

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.
- Data and models downloaded over **180 times** and viewed **435 times.**



PROFESSIONAL AND RESEARCH EXPERIENCE

Present
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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 **12 presentations** (5 national, 3 regional, 4 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 *Northcutt¹, Kick¹, 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.

CONTACT INFO

✉ 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 (3
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.



2020
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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.

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
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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
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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 4/9 PUBLISHED, 0/2 IN PREP.)

2023

● **Ensemble of Best Linear Unbiased Predictor, Machine Learning, and Deep Learning Models Predict Maize Yield Better Than Each Model Alone**

Daniel R. Kick, Jacob D. Washburn [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, Teclmariam 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. Northcutt¹, *Daniel R. Kick*¹, Adriane G. Otopalik, Benjamin M. Goetz, Rayna M. Harris, Joseph M. Santin, Hans A. Hofmann, Eve Marder, and David J. Schulz (¹ denotes co-first authorship) [Proceedings of the National Academy of Sciences](#)