.07.438824>.

### *Under revisions*

1. Rivas GBS, Zhou J, **Merlin C** and Hardin PE. CLOCKWORK ORANGE promotes CLOCK-CYCLE activation via the Drosophila ortholog of CLOCK INTERACING PROTEIN, CIRCADIAN. *Current Biology*.
2. Greenwell BJ, Beytebiere JR, Lamb TM, Bell-Pedersen D, **Merlin C** and Menet JS. Isoform-specific regulation of rhythmic gene expression by alternative polyadenylation. *BioRxiv*, doi: <https://doi.org/10.1101/2020.12.12.422514>.

### *Peer-reviewed* (\*: Postdoctoral Associates; \*: Graduate students; \*\*: Undergraduate students)

27. Nguyen TAT, Beetz J, **Merlin C** and El Jundi B (2021) Sun compass neurons are tuned to migratory orientation in monarch butterflies. *Proceedings of the Royal Society B* 288: 20202988.
26. Wan G<sup>+</sup>, Hayden AN<sup>\*\*</sup>, liams SE<sup>\*</sup> and **Merlin C** (2021) Cryptochrome 1 mediates light-dependent inclination magnetosensing in monarch butterflies. *Nature Communications* 12: 771.
25. **Merlin C**, liams SE<sup>\*</sup> and Lugena AB<sup>\*</sup> (2020) Monarch butterfly migration moving into the genetic era. *Trends in Genetics* 36(9): 689-701.
24. liams SE<sup>\*</sup>, Lugena AB<sup>\*</sup>, Zhang Y<sup>+</sup>, Hayden AN<sup>\*\*</sup> and **Merlin C** (2019) Photoperiodic and clock regulation of the vitamin A pathway in the brain mediates seasonal responsiveness in the monarch butterfly. *Proc Natl Acad Sci USA* 116(50): 25214-25221.
23. Lugena AB<sup>\*</sup>, Zhang Y<sup>+</sup>, Menet JS and **Merlin C** (2019) Genome-wide discovery of the daily transcriptome, cis-regulatory elements and transcription factor footprints in the monarch butterfly brain. *PLoS Genetics* 15(7): e1008265.
22. **Merlin C** and Liedvogel M (2019) The genetics and epigenetics of animal migration and orientation: birds, butterflies, and beyond. *Journal of Experimental Biology*, 222, jeb191890.
21. Zhang Y<sup>+</sup>, Markert MJ<sup>\*</sup>, Groves SC<sup>\*\*</sup>, Hardin PE and **Merlin C** (2017) Vertebrate-like CRYPTOCHROME 2 from monarch regulates circadian transcription via independent mechanisms on CLOCK and BMAL1. *Proc Natl Acad Sci USA* 114(36): E7516-E7525.
20. Denlinger DL, Hahn DA, **Merlin C**, Holzapfel CM, and Bradshaw WE (2017) Keeping time without a spine: what can the insect clock teach us about seasonal adaptation? *Philosophical Transactions of the Royal Society B* 372:1734.

19. Markert MJ\*, Zhang Y\*, Enuameh MS, Reppert SM, Wolfe SA and **Merlin C** (2016) Genomic access to monarch migration using TALEN and CRISPR/Cas9-mediated targeted mutagenesis. *G3: Genes, Genomes, Genetics* 6:905-15.  
• *Featured in 2016 G3: Genes|Genomes|Genetics Spotlight.*
18. Reppert SM, Guerra PA and **Merlin C** (2016) Neurobiology of Monarch Butterfly Migration. *Annual Reviews of Entomology* 61:25-42.
17. **Merlin C**, Beaver LE, Taylor OR, Wolfe SA and Reppert SM (2013) Efficient targeted mutagenesis in the monarch butterfly using Zinc Finger Nucleases. *Genome Research* 23:159-68.
16. Guerra PA, **Merlin C**, Gegear RJ and Reppert SM (2012) Discordant timing between antennae disrupts sun compass orientation in migratory monarch butterflies. *Nature Communications* 3:958.
15. **Merlin C**, Heinze S and Reppert SM (2012) Unraveling navigational strategies in migratory insects. *Current Opinion in Neurobiology* 22:353-61.
14. Zhan S, **Merlin C**, Boore JL and Reppert SM (2011) The monarch butterfly genome yields insights into long-distance migration. *Cell* 147: 1171-1185.
13. Legeai F, Malpel S, Montagné N, Monsempes C, Cousseran F, **Merlin C**, François M-C, Maïbèche-Coisne M, Gavory F, Poulain J and Jacquin-Joly E (2011) An Expressed Sequence Tag collection from the male antennae of the Noctuid moth *Spodoptera littoralis*: a resource for olfactory and pheromone detection research. *BMC Genomics* 12: 86.
12. Reppert SM, Gegear RJ and **Merlin C** (2010) Navigational mechanisms of migrating monarch butterflies. *Trends in Neurosciences* 33: 399-406.
11. **Merlin C**, Gegear RJ and Reppert SM (2009) Antennal circadian clocks coordinate sun compass orientation in migratory monarch butterflies. *Science* 325: 1700-1704.
10. Bradley TJ, Briscoe AD, Brady SG, Cardinal S, Contreras HL, Danforth N, Dudley R, Grimaldi D, Harrison JF, Kaiser A, **Merlin C**, Reppert SM, Vanderbrooks JM and Yanoviak SP (2009) Episodes in Insect Evolution. *Integrative and Comparative Biology* 49: 590-606.
9. Malpel S, **Merlin C**, François M-C and Jacquin-Joly E (2008) Molecular identification and characterization of two new Lepidoptera chemoreceptors belonging to the *Drosophila* OR83b family. *Insect Molecular Biology* 17: 587-596.
8. **Merlin C**, Lucas P, Rochat D, François M-C, Maïbèche-Coisne M and Jacquin-Joly E (2007) An antennal circadian clock and circadian rhythms in the peripheral pheromone reception in the moth *Spodoptera littoralis*. *Journal of Biological Rhythms* 22: 502-514.
7. **Merlin C**, Rosell G, Carot-Sans G, François M-C, Bozzolan F, Pelletier J, Jacquin-Joly E, Guerrero A and Maïbèche-Coisne M (2007) Antennal esterase cDNAs from two pest moths, *Spodoptera littoralis* and *Sesamia nonagrioides*, potentially involved in odourant degradation. *Insect Molecular Biology* 16: 73-81.
6. De Santis F, François M-C, **Merlin C**, Pelletier J, Maïbèche-Coisne M, Conti E and Jacquin-Joly E (2006) Molecular cloning and *in situ* expression patterns of two new pheromone-binding proteins from the corn stemborer *Sesamia nonagrioides*. *Journal of Chemical Ecology* 32: 1703-1717.
5. **Merlin C**, François M-C, Queguiner I, Maïbèche-Coisne M and Jacquin-Joly E (2006) Evidence for a putative antennal clock in *Mamestra brassicae*: molecular cloning and characterization of two clock genes-*period* and *cryptochrome*- in antennae. *Insect Molecular Biology* 15: 137-145.
4. **Merlin C**, François M-C, Bozzolan F, Pelletier J, Jacquin-Joly E and Maïbèche-Coisne M (2005) A new aldehyde oxidase selectively expressed in chemosensory organs of insects. *Biochemical and Biophysical Research Communications* 332: 4-10.
3. Maïbèche-Coisne M, **Merlin C**, François M-C, Porcheron P and Jacquin-Joly E (2005) P450 and P450 reductase cDNAs from the moth *Mamestra brassicae*: cloning and expression patterns in male antennae. *Gene* 346: 195-203.
2. Jacquin-Joly E and **Merlin C** (2004) Insect olfactory receptors: contributions of molecular biology to chemical ecology. *Journal of Chemical Ecology* 30: 2359-97.
1. Maïbèche-Coisne M, **Merlin C**, François M-C, Queguiner I, Porcheron P and Jacquin-Joly E (2004) Putative odorant-degrading esterase cDNA from the moth *Mamestra brassicae*: cloning and expression patterns in male and female antennae. *Chemical Senses* 29: 381-390.

### **Book chapters**

2. **Merlin C**, Gegeer RJ and Reppert SM (2011) Monarch butterfly migration. In, McGraw-Hill Yearbook of Science and Technology, pp 212-214.
1. **Merlin C** and Reppert SM (2009) Lepidopteran circadian clocks: from molecules to behavior. In, Molecular Biology and Genetics of the Lepidoptera, Goldsmith M.R. and Marec, F.(Eds), Taylor & Francis, Boca Raton, FL, chap. 8, pp 137-152.

## **Teaching**

### **Texas A&M University**

#### **BIOL 609: Molecular Tools**

Graduate course that focuses on modern tools and methods used in prokaryotic and eukaryotic molecular biology. Students learn to choose the appropriate experimental technique for a given scientific question and to design and interpret experiments. (Co-Instructor with Dr. Menet Jerome, Fall semester; 50% effort; enrollment 20-30 students)

#### **BIOL 214: Genes, Ecology and Evolution**

Undergraduate sophomore-level course that provides a genetically-based introduction to the study of ecology and evolution with an emphasis on the interactions of organisms with each other and with their environment. (Spring semester; 100% effort; enrollment 80-110 students)

### **International Courses** (\*: Upcoming commitment)

#### **Society for Neuroscience 2021\***

Short course on Mechanisms and Methods in Circadian Rhythm Research (Lecturer)

## **Research Personnel**

### **Current**

Corine Harvey	Student worker, Biology undergraduate student
Aldrin Lugena	Ph.D candidate, Biology <i>Recipient of: 2018 Society for Research on Biological Rhythms Trainee Merit Award; 2018 Texas A&amp;M Department of Biology Travel Award; 2020 Society for Research on Biological Rhythms Trainee Merit Award; 2020 Roozbeh Arianpour Memorial Scholarship from the Texas A&amp;M Department of Biology; 2020 SPRC Second place best poster award (post-prelims).</i>
Julia Peralta	Student worker, Biology undergraduate student
Jiwei Zhang	Graduate Student, Biology
Dr. Ying Zhang	Postdoctoral Research Associate <i>Recipient of: Best postdoc poster at the 2019 TAMU Biology Student/Postdoc Research Conference</i>

### **Current Visiting Scholars**

Dr. Basil el Jundi	Emmy Noether group leader, Biocenter, University of Würzburg, Germany
Dr. Jerome Beetz	Postdoctoral researcher, el Jundi's group, University of Würzburg, Germany
Myriam Franzke	Graduate student, el Jundi's group, Biocenter, University of Würzburg, Germany
Tu Anh Nguyen Thi	Graduate student, el Jundi's group, Biocenter, University of Würzburg, Germany

### **Former Trainees**

Dr. Guijun Wan	Postdoctoral Research Associate, 2017-2020 <i>Recipient of: 1<sup>st</sup> place poster competition at the 2019 Texas Society for Circadian Biology and Medicine; 2020 Society for Research on Biological Rhythms Wellcome Burrough Fund Excellence Award</i> <u>Current position:</u> Assistant Professor, Department of Entomology, Nanjing Agricultural University, China
Dr. Samantha Iiams	Interdisciplinary Program of Genetics PhD student, 2015-2021

*Recipient of: 2016 Texas A&M Genetics Outstanding Performance in Teaching Award; Best poster prize in the junior category at the 2017 Texas A&M Biology Student Postdoc Research Conference; Second place oral competition and People's Choice awards at the 2018 Texas A&M Genetics Symposium; Poster prize at the 2018 Texas Society for Circadian Biology and Medicine meeting; 2018 Society for Research on Biological Rhythms Patricia DeCoursey Excellence Award; 2018 Texas A&M Genetics Program Travel Award; 1<sup>st</sup> place poster competition at the 2019 Texas A&M Genetics Symposium; 1<sup>st</sup> place poster competition at the 2019 Texas A&M Genome Editing Symposium*  
**Current position:** Postdoctoral Research Associate, Department of Neurosciences, UT Southwestern Medical School, Joseph Takahashi's lab

### Former Visiting Scholars

Dr. Alok Arun	Assistant Professor, Institute of Sustainable Biotechnology, Inter American University of Puerto Rico
Dr. Guijun Wan	Postdoctoral Researcher, Department of Entomology, Nanjing Agricultural University, Nanjing, China
Milan Becker	Master's student, el Jundi's group, Biocenter, University of Würzburg, Germany
Mingqi Cai	Master's student, East Normal China University, Shanghai, China

### Former Undergraduate Students

Alyssa Bennett (2019)	Undergraduate research assistant, Biology TAMU
Catherine Bogdan (2017-19)	B.S. Genetics TAMU, <i>Recipient of: President's Endowed Scholarship, Billy G. Bethea '52 Scholarship, Joe and Billy Manion Endowed Scholarship, PACE Scholarship</i> (Graduate School, Biology, University of Delaware)
Kendall Bowen (2015-17)	B.S. Genetics TAMU, <i>Recipient of: Poster prize at the 2017 TAMU Biology graduation reception</i>
Jenna Coleman (2019-2020)	B.S. Biology TAMU
Mandy Eckhardt (2019)	Genetics IDP REU undergraduate student (Austin College)
Melanie Goodman (2014-15)	B.S. Biology TAMU
Shayna Groves (2014-15)	B.S. Biology TAMU (Histology Technician at Amarillo Pathology Group, TX)
Ashley Hayden (2017-19)	B.S. Honors Biology TAMU, <i>Recipient of: 2018-2019 Astronaut Scholarship; 2019 Texas A&amp;M Biology Distinguished Undergraduate Award</i> (Graduate School, Neuroscience program, Baylor College of Medicine)
Sarah Kenny (2015-17)	B.S. Biology TAMU, <i>Recipient of: Poster prize at the 2017 TAMU Biology graduation reception</i> , (Medical School, University of Texas School of Medicine at San Antonio)
Emily McKnight (2013-14)	B.S. Biology TAMU (Physician Assistant School, University of Texas Medical Branch, Galveston, TX)
Candice Medina (2015)	B.S. Biology TAMU, (Graduate School at Texas A&M University)
Kimberly Morrison (2018)	B.S. Biology TAMU
Lauren Nowlin (2016)	B.S. Biology TAMU
Jason Park (2017-18)	B.S. Biology TAMU (M.S. student in Biomedical Sciences, Texas A&M University)
Anna Subonj (2018-19)	Undergraduate research assistant, Biology TAMU
Justin Vann (2014)	B.S. Biology TAMU (M.S. student in Biomedical Sciences, Texas A&M University)

## **Funding**

### Current

#### **TAMU Presidential Impact Fellowship**

(PI: C. Merlin) 2020-2023  
 Total award amount: \$75,000

#### **Klingenstein-Simons Award in Neuroscience**

(PI: C. Merlin) 7/1/2017-6/30/2022 (2-year no cost extension)  
 Title: Defining clock neuronal circuits that control seasonal behavior  
 Total award amount: \$225,000

The objective of this project is to develop CRISPR/Cas9-assisted knock-in approaches in the monarch butterfly 1) to generate a reporter rhythmic monarch cell line, and 2) to tag clock neurons in vivo to map the circadian neural circuits in monarch brains and antennae and determine if they are rewired seasonally.

#### **NIH R01 GM124617**

(PI: C. Merlin, MPI: P. Hardin)

8/11/2017-8/10/2022 (1-year no cost extension)

Title: Mechanisms of circadian repression

Total award amount: \$1,157,576

The objective of this project is to determine 1) how PERIOD initiates on-DNA repression of CLOCK-BMAL1 and CLOCK-CYCLE transcription, and 2) how PERIOD and CLOCKWORKORANGE collaborate to maintain off-DNA transcriptional repression and promote CLOCK-CYCLE/CLOCK-BMAL1 transcription, using the monarch butterfly and *Drosophila* as two complementary models.

#### **NIH R01 GM124617 S1 Administrative Supplement**

(PI: C. Merlin, MPI: P. Hardin)

8/01/2020-7/31/2021

Title: Mechanisms of circadian repression

Total award amount: \$66,696 (supplemented with \$22,250 from TAMU as 25% cost sharing)

#### **NSF IOS 1754725**

(PI: C. Merlin)

6/1/2018-5/30/2022 (1-year no cost extension)

Title: Epigenetic regulation of seasonal behavior in insects

Total award amount: \$600,000

The objective of this project is to delineate the epigenetic architecture that underlies differential gene expression in the monarch brain responsible for migratory behavior and the production of distinct seasonal flight orientations by identifying open chromatin regions, cis-regulatory elements and transcription factors that mediate differential gene expression between non-migrants, fall migrants and spring remigrants.

#### Completed

##### **T3 Triad Texas A&M University**

(PI: K. Delmore; Co-PIs: C. Merlin, K. Entesari)

1/1/2019-12/31/2020

Title: Unravelling the genetic basis of seasonal migration in songbirds

Total award amount: \$30,000

The objective of this grant is to establish an automated telemetry system in British Columbia to quantify migratory timing, orientation and gene expression in Swainson's thrushes hybrids.

##### **NSF IOS 1456985**

(PI: C. Merlin)

5/1/2015-4/30/2019 (1-year no cost extension)

Title: Circadian clock control of seasonal migration

Total award amount: \$550,863

The objectives of this project were to 1) genetically determine the role of the circadian clock in the control of the monarch butterfly migratory switch, and 2) to identify molecular pathways under clock-control in the monarch brain that underlie the photoperiodically-induced migratory switch.

##### **Center for Biological Clocks Research Bridge Funds Mini Grant 2014**

(Co-PI with Dr. Paul Hardin)

Title: Knocking out and tagging clock genes in *Drosophila* and the Monarch butterfly using CRISPR/Cas9 and TALEN-mediated genome editing approaches

Total amount: \$16,000

#### **University Services**

##### Departmental

2020-2023 Graduate Program Committee, Department of Biology, Member

2020-2021 Faculty Search Committee, Department of Biology, Member

2015-2017 Faculty Search Committee, Department of Biology, Member (two consecutive searches)

2015 Student/Postdoc Research Conference Committee, Department of Biology, Chair

2014, 2016 Student/Postdoc Research Conference Committee, Department of Biology, Member

### Graduate Student Committee member

2020-present Griffin Best, Department of Biology  
2020-present Ebi Preh, Department of Biology  
2018-present Kushal Bakshi, Neuroscience Program  
2018-present Whitney Robertson, Department of Biology  
2018-present Jordan Holland, Genetics Program  
2017-present Amy Tan, Department of Biology  
2018-2020 Tammy oh, Department of Biology (Chair)  
2016-2020 Ashley Tessnow, Department of Entomology  
2015-2020 Zachary Popkin-Hall, Department of Entomology  
2015-2019 Joshua Beytebiere, Department of Biology  
2016-2019 Justin Overcash, Genetics Program  
2014-2019 Michael Werry, Department of Biology  
2018-2019 James Kutlowski, Department of Biology  
2015-2018 Andrew Sakla, Department of Biology  
2016-2018 Miguel Gonzales, Genetics Program  
2016-2018 Melanie DeSessa, Chemical Engineering Department  
2015-2017 Courtney Caster, Genetics Program  
2014-2017 Tianxin Liu, Department of Biology

### Interdepartmental

2016-2019 Texas A&M Genetics Graduate program, Graduate Recruiting Committee, Member  
2015-2016 Texas A&M Genetics Graduate program, Graduate Advising Committee, Member  
2014-2016 Texas A&M Institute for Neuroscience, Graduate Program Committee, Member

### College-level

2020-2021 Biology Department Head Search Advisory Committee, Member

### University-level

2020-2021 Texas A&M President's Excellence Funds Steering Committee, Member  
2019 Texas A&M Astronaut Scholarship Foundation Selection Committee, Member