

# DANIEL R. KICK, PHD

- Experience with **statistics, programming, machine learning, and deep learning.**
- Designed NIFA funded research plan ([Grant 2023-67012-39485](#)).
- Presented to scientific and general audiences over **25 times** since 2016.
- Led **4 teaching assistants** and mentored **7 research students.**
- Developed statistical tool used by **>700 students** as of 2021.



## PROFESSIONAL AND RESEARCH EXPERIENCE

Present  
|  
2021

### Research Geneticist

Jacob Washburn Lab, USDA-ARS

- Secured \$225,000 to develop “Environmentally Aware Deep Learning Based Genomic Selection And Management Optimization For Maize Yield” from the National Institute of Food and Agriculture (NIFA) ([Grant 2023-67012-39485](#)).
- Employed **deep neural networks, machine learning models, and best linear unbiased predictors** to **improve corn yield prediction accuracy** in diverse environments.
- **Communicated** with stakeholders via **11 presentations** (5 national, 3 regional, 3 outreach).
- **Mentored** 2 students conducting a high throughput root phenotyping experiment.
- **Created** and taught a **Python data visualization workshop** titled “Tools and Techniques for a Jupyter Based Scientific Workflow”.
- Completed **Software Carpentries instructor certification**, taught **R for Reproducible Scientific Analysis**, and assisted in teaching **Data Management with SQL**.
- Designed and completed a professional development curriculum with the guidance of an industry scientist via the **Bayer-University Mentoring Program**.
- Served as a **panel member** on “Next-Generation Omics” at the 2022 University of Missouri Division of Biological Sciences Retreat.

2021  
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2015

### Graduate Researcher

David Schulz Lab, University of Missouri

- **Author on 6 publications:** 4 original research and 2 eLife Insight publications.
- **Assessed the efficacy of machine learning models** to identify cell identity from mRNA and contig abundances. **Applied cluster estimation, hyperparameter tuning, unsupervised machine learning, and supervised machine learning.** Identified and learned needed skills primarily through self study. Collaborated with molecular biology project lead. (see *Northcutt<sup>1</sup>, Kick<sup>1</sup>, et al. 2019*).
- Defined research question and experiments. **Developed novel approaches to quantify changes in cell activity.**
- Collaborated with **electrophysiologists**, assisting with data analysis.
- Collaborated with **computational neuroscientists**, contributing domain expertise.
- **Mentored 5 students** and oversaw their projects.
- Communicated results through **18 presentations** (6 national, 6 regional, 6 outreach).
- Served as a **peer mentor of 3 PhD students** in use of R for reproducible data analysis, created internal documents on same.

2021  
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2020

### Lead Teaching Assistant, Animal Physiology Lab

Biological Sciences, University of Missouri

- Developed **statistics web application** used by **more than 700 students** as of 2021 with **shiny** ([source](#), [deployed](#)) for data visualization, testing assumptions, and fitting **frequentist, non-parametric, and Bayesian** models.
- Led 4 Teaching Assistants and coordinated adaptation of lab curriculum to be fully online due to COVID-19 pandemic.
- **Mentored** next Lead Teaching Assistant, created documentation on best practices.

2020  
|  
2018

### Teaching Assistant, Animal Physiology Lab

Biological Sciences, University of Missouri

- Updated and refined curriculum, delivered lectures and ensured experiments were conducted safely, and modeled student grade distributions to identify and adjust for differences in grading.

## CONTACT INFO

✉ [daniel.r.kick@protonmail.com](mailto:daniel.r.kick@protonmail.com)

📄 [daniel-kick-5a449b9a](#)

🔗 [Google Scholar](#)

🐙 [github.com/danielkick](#)

🌐 [danielkick.com](#)

## EDUCATION

### PhD: Biological Sciences

University of Missouri,  
Columbia, MO (2021)

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

### Bachelor of Science: Biology

Truman State University,  
Kirksville, MO (2015)

Next Generation Sequence Data  
and Analysis, Bioinformatics

Leadership role in the biological  
honors society Tri-Beta

## Technical Skills

🐼: R Programming (7 years)  
and experience with  
**tidyverse, lme4, caret,**  
**ggplot2, shiny,** & package  
creation.

🐍: Python Programming (2  
years) and experience with  
**pandas, numpy, plotly,**  
**scikit-learn, keras,**  
**pytorch.**

📦: Miscellaneous Experience  
with high performance  
computing (**bash, slurm**),  
virtual environments (**conda,**  
**singularity**), version control  
(**git, GitHub**), literate  
programming (**Rmarkdown,**  
**Jupyter**), crop growth  
modeling (**APSIM Next**  
**Generation**).

For a pdf with  
links scan here.



- 2018 ● **Curriculum Consultant, Animal Physiology Lab**  
Biological Sciences, University of Missouri  
• Redesigned course material to incorporate primary literature and data analysis.
- 2016  
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2015 ● **Teaching Assistant, Animal Physiology Lab**  
Biological Sciences, University of Missouri  
• Delivered weekly lectures, ensured experiments were conducted safely, provided timely feedback on assignments.
- 2013  
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2015 ● **Undergraduate Researcher**  
University of Missouri, University of Connecticut, and Truman State University  
• Designed a hydroponic system for maize root phenotyping –(2014-2015), Quantified retinal minor splice expression using immunohistochemistry – (2014), Measured effectiveness of oligonucleotide treatment for spinal muscular atrophy in mice – (2013).



## HONORS AND AWARDS (4/5)

- 2025  
|  
2023 ● **NIFA Fellowship (AFRI EWD)**  
\$225,000 awarded over two years to create and environmentally aware deep learning genomic selection models and prepare the recipient to transition into industry [Grant # 2023-67012-39485](#).
- 2019 ● **J. Perry Gustafson Award for Outstanding Graduate Research in the Life Sciences**  
[This \\$2,000 award](#) is granted for the quality of their research and academic achievements.
- 2018  
|  
2016 ● **NIH T32 Training Grant Recipient**  
This provides a \$27,000 yearly stipend and \$750 yearly to facilitate presenting research at scientific conferences.
- 2015 ● **Cum Laude & President's Recognition, Truman State University**



## SELECTED PUBLICATIONS (SHOWING 3/8 PUBLISHED, 1/2 IN REVIEW, 0/3 IN PREP.)

- 2023 ● **Ensemble of BLUP, Machine Learning, and Deep Learning Models Predict Maize Yield Better than Each Model Alone**  
*Daniel R. Kick*, Jacob D. Washburn ([bioRxiv](#)) In Review at *In silico Plants*
- 2023 ● **Yield Prediction Through Integration of Genetic, Environment, and Management Data Through Deep Learning**  
*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 Weldekidan, Jacob D. Washburn [G3: Genes, Genomes, Genetics](#)
- 2022 ● **Timing dependent potentiation and depression of electrical synapses contributes to network stability in the crustacean cardiac ganglion**  
*Daniel R. Kick* and David J. Schulz [The Journal of Neuroscience](#)
- 2019 ● **Molecular profiling of single neurons of known identity in two ganglia from the crab *Cancer borealis***  
Adam J. Northcutt<sup>1</sup>, *Daniel R. Kick*<sup>1</sup>, Adriane G. Otopalik, Benjamin M. Goetz, Rayna M. Harris, Joseph M. Santin, Hans A. Hofmann, Eve Marder, and David J. Schulz (<sup>1</sup> *denotes co-first authorship*) [Proceedings of the National Academy of Sciences](#)