

# ANDREW G. JOHNSON

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## EDUCATION

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University of Pennsylvania, <i>Ph.D., M.S. in Biology</i>	August 2017 - September 2024
North Carolina State University, <i>B.S. in Animal Science</i>	August 2008 - December 2012

## RESEARCH EXPERIENCE

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<b>Penn Institute for Urban Research/School of Medicine</b> <i>Postdoctoral Fellow</i>	September 2024 - Present <i>Philadelphia, PA / Cary, NC</i>
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- Using features of the urban built environment, e.g. infrastructure, heat landscape, etc. to predict localized population density and human movement in cities

<b>Penn Institute for Urban Research/Wharton Real Estate</b> <i>Research Associate</i>	August 2023 - December 2024 <i>Philadelphia, PA</i>
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- 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

<b>Adaptive Cities Working Group</b> <i>Infectious Disease Biologist</i>	July 2022 - Present <i>Philadelphia, PA</i>
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- 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

<b>Perry World House</b> <i>Graduate Associate</i>	August 2022 - May 2023 <i>Philadelphia, PA</i>
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- 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)

<b>Host-Microorganism Interaction Laboratory</b> <i>Visiting Scholar, Instituto Gulbenkian de Cincia</i>	February 2020 <i>Oeiras, Portugal</i>
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- Performed gnotobiotic microbiome experiments using *D. melanogaster*
- Helped to establish an international collaboration between three laboratories

<b>Evolution and Ecology of Disease Systems Laboratory</b> <i>Doctoral Candidate</i>	April 2018 - September 2024 <i>Philadelphia, PA</i>
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- Working to understand ecological assembly and coexistence dynamics within the gut microbiome
- Adapting existing ecological theory to novel systems

<b>Plotkin Research Group in Mathematical Biology</b> <i>Rotation Student</i>	January 2018 - May 2018 <i>Philadelphia, PA</i>
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- 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 Akcay, 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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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

<b>Teece Dissertation Research Fellowship</b>	2020
Amount Awarded: \$2,500	
<b>SASGov Research Student Grant</b>	2020
Amount Awarded: \$2,000	

## AWARDS AND HONORS

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<b>Schmidt Science Fellowship Nominee</b> , University of Pennsylvania	2024
<b>Perry World House Graduate Associate</b> , University of Pennsylvania	2022

## TECHNICAL STRENGTHS

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<b>Languages</b>	Python, R, Java
<b>Software &amp; Tools</b>	VS Code, Jupyter, RStudio, Anaconda, L <sup>A</sup> T <sub>E</sub> X, NetLogo, Eclipse
<b>Machine Learning</b>	Random Forests, Gradient Boosted Models, Ensembling & Stacking

## ADVISING

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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

## TEACHING EXPERIENCE

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Statistics for Biologists (BIOL 446)	Fall 2021
University of Pennsylvania	<i>Teaching Assistant</i>
Evolutionary Biology (BIOL 230)	Spring 2019
University of Pennsylvania	<i>Teaching Assistant</i>
Statistics for Biologists (BIOL 446)	Fall 2018
University of Pennsylvania	<i>Teaching Assistant</i>

## DEPARTMENTAL SERVICE

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President, Biology Graduate Group	2020-2021
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## ORGANIZATIONS AND VOLUNTEERING

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University of Pennsylvania 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*