Amanda Lee Skarlupka

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GITHUB: HTTPS://GITHUB.COM/ASKARLUPKA
CITIZENSHIP: U.S.
VETERANS' PREFERENCE: NONE

EDUCATION

Ph.D., Infectious Disease — January 2018-May 2022
University of Georgia
Oral defense completed: 12/02/2021
Dissertation title: "Broadly-Protective Influenza N1 Neuraminidase Vaccine Development and Characterization"
GPA: 3.92/4.00 Total Credits Earned: 202 semester hours

M.S., Epidemiology and Biostatistics — January 2020 – May 2022
Emphasis: Data Analysis and Modeling
University of Georgia
Oral defense completed: 04/07/2022
Thesis title: "Breadth Quantification of the Human Antibody Response to Influenza Vaccination"
GPA: 3.94/4.00 Total Credits Earned: 47 semester hours

B.S., Microbiology
B.S., Botany — Aug 2010- May 2014
University of Wisconsin – Madison, WI
GPA: 3.86/4.00

Hazard Analysis and Critical Control Point (HACCP) Certification — Oct 2013
Covance, Madison, WI

EDITORIAL EXPERIENCE

"The Immune System and Infectious Disease"
Edited and critiqued pre-publication versions
Author: Dr. David P. Adams; Point University — 2019-2020
Provided thorough review, fact-checking, and critique of book chapters for immunology and SARS-CoV-2.

PEER-REVIEWED PUBLICATIONS

In Preparation/Submission (available upon request):

16. **Amanda L. Skarlupka**, Zane Billings, Ted M. Ross, and Andreas Handel. "Quantification of breadth for influenza vaccines: a proposed method." In preparation for Submission in January 2023.

15. Yang Ge, **Amanda L. Skarlupka**, Zane Billings, Ye Shen, Justin Bahl, Paul Thomas, Ted M. Ross, and Andreas Handel. "Impact of seasonal influenza vaccine dose on homologous and heterologous immunity." In preparation.

Accepted/Published:

14. **Amanda L. Skarlupka***, Xiaojian Zhang*, Uriel Blas-Machado, Spencer F. Sumner, and Ted M. Ross. (2023). Multi-influenza HA subtype protection of ferrets vaccinated with an N1 COBRA-based neuraminidase. Accepted to Viruses. Addressing reviewer comments for resubmission. *Co-authors contributed equally.

13. Ying Huang, **Amanda L. Skarlupka**, Hyesun Jang, Uriel Blas-Machado, Nathan Holladay, R. Jeffrey Hogan, and Ted M. Ross. (2021) "SARS-CoV-2 and Influenza A virus Co-infections in Ferrets." J Virol. Dec 22:JVI0179121. DOI: 10.1128/JVI.01791-21.

12. **Amanda L. Skarlupka**, Anne Gaelle Bebin-Blackwell, Spencer F. Sumner, and Ted M. Ross. (2021) "Universal influenza virus neuraminidase vaccine elicits protective immune responses against human seasonal and pre-pandemic strains." J Virol. Jun 23:JVI0075921. DOI: 10.1128/JVI.00759-21

11. **Amanda L. Skarlupka** and Ted M. Ross. (2021) "Inherent serum inhibition of influenza neuraminidase." Front. Vet. Sci. 8:677693. DOI: 10.3389/fvets.2021.677693

10. Z. Beau Reneer, **Amanda L. Skarlupka**, Parker J. Jamieson, and Ted M. Ross. (2021) "Broadly Reactive H2 Hemagglutinin Vaccines Elicit Cross-Reactive Antibodies in Ferrets Pre-Immune to Seasonal Influenza A Viruses." mSphere. Mar 10;6(2):e00052-21. DOI: 10.1128/mSphere.00052-21

9. Z. Beau Reneer, Parker J. Jamieson, **Amanda L. Skarlupka**, Ying Huang, and Ted M. Ross. (2020) "Computationally Optimized Broadly Reactive H2 HA Influenza Vaccines Elicited Broadly Cross-Reactive Antibodies and Protected Mice from Viral Challenges." J Virol. JVI.01526-20. DOI: 10.1128/JVI.01526-20

8. Jeffrey W. Ecker, Greg A. Kirchenbaum, Spencer R. Pierce, **Amanda L. Skarlupka**, Rodrigo B. Abreu, R. Ethan Cooper, Dawn Taylor-Mulneix, Ted M. Ross, and Giuseppe A. Sautto. (2020) "High-yield expression and purification of recombinant influenza virus proteins from stably-transfected mammalian cell lines." *Vaccines (Basel).* 8(3):E462. DOI:10.3390/vaccines8030462

7. **Amanda L. Skarlupka**, Andreas Handel, and Ted M. Ross. (2020) "Dataset of antigenic distance measures, hemagglutination inhibition, viral lung titers, and weight loss in mice and ferrets when exposed to HA-based vaccination or sub-lethal A(H1) influenza infection." *Data in Brief.* 32:106118. DOI:10.1016/j.dib.2020.106118

6. **Amanda L. Skarlupka**, Andreas Handel, and Ted M. Ross. (2020) "Influenza hemagglutinin antigenic distance measures capture trends in HAI differences and infection outcomes, but are not suitable predictive tools." *Vaccine.* 38(36):5822-5830. DOI:10.1016/j.vaccine.2020.06.042

5. **Amanda L. Skarlupka** and Ted M. Ross. (2020) "Immune Imprinting in the Influenza Ferret Model." *Vaccines (Basel).* 8(2):E173. Review. DOI: 10.3390/vaccines8020173

4. **Amanda L. Skarlupka**, Zachary B. Reneer, Rodrigo B. Abreu, Ted M. Ross, and Giuseppe A. Sautto. (2020) "An influenza HA Computationally Optimized Broadly Reactive Antigen elicits antibodies endowed with group-1 heterosubtypic breadth against swine influenza viruses." Journal of Virology Mar 2020, 94 (8) e02061-19; DOI: 10.1128/JVI.02061-19

3. **Amanda L. Skarlupka**, Simon O. Owino, Lui P. Suzuki-Williams, Corey J. Crevar, Donald M. Carter, and Ted M. Ross. (2019) "A computationally optimized broadly reactive vaccine based upon swine H1N1 influenza hemagglutinin sequences protects against both swine and human isolated viruses." Human Vaccines & Immunotherapeutics, 15:9, 2013-2029, DOI: 10.1080/21645515.2019.1653743

2. Kalyan K. Dewan, Dawn L. Taylor-Mulneix, Laura L. Campos, **Amanda L. Skarlupka**, Shannon M. Wagner, Valerie E. Ryman, Monica C. Gestal, Uriel Blas-Machado, Brian T. Faddis, Eric T. Harvill. (2019) "A model of chronic, transmissible Otitis media in mice." PLoS Pathogen 15(4):e1007696

1. Kalyan K. Dewan, **Amanda L. Skarlupka**, Israel Rivera, Laura E. Cuff, Monica Gestal, Dawn L. Taylor-Mulneix, Shannon M. Wagner, Valerie E. Ryman, Coralis Rodriguez, Hamidou Illiassou Soumana, Bruce Levin, Eric T. Harvill. (2018). "Development of macrolide resistance in *Bordetella bronchiseptica* is associated with the loss of virulence." Journal of Antimicrobial Chemotherapy. 73(10):2797-2805. DOI: 10.1093/jac/dky264

OTHER PUBLICATIONS

1. **Amanda L. Skarlupka**, Bodo Linz, Jennifer Maynard, and Eric T. Harvill. (2018) Basics of pertussis pathogenesis. Pertussis: Epidemiology, Immunology, and Evolution. P. Rohani and S. Scarpino, Oxford University Press.

PRESENTATIONS

16. "Breadth Quantification of the Human Antibody Response to Influenza Vaccination"
    Oral Presentation
    M.S. Thesis Defense
    Department of Epidemiology and Biostatistics
    College of Public Health, University of Georgia
    April 7, 2022

15. "Broadly-Protective Influenza N1 Neuraminidase Vaccine Development and Characterization"
    Oral Presentation
    Ph.D. Dissertation Defense
    Infectious Disease Department, University of Georgia
    December 2, 2021

14. "Antigenic cartography and landscapes of influenza strains with preimmune human sera."
    Poster Presentation
    5th Annual Workshop on Viral Dynamics
    October 4-6, 2021

13. "Broadly protective computationally designed influenza neuraminidase vaccine in the ferret animal model"
    Poster Presentation
    International Society for Vaccines Annual Congress 2021
    September 13-15, 2021

12. "N1 COBRA neuraminidase vaccines in the ferret animal model"
    Oral Presentation
    CIVIC – NIH/NIAID Annual Meeting
    August 7-11, 2021

11. "N1 COBRA Neuraminidase Broadly Inhibits Viruses with Divergent N1 NA proteins"
    Oral Presentation
    CIVR-HRP Virtual Annual Meeting 2021
    April 26, 2021

10. "Development of Swine Influenza H1 Vaccine using the Computationally Optimized Broadly Reactive Antigen Methodology"
    Oral Presentation
    American Society for Virology 38th Annual Meeting 2019
    University of Minnesota, Minneapolis
    July 22, 2019

9. "Sequence data and Antigenicity: Optimized Selection of Vaccine Candidates"
    Poster Presentation
    Joint Symposia on Inflammation, Infection, and Immunity
    Georgia State University, 55 Gilmer St, Atlanta, GA
    June 12, 2019

8. "Zoonotic Transmission of Influenza: Preventing the Next Pandemic"
   Invited Departmental Seminar – Hosted by Dr. Janice Crook-Hill
   Department of Biology
   University of North Georgia – Dahlonega
   Health and Natural Sciences Building, 159 Sunset Drive, Dahlonega, GA, 30533
   April 10, 2019

7. "Broadly Reactive Hemagglutinin-based Vaccine Designed for Swine Protects Against All Human and Swine H1N1 Influenza Viruses"
   Poster Presentation
   International Society for Vaccines Annual Congress 2018
   Atlanta Marriott Marquis, 265 Peachtree Center Ave, Atlanta, GA 30303
   Oct 30, 2018

6. "Swine-based Broadly Reactive Hemagglutinin Vaccine Protects Against Both Human and Swine H1 Influenza Viruses"
   Poster Presentation
   Department of Infectious Diseases Annual Retreat 2018
   Special Collections Library, 300 South Hull Street, Athens, GA 30605
   Oct 19, 2018

5. "A Novel Otitis Media Mouse Model"
   Oral Presentation
   Georgia Bordetella Symposium
   College of Veterinary Medicine, 501 D. W. Brooks Drive, Athens, GA
   Oct 30, 2017

4. "*The Aftermath of Genome Mining: Discovery of Pertussis-like Toxin in* Bordetella pseudohinzii"
   Poster Presentation
   Department of Microbiology Recruitment 2017
   Paul D. Coverdell Center, Athens, GA 30605
   Feb 4, 2017

3. "*Effect of Thermal Adaptation on Thermal Inactivation Rates of* Salmonella *in Roast Beef at Low Cook Temperatures*"
   Poster Presentation
   Annual Meeting for International Association for Food Protection
   Oregon Convention Center, 777 Northeast Martin Luther King Junior Boulevard, Portland, OR
   July 25-28, 2015

2. "*Thermal Adaptation and Validation of* Salmonella *Inactivation in Roast Beef at 130°F*"
   Poster Presentation
   Annual Meeting for Food Research Institute
   Pyle Center, University of Wisconsin-Madison, 702 Langdon Street, Madison, WI
   May 20, 2015

1. "*The Effect of CYP Gene Deletion in* Aspergillus fumigatus *on PAH Metabolism*"
   Oral and Poster Presentation
   Food Research Summer Research Scholar Presentations
   Microbial Sciences Building, University of Wisconsin, 1550 Linden Drive, Madison, WI
   August 6, 2013

GRANT SUBMISSIONS

Unfunded:

2. Discovery Grant – Peer Reviewed Medical Research Program - Department of Defense – Aug 2017

1. "Identifying Novel Factors Involved in the Transmission of Respiratory Pathogens". Graduate Research Fellowship Program – National Science Foundation – Oct 2016

PATENTS

PCT/US2021/12695 (patent application)

Inventors: **Amanda L. Skarlupka**, Z. Beau Reneer, Ivette Nunez, Hyesun Jang, Michael Carlock, James Allen, Ying Huang, and Ted M. Ross. (Order of inventor is irrelevant)

VOLUNTARY PEER-REVIEWER

- BMC Microbiology
- Frontiers in Immunology

WORK EXPERIENCE

National Institutes of Health
Presidential Management Fellow (Health Specialist) June 5, 2022 - Present
National Cancer Institute/Division of Cancer Prevention (DCP)/Office of the Deputy Director
Supervisor: Dr. Lori Minasian

Duties:

- Evaluate and suggest solutions to increase quality and quantity of accessible data in the Early Detection Research Network (EDRN) repository
- Advise on best practices for artificial intelligence and machine learning in the context of public health research
- Intentionally design data collection and storage methods for the Multi-Cancer Early Detection (MCED) clinical network to optimize data sharing and reuse
- Meeting organizer for the *Statistical Adjustment for Multiplicity Virtual Workshop* with DCP - Biometry Group

- Define, collect, and evaluate user metrics for the Clinical Trial Randomization tool and quantify usership growth over time
- Test the capacity and user-friendliness of using SAS Viya as a data scientist in analyzing private cancer trial data

Accomplishments:

- Created an R Shiny tree-based informational interview tracker for the PMF program
- Wrote and designed DCP Director's welcome message and presentation for Statistical Adjustment for Multiplicity Virtual Workshop

Committees/Working Groups:

- NIH Presidential Management Fellow Annual Report Committee - Lead
- Trans-NCI Artificial Intelligence Working Group
- Statistical Adjustment for Multiplicity Virtual Workshop Planning Committee
- MCED Assay Criteria Working Group
- DCP Biometry Machine Learning Model Selection Working Group
- NIH's Interagency Modeling and Analysis - Multiscale Modeling and Viral Pandemics Working Group
    - Immunology Modeling Subgroup – Meeting Coordinator

University of Georgia
Doctoral Graduate Researcher Jan 1, 2018 – Dec 31, 2021
Center for Vaccines and Immunology, Department of Infectious Diseases, Athens, GA
Supervisor: Dr. Ted Ross

Duties:

- Conceptualized, designed, and conducted experiments for publication and funding sources
- Analyzed results and data using statistical approaches
- Coordinated with and maintained working collaborations with 4 research groups
- Mentored 3 undergraduate researchers
- Managed 4 concurrent projects, all of which resulted in publication
    - Swine H1 Influenza Cross-Species Vaccine Development
    - Influenza Sequence Similarity and Antigenicity Comparison
    - Neuraminidase COBRA as a Human Seasonal and Pre-Pandemic Vaccine Antigen
    - Influenza and SARS-CoV-2 Pathobiology in the Ferret Animal Model
- Prepared data reports for funding agencies

Accomplishments:

- Applied and obtained $21,000 in funding for dissertation completion, $7,430 in trainee funds, $500 in travel, and $2500 in fellowship

Related skills:

- Excellent written and oral skills
    - Presented findings at 1 invited seminar, 5 oral, and 7 poster presentations

- Authored and contributed to over 15 peer-reviewed publications over 4 years and 2 grant submissions

University of Georgia
Master's Graduate Researcher Sept 1, 2019 – May 13, 2022
Department of Epidemiology and Biostatistics, School of Public Health, Athens, GA
Supervisor: Dr. Andreas Handel

University of Georgia
Doctoral Graduate Researcher Jan 1, 2017 – Dec 31, 2017
Department of Infectious Disease, Athens, GA
Supervisor: Dr. Eric Harvill

- Identified suitable potential funding sources, prepared, and submitted grant proposal

Food Research Institute
Associate Research Specialist July 1, 2014 – July 31, 2016
Applied Food Laboratory, Madison, WI
Supervisor: Dr. Kathleen Glass

- Wrote protocols and procedures for different food studies:
  - Pathogens - *Clostridium botulinum, Clostridium perfringens, Salmonella* sp.*, Listeria monocytogenes, Bacillus cereus,* and *Staphylococcus aureus.*
  - Growth studies – inoculate product to determine if conditions are conducive to pathogen growth.
  - Inactivation studies – inoculate product before, during, and after a procedure (i.e. thermal cooking) to measure pathogen death/inactivation.
- Managed the preparation, inoculation, and sampling of experiments.
- Analyzed and reviewed data generated from experiments.
- Trained and supervised undergraduate students.
- Interpreted and communicated study results to clients.

University of Wisconsin - Madison
Undergraduate Researcher Feb 1, 2013 – May 15, 2014
Department of Bacteriology, Madison, WI
Supervisor: Dr. Jae-hyuk Yu

- Molecular genetics:
  - Characterized gene expression at the transcriptional level
  - Constructed gene deletion mutant strains of *Aspergillus* spp.
- Trained graduate student and intern in laboratory techniques.
- Maintained a safe and sterile environment when working with hazardous materials and organisms.
- Collaborated with international PhD scientists and graduate students.

AWARDS AND HONORS

Presidential Management Fellow – NIH Class of 2024 2022-2024
Dissertation Completion Award 2021-2022

- $21,000 assistantship over 10 months

Collaborative Influenza Vaccine Innovation Centers (CIVIC)
Trainee Program Awardee June 2-21, 2022
- $7,430 in travel and training award funds
- Awarded in 2020; utilized in 2022

Stanford PRISM 2020 Cohort 2020
- Networked and interviewed with Stanford professors to develop collaborations

UGA Graduate Education Advancement Board Fellowship 2020
Roswell Chapter M Nominee for 2020 PEO International Scholar Award 2019
UGA Nominee for 2020 Lindau Nobel Laureate Meeting 2019
International Society for Vaccines Congress Trainee Award 2018
Microbiology High Achievement Award 2014
- Department of Bacteriology | University of Wisconsin

Graduated with Distinction from University of Wisconsin 2014
Dean's List of the University of Wisconsin 2010-2014
Food Research Institute Summer Research Scholar 2013
Kettle Moraine Garden Club Scholarship 2014
Phillip Lautenbach and Wilma Lautenbach Vollendorf Academic Merit Award 2013
Wisconsin Cheese Makers' Association Supplier Member Scholarship 2013
Catholic Order of Foresters' Scholarship 2010

LEADERSHIP

Research mentor for undergraduate students, University of Georgia
Lui Suzuki-Williams Jan – Dec 2019
Characterization of antibody binding to the swine 2015 North Carolina influenza virus (H1N2)
Current Position: Post-Baccalaureate IRT Trainee at NIH, Bethesda, MD
Ross Lima Aug 2019 - Jan 2020
Production of tetrameric influenza neuraminidase proteins
Current Position: Americorp member in Baltimore, MD, USA
Spencer Sumner Aug 2020 – Dec 2021
Serological assays to describe and quantify neuraminidase-specific antibodies
Current Position: Doctor of Medicine Student at Duke University School of Medicine

Research mentor for Malcom Bridge Middle School students. FFA Agriscience Fair Jan – April 2018
Assisted with the design and analysis of projects including effects of pasteurization on mold inhibition of baked goods and the ability of home-made vs store-bought toothpaste to decrease canine oral bacterial populations

Graduate Teaching Assistant Jan - May 2018
Microbiology Introductory Lab (MIBO 3510L)
Department of Microbiology
University of Georgia

Research mentor for undergraduate student, University of Wisconsin - Madison Spring 2016
Katie-Jo Osterbauer
Characterization of *Clostridium perfringens* growth in uncured and cured pork product during a thermoprocess.
Current Position: Nutritional Sciences PhD Student at University of Wisconsin -Madison

INDEPENDENT EDUCATIONAL OPPORTUNTIES

CIVIC Trainee Program June 2-21, 2022
Two-week program that taught core concepts with hands-on experience.
- Digital Infuzion project incorporated the use of natural language processing techniques on data scraped from websites and available APIs to assist with determining which viruses were used in published manuscripts using python.
- Gryphon Scientific projects included pre-publication manuscript review for scientific rigor and impact, analysis of proprietary data using multiple linear regression in R, and analysis and evaluation of the CIVIC's data model and how best to foster communication between data management cores and experimentalists.

Hosted: Digital Infuzion (Stephan Bour, Kyle Martin, Jeremy Carson) and Gryphon Scientific (Emily Billings, Henry Wyneken)

10X Genomics Symposium Nov 20, 2019
Single-cell sequencing research day covering in depth techniques, uses, strengths and limitations of the current state of the field
Hosted: Dr. Steve Bosinger, Genomics Core, Emory University

Microbial Challenge Testing for Foods Workshop May 24-25, 2015
Workshop focusing on the analysis and development of food safety challenge study protocols based on National Advisory Committee on Microbiological Criteria for Foods (NACMCF) recommendations
Sanctioned by: International Association for Food Protection (IAFP)
Chicago, IL, USA

PROFESSIONAL ORGANIZATIONS

Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) - Member	2022
American Statistical Association - Member	2021
American Physical Society - Member	2021
American Society for Virology - Member	2019
International Society for Vaccines - Member	2018-2019, 2021
International Association for Food Protection - Member	2015

SERVICE

Paper Reader. 42-48th Georgia Junior Science and Humanities Symposium (GJSHS). Reviewed and scored research papers to determine invitees to GJSHS. January 2017 - 2023. UGA Office of Academic Special Programs

Café Scientifique Presenter. Spoke to graduate level students at the UGA Physics Department about career opportunities after graduation. November 11, 2022. University of Georgia – Physics Department. Hosted by: Steven Hancock and Dr. Cassandra Hall

HeroX Dataworks! Challenge Project Judge. Volunteer subject matter expert for project submissions that showcase innovative programs that further data sharing and reuse. August 22, 2022. NIH/National Institute of Mental Health and FASEB.

Oral Presentation Finalist Judge. 47th GJSHS. Evaluated and interviewed oral presentation finalists to decide which presenters move onto Nationals. February 22, 2022. UGA Office of Academic Special Programs

Poster Judge. 42nd, 44th and 46th GJSHS. Evaluated students' poster presentations and interview the students about their work. February 26, 2017, February 24, 2019, and February 26, 2021. UGA Office of Academic Special Programs

Science Fair Judge. Clark County School District Science and Engineering Fair. January 6, 2018 and January 11, 2020. 1235 Baxter Street, Clarke Middle School, Athens, GA 30606

Lesson Planner. Scientific Research and Education Network – Lesson Plan Showcase Event. February 17, 2017. Sandy Creek Nature Center, Athens GA

Science Fair Judge. Clark County School District Elementary Young Scientist Fair. February 11, 2017. 205 Alps Road, Alps Elementary School, Athens, GA 30606

Science Fair Judge. Clark County School District Science and Engineering Fair. January 14, 2017. 1300 Cedar Shoals Drive, Cedar Shoals High School, Athens, GA 30606