

DANIEL R. KICK

PUBLICATIONS

- 2022 • **Yield Prediction Through Integration of Genetic, Environment, and Management Data Through Deep Learning**
[bioRxiv \(Under-Review\)](#)
• Daniel R. Kick, Jason G. Wallace, James C. Schnable, Judith M. Kolkman, Baris Alaca, Timothy M. Beissinger, David Ertl, Sherry Flint-Garcia, Joseph L. Gage, Candice N. Hirsch, Joseph E. Knoll, Natalia de Leon, Dayane C. Lima, Danilo Moreta, Maninder P. Singh, Teclemariam Weldekiidan, Jacob D. Washburn

2022 • **Timing dependent potentiation and depression of electrical synapses contributes to network stability in the crustacean cardiac ganglion**
[The Journal of Neuroscience](#) 📍 Code

2019 • **Molecular profiling of single neurons of known identity in two ganglia from the crab *Cancer borealis***
[Proceedings of the National Academy of Sciences](#) 📍 Code
• Adam J. Northcutt, Daniel R. Kick, Adriane G. Otopalik, Benjamin M. Goetz, Rayna M. Harris, Joseph M. Santin, Hans A. Hofmann, Eve Marder, and David J. Schulz

2019 • **Cell Communication: Studying gap junctions with PARIS**
[eLife](#)
• Daniel R Kick, David J Schulz

2018 • **Dopamine maintains network synchrony via direct modulation of gap junctions in the crustacean cardiac ganglion**
[eLife](#)
• Brian J Lane, Daniel R Kick, David K Wilson, Satish S Nair, David J Schulz

2018 • **Motor Systems: Variability in neural networks**
[eLife](#)
• Daniel R Kick, David J Schulz

2016 • **The Hillary Climber trumps manual testing: an automatic system for studying *Drosophila* climbing**
[The Journal of Neurogenetics](#)
• Alex M. Willenbrink, Margo K. Gronauer, Leon F. Toebben, Daniel R. Kick, Madalyn Wells & Bing Zhang
• [Journal of Neurogenetics](#)



View this CV online with links at
<https://danielkick.com/cv.pdf>

CONTACT

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LANGUAGE SKILLS

R
Python
Bash

Made with the R package
[pagedown](#).

The source code is available on
github.com/danielkick/cv.

Last updated on 2022-10-18.



INDUSTRY EXPERIENCE

2021

- **Research Geneticist**

Jacob Washburn Lab

📍 USDA-ARS

- Improved yield prediction of maize in diverse environments by using deep learning to better capture gene by environment effects. Conducted research and wrote manuscript on results. Communicated results to stakeholders through local and national presentations. Supervised undergraduate high throughput phenotyping project and assisted with related coding needs.

I have had the opportunity of researching diverse systems and question but connecting these has been a focus developing or applying physical or computational tools and approaches to collect better data or make better use of collected data regardless of whether it is being used to answer questions of cell identity and compensation or interactions between genetic and environmental factors. As a graduate researcher I gained experience with machine learning, statistics, and data analysis. I also had the opportunity to receive training in bioinformatics. In just over a year as a post-doc I have gained experience manipulating genomic data, curating large datasets, interacting with high performance computing, and optimizing deep neural networks



EDUCATION

2021

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2015

- **PhD. Biological Sciences**

University of Missouri

📍 Columbia, MO

- Coursework included Machine Learning Methods for Biomedical Informatics, Quantitative Methods in the Life Sciences, and Grant Writing

2015

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2011

- **Bachelor of Science**

Truman State University

📍 Kirksville, MO

- Coursework included Next Generation Sequence Data and Analysis, Bioinformatics, Analysis of Variance and Experimental Design, Non-Parametric Statistics, and Economic & Medicinal Botany



RESEARCH EXPERIENCE

2021

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2016

- **Graduate Student**

David Schulz Lab

📍 Missouri State University

- Assessed the efficacy of machine learning models to recapitulate neural cell identity from mRNA expression ¹. Demonstrated that activity desynchronization induces degree dependent changes in conductance between neurons ². Investigated the compensatory effects of elevated depolarization on neuronal excitability, conductances, and ion channel mRNA abundances in small neural networks ³.

2015

- **Graduate Student Rotation**

Loren Milescu Lab

📍 Missouri State University

- Developed a protocol for live imaging neurons in *Drosophila melanogaster* with a two-photon microscope.

2015	Graduate Student Rotation Bing Zhang Lab	📍 Missouri State University
	• Designed a machine to assay Drosophila climbing ⁴) and quantified sleep patterns of Drosophila tyrosine hydroxylase mutants	
2014	Undergraduate Researcher Diane Janick-Buckner, Brent Buckner Lab	📍 Truman State University
	• Designed and prototyped a hydroponic growth chamber for maize root phenotyping.	
2014	NSF REU Student Rahul Kanadia Lab	📍 University of Connecticut
	• Measured minor spliceosome upregulation using in situ hybridization supporting a role in postponing retinal cell death.	
2013	NSF REU Student Christian Lorson Lab	📍 Missouri State University
	• Assessed motor function in mouse model of spinal muscular atrophy with and without oligonucleotide treatment.	
2011	Student Assistant Laszlo Kovacs Laboratory	📍 Missouri State University
	• Tested teaching experiments for use in a genetics course.	

TEACHING EXPERIENCE

2021 2020	Lead Teaching Assistant, Animal Physiology Lab Biological Sciences	📍 University of Missouri
	• Coordinated adaptation and expansion of lab material to be fully online due to Covid-19. Developed and deployed a statistics web application used by a minimum 705 students as of 2021 source ⁵ , deployed ⁶ . Includes capability for visualization, testing model assumptions, frequentist models, non-parametric tests, basic Bayesian models.	
2020 2018	Teaching Assistant, Animal Physiology Lab Biological Sciences	📍 University of Missouri
	• Tested additional curriculum alterations, tested grade distributions to identify and adjust for grader effects.	
2018 2018	Curriculum Consultant, Animal Physiology Lab Biological Sciences	📍 University of Missouri
	• Updated curriculum and redesigned experiments placing a greater focus primary literature and data analysis.	

As a teaching assistant I took on curriculum design and leadership roles in addition to teaching. In process of overhauling the statistical methods used in this lab I programmed and deployed a statistical application for students to analyze their data with. A demonstration copy is available at danielkick.shinyapps.io/BioSc3700_1/. Later, I coordinated the necessary curriculum adjustments to allow animal physiology to be taught remotely and adhere to the University of Missouri's COVID-19 policies. In my final semester I trained my replacement (Benton Berigan, PhD) for this role. Additionally, I have had the opportunity to mentor and work alongside five students, training them in microdissection, electrophysiology, experimental design, and data analysis.

2016
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2015

- **Teaching Assistant, Animal Physiology Lab**
Biological Sciences 📍 University of Missouri
 - Provided weekly lectures on relevant background, ensured experiments were conducted safely, provided timely feedback on assignments.

☰ HONORS AND AWARDS

2022

- **Poster Ranked first in MU Plant Research Symposium poster competition**

2019

- **J. Perry Gustafson Award for Outstanding Graduate Research in the Life Sciences**
 - \$2,000

2018

- **NIH T32 Training Grant Recipient**

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2016

- \$27,000 yearly stipend

2017

- **NIH T32 Travel Award (x2)**

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2016

- \$750, each

2015

- **Cum Laude, Truman State University**

2015

- **President's Recognition, Truman State University**

☰ PROFESSIONAL ACTIVITIES

2022

- **The Carpentries Instructor⁷**

2022

- **Data Carpentries (Helper)**

Workshop Assistant; [Data Management with SQL](#)

📍 University of Missouri, Columbia

- Data Management with SQL⁸

2022

- **Panel Member, Next-Generation Omics, Biological Sciences Divisional Retreat**

Panel Member; Next-Generation Omics, Biological Sciences Divisional Retreat

📍 University of Missouri Division of Biological Sciences Retreat

- Ruthie Angelovici, David J Schulz, Daniel R Kick, and Mannie Liscum

- 2022 • Workshop Instructor; R for Reproducible Scientific Analysis⁹
 📍 University of Missouri, Columbia
- 2022 • Workshop Instructor, creator; Tools and Techniques for a Jupyter Based Scientific Workflow
 📍 University of Missouri Bioinformatics in Plant Science (BIPS) [12](#)
 · Daniel R Kick*
- 2019 | 2016 • Society for Neuroscience
- 2016 • Scientific Poster Judge
Spring Undergraduate Research and Creative Achievements Forum
 📍 University of Missouri Bioinformatics in Plant Science (BIPS)

☰ PROFESSIONAL DEVELOPMENT

- 2022 • MU-Bayer Mentoring Program (mentee)
- 2020 • Software Carpentry: Python, University of Missouri
- 2017 • Diversity & Inclusion Workshop, University of Missouri
- 2016 • Big Data in Biology, University of Austin

☰ MENTORING

- 2022 • **Madi Mitchell**
Undergraduate
- 2022 | 2021 • **Grace Sidberry**
Undergraduate
- 2022 | 2021 • **Mia Rupel**
Undergraduate
- 2021 • **Brady Bradford**
Undergraduate
- 2019 | 2016 • **Abby Beckerdite**
Undergraduate
- 2019 • **Ayla Ross**
NSF REU

- 2018 ● **Katlyn Sullivan**
NSF REU
- 2017 ● **Kelly Hiersche**
NSF REU
- 2016 ● **Rody Kingston**
Post-baccalaureate Scholar

☰ PRESENTATIONS (NATIONAL)

- 2022 ● **Yield Prediction Accuracy is Improved Through Incorporating Genetic, Environmental, and Management Interactions with Deep Learning,**
Columbia MO
📍 University of Missouri Interdisciplinary Plant Group Symposium
 - Daniel R Kick*, Jacob D. Washburn (2022)
 - Presentation
- 2020 ● **Effects of blockade of K⁺ currents on membrane conductance and channel expression at 1 hour and 24 hours in motor neurons of the cardiac ganglion.**
Virtual
📍 Dynamic Neural Networks: The Stomatogastric Nervous System
 - Daniel R Kick*, Brian J. Lane, David J Schulz.
 - Presentation
- 2019 ● **Loss of synchronous activity across gap junctions results in a phase-dependent change in coupling conductance magnitude.**
Chicago IL
📍 Neuroscience
 - Daniel R Kick*, David J Schulz.
 - Poster
- 2019 ● **Asynchronous voltage activity regulates electrical synapse plasticity.**
Chicago IL
📍 Dynamic Neural Networks: The Stomatogastric Nervous System
 - Daniel R Kick*, David J Schulz.
 - Presentation
- 2017 ● **Variability from mRNAs to network output in the *C. borealis* cardiac ganglion.**
Washington D.C.
📍 Dynamic Neural Networks: The Stomatogastric Nervous System
 - Daniel R Kick*, David J Schulz.
 - Presentation

2017

- Variation across network output, excitatory post synaptic potentials, ionic conductances, and ion channel and receptor mRNAs within motor neurons of the crustacean cardiac ganglion.

Washington D.C.



Neuroscience

- Daniel R Kick*, Brian J Lane, Joseph L Ransdell, Satish S Nair, David J Schulz.
- Poster

2016

- What crustaceans can teach us about the workings of the nervous system.

Columbia MO



Animal Behavior Society

- Virginia Garcia, Daniel R Kick*, Cindy Kyi, Brian J Lane, Kwasi M Lett, Adam J Northcutt, Joseph L Ransdell, Simone Temporal, and David J Schulz.
- Poster

PRESENTATIONS (LOCAL)

2022

- Maize Yield Prediction is Improved by using Deep Learning to Incorporate Interactions between Genetic, Environmental, and Management Factors.

Virtual



- Daniel R Kick*, Jacob D Washburn

2022

- Maize Yield Prediction is Improved by Modeling Interactions between Genetic, Environmental, and Management Factors with Deep Learning

Columbia MO



- Daniel R Kick*, Jacob D Washburn
- Presentation

2022

- Yield Prediction Through Integration of Genetic, Environment, and Management Data by Deep Learning

Columbia MO



- Daniel R Kick*, Jacob D Washburn
- Poster
- Ranked first in poster competition

2019

- Classifying neurons from molecular data

Columbia MO



2018

- Voltage Dependent Modification of Electrical Synapses and Ionic Conductances

Columbia MO



- Daniel R Kick*, David J Schulz
- Poster

- 2017
- **The Cancer borealis Cardiac Ganglion: a Window into Variability and Activity Dependent Regulation**
Columbia MO  NIH-T32 progress seminar
 - Daniel R Kick*, David J Schulz
 - Presentation
- 2015
- **Upregulation of the Minor Spliceosome in Mouse Retinae due to Zaprinast Exposure**
Kirksville MO  Truman State University Student Research Conference
 - Daniel R Kick*, Marybeth Baumgartner, Christopher Lemoine, Devi Krishna Priya Karunakaran, Nikita Sturrock, Amye Black, Rahul Kanadia
 - Poster
- 2014
- **Upregulation of the Minor Spliceosome in Mouse Retinae due to Zaprinast Exposure**
Storrs CT  University of Connecticut Summer Undergraduate Research Conference
 - Daniel R Kick*, Marybeth Baumgartner, Christopher Lemoine, Devi Krishna Priya Karunakaran, Nikita Sturrock, Amye Black, Rahul Kanadia
 - Poster
- 2013
- **Effective Gene Therapy in Spinal Muscular Atrophy: Utilizing Antisense Oligonucleotides Targeting Intronic Repressor Element1**
Columbia MO  University of Missouri Summer Undergraduate Research Conference
 - Daniel R Kick*, Eric Osman, Christian Lorson
 - Poster

PRESENTATIONS (OUTREACH)

- 2022
- **From Neurobiologist to Research Geneticist**
Virtual  Beyond the PhD (beyond-the-phd.com)
 - Daniel R Kick*
 - Presentation
- 2019
- **Spare the synapse, spoil the circuit, Public presentation**
Columbia MO  Science on Tap
 - Daniel R Kick*
 - Presentation
- 2019
- **Can mRNA expression recapitulate neuron cell types**
Kirksville MO  Truman State University Alumni Research Presentation
 - Daniel R Kick*
 - Presentation

- 2019
- **Voltage Dependent modification of Electrical Synapses**
Columbia MO  University of Missouri Biological Sciences Recruitment
 - Daniel R Kick*
 - Poster
- 2018
- **Gap Junction Conductance Modulation Via Voltage**
Kirksville MO  Truman State University Alumni Research Presentation
 - Daniel R Kick*
 - Presentation
- 2017
- **Please mind the gap: Network homeostatic plasticity in the Cancer borealis cardiac ganglion**
Kirksville MO  Truman State University Alumni Research Presentation
 - Daniel R Kick*
 - Presentation
- 2016
- **The Tell-Tale Heart: Applying crustacean neurogenic hearts to basic neurosciences questions**
Kirksville MO  Truman State University Alumni Research Presentation
 - Daniel R Kick*
 - Presentation