

# Tanner Varrelman

## PhD Candidate

I am a PhD candidate in the Bioinformatics and Computational Biology Program at the University of Idaho. My dissertation takes a multidisciplinary approach to study infectious disease. Specifically, I have developed mathematical models to study the impact of transmissible vaccines to control infectious diseases in wildlife populations, and have compiled databases and developed web interfaces to visualize environmental and infectious disease data. I am expected to complete my PhD by May 2021.

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🌐 tvarrelman.github.io

in tanner-varrelman

🔄 tvarrelman

## SKILLS

### Programming

Python, R

### Web Development

JavaScript, HTML5

### Data Management

PostgreSQL, MySQL

### Version Control

GitHub

## EDUCATION

### Ph.D. Bioinformatics & Computational Biology

🏫 University of Idaho 📅 Jan 2017 – May 2021 (expected)

- Current GPA: 3.9
- Thesis Title: *Mathematical Models of Transmissible Vaccines: The impact of heterogeneities in transmission, space, and vector biology*

### B.S. Biology

🏫 University of Idaho 📅 2013 – 2016

- GPA: 3.71

## EXPERIENCE

### Research Assistant

🏫 University of Idaho 📅 Jan 2017 – May 2021

- Advisors: Christopher H. Remien, Scott L. Nuismer
- Develop mathematical models of transmissible vaccines.
- Development and management of an environmental database to aid in predictive modeling of Lassa virus in West Africa (<https://preemptlassawestafrika.ibest.uidaho.edu/res/map.php>).
- Develop python scripts to scrape and process environmental raster data from various data sources.
- Use GIS data and machine learning techniques to forecast the risk of infectious disease.

### Lab Rotation

🏫 Northwest Knowledge Network 📅 Aug 2020 – Dec 2020

- Mentors: Luke Sheneman, Jennifer Hinds
- Develop and manage a Lassa virus database consisting of both viral infection and viral sequence data.
- Create a Lassa virus dashboard that includes interactive data visualizations, filtered data download, and admin tools to insert new data into the Lassa virus database (<https://lassa.nkn.uidaho.edu>).

### Teaching

🏫 University of Idaho 📅 Spring 2020

- Bio 314L: Ecology and Population Biology Lab.
- Students learned how to utilize Excel to perform statistical analyses on biological data.

### Undergraduate Researcher

🏫 University of Idaho 📅 May 2016 – Dec 2016

## PUBLICATIONS

- Basinski, Andrew et al. (Mar. 2020). "Bridging the gap: Using reservoir ecology and human serosurveys to estimate Lassa virus incidence in West Africa". In: doi: 10.1101/2020.03.05.979658.
- Nuismer, Scott L. et al. (Sept. 2020). "Bayesian estimation of Lassa virus epidemiological parameters: Implications for spillover prevention using wildlife vaccination". In: *PLOS Neglected Tropical Diseases* 14.9, pp. 1–20. doi: 10.1371/journal.pntd.0007920. URL: <https://doi.org/10.1371/journal.pntd.0007920>.
- Varrelman, Tanner J. et al. (2019). "Transmissible vaccines in heterogeneous populations: Implications for vaccine design". In: *One Health* 7, p. 100084. ISSN: 2352-7714. DOI: <https://doi.org/10.1016/j.onehlt.2019.100084>. URL: <http://www.sciencedirect.com/science/article/pii/S2352771418300454>.

- Basinski, Andrew J. et al. (2018). "Evaluating the promise of recombinant transmissible vaccines". In: *Vaccine* 36.5, pp. 675–682. ISSN: 0264-410X. DOI: <https://doi.org/10.1016/j.vaccine.2017.12.037>. URL: <http://www.sciencedirect.com/science/article/pii/S0264410X17317905>.

## PRESENTATIONS

- Contributed lightning talk. Forecasting Lassa Fever. *UI Research Computing and Data Science Symposium*. 2019.
- Contributed poster. Transmissible vaccines in heterogeneous populations: Implications for vaccine design. *University of Idaho IBEST Science Expo*. 2018.

## WORKSHOPS ATTENDED

- Big Data: Web Services and Cloud Computing. *University of Idaho*. May 2019.
- Machine Learning/Tensorflow. *University of Idaho*. May 2019.
- Remotely sensed data for ecological niche modeling: a primer of NASA/USGS sources. *University of Idaho*. October 2018.