

# ANDREW G. JOHNSON

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More ◇ [anjohns.github.io](https://github.com/anjohns)

## EDUCATION

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University of Pennsylvania, *Ph.D., M.S. in Biology*

August 2017 - September 2024

North Carolina State University, *B.S. in Animal Science*

August 2008 - December 2012

## RESEARCH EXPERIENCE

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**Penn Institute for Urban Research/School of Medicine**  
*Postdoctoral Fellow*

September 2024 - Present  
*Philadelphia, PA / Cary, NC*

- Using features of the urban built environment, e.g. infrastructure, heat landscape, etc. to predict localized population density and human movement in cities

**Penn Institute for Urban Research/Wharton Real Estate**  
*Research Associate*

August 2023 - December 2024  
*Philadelphia, PA*

- Developed a large language model pipeline to extract zoning data from municipal zoning ordinances
- Led machine learning pipeline development and data analysis for a project aimed at inferring residential land use allowances nationally
- Presented findings to non-technical, interdisciplinary audiences

**Adaptive Cities Working Group**  
*Infectious Disease Biologist*

July 2022 - Present  
*Philadelphia, PA*

- Interdisciplinary working group, in partnership with the Rockefeller Foundation and the Brookings Institution, focused on the intersection of cities, climate, and health.
- Participating in Brookings 17 Rooms 2023 flagship, Room 3
- Organizing a Digital Twin City Initiative at the University of Pennsylvania

**Perry World House**  
*Graduate Associate*

August 2022 - May 2023  
*Philadelphia, PA*

- Worked at the intersection of scientific and policy challenges associated with modern biodefense
- Wrote an op-ed highlighting the latent value of built infrastructure for pandemic mitigation (in review)

**Host-Microorganism Interaction Laboratory**  
*Visiting Scholar, Instituto Gulbenkian de Cincia*

February 2020  
*Oeiras, Portugal*

- Performed gnotobiotic microbiome experiments using *D. melanogaster*
- Helped to establish an international collaboration between three laboratories

**Evolution and Ecology of Disease Systems Laboratory**  
*Doctoral Candidate*

April 2018 - September 2024  
*Philadelphia, PA*

- Working to understand ecological assembly and coexistence dynamics within the gut microbiome
- Adapting existing ecological theory to novel systems

**Plotkin Research Group in Mathematical Biology**  
*Rotation Student*

January 2018 - May 2018  
*Philadelphia, PA*

- Developed a series of computational Wright-Fisher models to simulate the competitive dynamics of hashtags on Twitter

## **Akçay Lab**

*Rotation Student*

August 2017 - December 2017

*Philadelphia, PA*

- Studied the intersection between ecological theory, multi-layer network analysis, and urban planning

## **Duke Network Analysis Center (DNAC)**

*Associate in Research*

February 2017 - July 2017

*Durham, NC*

- Cleaned and analyzed empirical network data

## **Zoonotic Disease Research Center**

*Field Research Assistant*

October 2016 - January 2017

*Arequipa, Peru*

- Led a team to collect GPS data of free-roaming dog movement to infer correlations between the built environment and rabies dynamics

## **PEER-REVIEWED PUBLICATIONS**

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2. Brinkley Raynor, Micaela De la Puente-Len, **Andrew Johnson**, Elvis W. Daz, Michael Z. Levy, Sergio E. Recuenco, and Ricardo Castillo-Neyra. "Movement patterns of free-roaming dogs on heterogeneous urban landscapes: Implications for rabies control." *Preventive veterinary medicine* 178 (2020): 104978.
1. Ricardo Castillo-Neyra, Valerie Paz-Soldan, Alison Bittenheim, Hannelore MacDonald, **Andrew Johnson**, Cesar Naquira, Michael Z Levy. "Reemergence of canine rabies in complex urban environments: Lessons from an outbreak in Arequipa, Peru." *American Journal of Tropical Medicine and Hygiene*. Vol. 97. No. 5. (2017)

## **MANUSCRIPTS IN PREPARATION**

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4. **Andrew Johnson**, Jake Hira, Dustin Brisson (In Preparation). The gut microbiome can influence female mating behavior in *D. melanogaster*.
3. **Andrew Johnson**, Julia Pfrommer, Jake Hira, Dustin Brisson (In Preparation). Neutral Processes Play a Role in Microbiome Community Assembly.
2. **Andrew Johnson**, Julia Pfrommer, Erol Akçay, Dustin Brisson (In Preparation). Phylogenetic determinants of coexistence in the gut microbiome of *D. melanogaster*.
1. **Andrew Johnson**, William Manly, Dustin Brisson (In Preparation). Wisdom of the masses: stacking and ensembling approaches for statistical ecology.

## **OTHER PUBLICATIONS**

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3. **Andrew Johnson** (In Preparation). To Restore Trust, NIHs New Director Needs More Than Science (Op-ed).
2. **Andrew Johnson** (In Preparation). The Case for a Global Biosafety Agency with Teeth (Essay).
1. **Andrew Johnson** (In Preparation). City Infrastructure Could Help Curb the Next Pandemic (Op-ed).

## **FELLOWSHIPS AND GRANTS**

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**Intelligence Community Postdoctoral Research Fellowship**

2024-2026

Amount Awarded: \$200,000

**SASGov Research Student Grant**

2022

Amount Awarded: \$2,000

**GAPSA-Provost Fellowship for Interdisciplinary Innovation**

2021

*Community ecology of the gut microbiome*

Role: Principle Investigator

Amount Awarded: \$6,000

**Teece Dissertation Research Fellowship**

2020

Amount Awarded: \$2,500

**SASGov Research Student Grant**

2020

Amount Awarded: \$2,000

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**AWARDS AND HONORS**

**Schmidt Science Fellowship Nominee**, University of Pennsylvania

2024

**Perry World House Graduate Associate**, University of Pennsylvania

2022

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**TECHNICAL STRENGTHS**

**Languages** Python, R, Java

**Software & Tools** VS Code, Jupyter, RStudio, Anaconda, L<sup>A</sup>T<sub>E</sub>X, NetLogo, Eclipse

**Machine Learning** Random Forests, Gradient Boosted Models, Ensembling & Stacking

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**ADVISING**

Graduate

Julia Pfrommer, masters student, currently an MD student at Boston University

2022-2023

Will Gaines, masters student, currently at J. Goldman & Co.

2019-2021

Post-Baccalaureate

Jake Hira, post-bacc researcher, currently a PhD student at Duke

2021-2023

William Manly, post-bacc researcher, currently a PhD student at UPenn

2021-2024

Bonnie Mendelson, post-bacc researcher, currently a PhD student at U. Chicago

2021

Undergraduate

Elizabeth Rush, undergraduate researcher

2024-current

Deborah Armstrong, undergraduate researcher

2024

Alvin Xu, undergraduate researcher

2023-2024

Henry Feldman, undergraduate researcher

2022-2023

Sophia Coutu, undergraduate researcher

2022-2023

Olivia Carrafiell, undergraduate researcher

2022

Dietrich Nigh, undergraduate researcher, currently a System Administrator at ZeroEyes

2019-2020

High School

Elli Greenbaum, research assistant

2023

Sophia Weatherwax, research assistant , currently an undergraduate at Penn State

2022

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**TEACHING EXPERIENCE**

Statistics for Biologists (BIOL 446)

Fall 2021

University of Pennsylvania

*Teaching Assistant*

Evolutionary Biology (BIOL 230)

Spring 2019

University of Pennsylvania

*Teaching Assistant*

Statistics for Biologists (BIOL 446)

Fall 2018

University of Pennsylvania

*Teaching Assistant*

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**DEPARTMENTAL SERVICE**

President, Biology Graduate Group

2020-2021

## ORGANIZATIONS AND VOLUNTEERING

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University of Pennsylvania Judo Club/Main Line Judo Club  
Member

August 2019 - September 2024  
*Philadelphia, PA*

NASA JPL Solar System Ambassador Program  
Member

January 2017 - December 2019  
*Raleigh, NC & Philadelphia, PA*

North Carolina One Health Collaborative  
Member

August 2012 - July 2017  
*Research Triangle Park, NC*

Triangle Linux Users Group (TriLUG)  
Member

July 2015 - July 2017  
*Raleigh, NC*