

Globally experienced statistician, data scientist, and educator that analyzes complex data finds and makes sense of themes builds intuition using narratives improves decision making supports collaboration and learning.

## Skills

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**Theory** Causal Inference, Network Science, Time Series, Model Selection, Information theory, Stochastic Processes  
Machine Learning, Maximum Likelihood Estimation, Bayesian Inference, Generalized Linear Modeling

**Toolbox** R, Python, Matlab, C++, Mathematica, TensorFlow, Stan, ArcGIS, SQL, Git  
L<sup>A</sup>T<sub>E</sub>X, Markdown, Adobe Illustrator, HTML, CSS, JS including D3, Microsoft Office including VBA

## Recent Positions

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- 2019 **Post-Doctoral Associate**, Cooperative Institute for Research in Environmental Sciences (CIRES)  
Developed and applied computational tools to explain and predict social, economic, and ecological systems. Published findings and secured additional funding. Supported under/grad students. Built collaborations with CIRES, Environmental Studies, the University of Colorado, and the local Boulder Valley School District.
- 2023 **Lecturer**, University of Colorado, Boulder  
Instructor of Record for Applied Ecology, a 75 student undergraduate class offered by the Environmental Studies Department that covers how ecological ideas and principles underlie both the problems and solutions of multiple environmental issues ranging from endangered species to global carbon cycling, including perspectives from physiological, behavioral, population, community and ecosystem ecology.
- 2020  
2018 **Data Scientist**, Arpeggio Biosciences  
Processed output from Next-Generation RNA Sequencing. Analyzed PRO-seq snapshots of transcription in cancerous cells treated with candidate drugs. Wrote customer reports suggesting actionable insights. Developed methods to infer gene regulatory networks that can be used to identify druggable targets.

## Select Publications

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- 2024 **Dynamic and context-dependent keystone species effects in kelp forests**  
Proceedings of the National Academy of Sciences *In Review*  
Ryan Langendorf, Jim Estes, Jane Watson, Mike Kenner, Brian Hatfield, Tim Tinker, Ellen Waddle, Megan DeMarche, & Dan Doak
- 2023 **Multidecadal dynamics project slow 21st-century economic growth and income convergence**  
Communications Earth & Environment  
Matt Burgess, Ryan Langendorf, Jonathan Moyer, Ashley Dancer, Barry Hughes, & Dave Tilman
- 2022 **Why win-wins are rare in complex environmental management**  
Nature Sustainability  
Margaret Hegwood, Ryan Langendorf, & Matt Burgess
- 2021 **Empirically classifying network mechanisms**  
Scientific Reports  
Ryan Langendorf & Matt Burgess
- 2020 **Two day time series of nascent RNA levels explains TF regulation of the MAPK pathway**  
Arpeggio Biosciences  
Ryan Langendorf, Joey Azofeifa, Joel Basken, & Maria Lai.

## Software

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- 2017 **netcom**  
Primary author and maintainer of this R package with tools for inferring system functioning from network data. Currently hosted on CRAN.

## Funding

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- 2021 **PI for NOAA Maryland Sea Grant**  
Beyond point measurements: Modeling benthic forage response to the duration, extent, and severity of hypoxia in Chesapeake Bay  
\$139,968
- 2020 **Senior Personnel for NSF Long Term Research in Environmental Biology**  
Stability and resilience in the face of multiple interacting press and pulse disturbances of a changing world  
\$512,987
- 2019 **PI for NOAA Maryland Sea Grant**  
The development and dissemination of causal inference for observational socio-environmental data  
\$8,179
- 2014 **NSF Graduate Research Fellowship**  
The Structure-Function Relationship of Ecological Systems  
\$130,000
- 2012 **IQ Biology**  
Interdisciplinary Quantitative Biology graduate PhD certificate through CU Boulder's BioFrontiers Institute. Learned the essential competencies demonstrated by knowledgeable, and well-rounded researchers who collaborate effectively across disciplines.  
\$45,000

## Mentoring

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- 2022 **PhD Dissertation Committee**  
University of Georgia  
Serve on a graduate student dissertation committee, helping them develop their research into a degree and a career in science.
- 2014 **Science Research Seminar, IB Biology, AP Biology, AP Statistics**  
Fairview High School  
Mentor students that presented research at the Regional, State, and International science fairs, some earning prize money and scholarships.
- 2023 **Research Experience for Community College Students (RECCS)**  
2022  
University of Colorado, Boulder  
Supported summer undergraduate research projects.
- 2020 **Computer Science Capstone**  
2018  
Arpeggio Biosciences  
Helped create and lead year-long team internships in the biotech industry for senior undergraduate computer science students. Fostered connections between academia and industry.
- 2014 **eCSite Fellowship**  
Worked with Paul Strode at Fairview high school to develop computational thinking skills with his students.

## Education

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- 2018 **PhD**  
2012  
University of Colorado, Boulder  
Environmental Studies  
Graduate Certificate in Interdisciplinary Quantitative Biology  
Dissertation: *Mechanical inference in complex ecosystems*
- 2010 **Bachelor of Science**  
2006  
Bates College  
Biology, Minor in Mathematics, *Magna Cum Laude*  
Organization for Tropical Studies in Kruger National Park, South Africa  
Center for Mathematical Biology at the University of Alberta  
Thesis: *Modeling diving patterns of foraging Crabeater seals*
- 2006 **International Baccalaureate**  
Chicago