

ASSISTED MIGRATION: AN ECOLOGIST GETS HELP WITH NIH

5th National Big Data Health Science Conference
February 3, 2024 | Columbia, SC



Big Data Health Science Center

UNIVERSITY OF SOUTH CAROLINA

ABOUT ME

- Assistant professor in biological sciences
- Disease ecologist by training
- Focus on microcosms and application of machine learning to understanding and forecasting ecological systems
- Desire to get back to disease focus



<https://uscjobs.sc.edu/postings/154390>



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MY RESEARCH

- Author or co-author on 79 published papers and 4 R statistical packages
- A mix of ecology and disease work
- Currently less focus on human infectious disease than NIH might want



Tad Dallas

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[population dynamics](#) [community ecology](#) [host-pathogen interactions](#)
[metacommunity theory](#)

TITLE	CITED BY	YEAR
Structural network characteristics affect epidemic severity and prediction in social contact networks J McKee, T Dallas Infectious Disease Modelling		2023
Temporal variability of carabid beetles as a function of geography, environment, and species TA Dallas, CT Caten, LA Holian Theoretical Ecology, 1-9		2023
Thinning occurrence points does not improve species distribution model performance C Ten Caten, T Dallas Ecosphere 14 (12), e4703		2023



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MY GOALS

- Shift research to the application of machine learning and ecology to understand human infectious disease
- Learn the process of successfully applying for NIH funding



MY SUCCESSES

- NSF RAPID (PI; 200k) to develop and test multi-model approaches to COVID-19
- NSF Macrosystems (PI; 300k) to examine theory of population dynamics across geographic space
- NSF BII Design (co-PI; 200k) to create VERENA
- Various internal grants

MY FAILURES

- NIH MIRA (rejected once so far)
- NIH NIAID Exploratory Data Sci Methods and Algo Dev (reject)
- NIH R21 NIAID TVZ (co-PI; rejected but close to funding)
- ...and plenty of others

Big Data Health Science Center

A University of South Carolina Excellence Initiative, the USC Big Data Health Science Center (BDHSC) serves as a campus-wide interdisciplinary enterprise that conducts cutting-edge research and discovery, offers professional development and academic training, and provides service to the community and industry.

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PROPEL GRANT WRITING PROGRAM



NIH EARLY CAREER REVIEWER PROGRAM



Center for
Scientific Review

Early Career Reviewer (ECR) Program

The program aims to help early career scientists become more competitive as grant applicants through first-hand experience with peer review and to enrich and diversify CSR's pool of trained reviewers.

INSTITUTE OF INFECTIOUS DISEASE TRANSLATIONAL RESEARCH

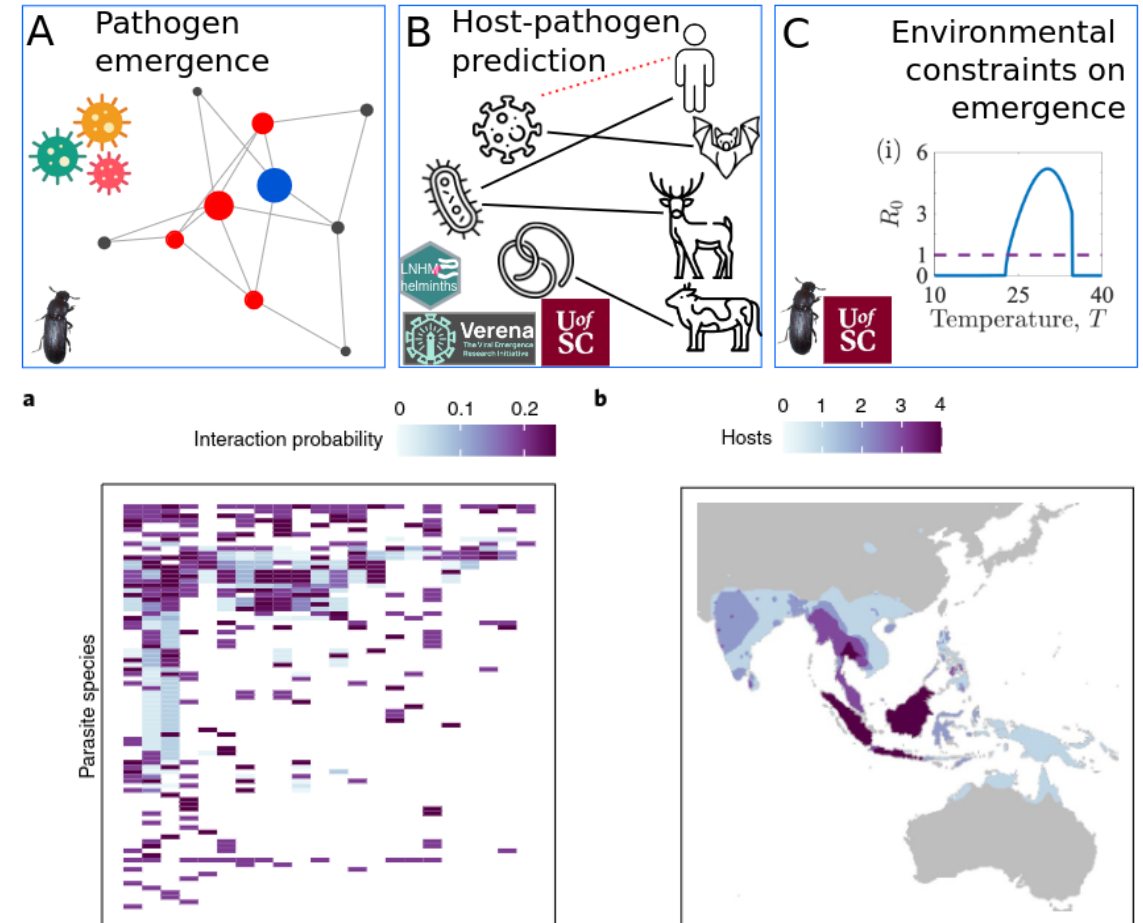


**ADVANCING SCIENCE
AND PROMOTING
HEALTH**

Interdisciplinary research studying the
disease pathways leading to global

THE OVERALL RESEARCH PROGRAM

- Incorporating ecological theory into the study of vector-borne disease (e.g., tick thermal performance curves)
- Graph-theoretic approaches to understand infectious disease emergence and mitigation
- Predictive modeling of potential, but undetected, host-parasite associations



HOW THE R25 HAS HELPED

- Targeted mentorship
- Community of scholars
- Clear plan for learning objectives and accountability
- Monthly seminar series
- Opportunities to interface with public health professionals and researchers

NEXT STEPS

- Continue learning the vast differences between NSF and NIH proposals
- Ongoing development
 - R01 Katz proposal with Dr. Mufaro Kanyangarara
 - R21 NIAID proposal with Dr. Melissa Nolan
- Potential targeting of mechanisms that bridge NSF and NIH (e.g., EEID award)

QUESTIONS?

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