

Lauren White

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GitHub: <https://github.com/whit1951>

RESEARCH INTERESTS

I am broadly interested in One Health- the intersection of human, animal, and environmental health- and its implications for the spread of disease. The goal of my research is to characterize how *three different types of heterogeneity* can alter individual infectiousness in domestic animal and wildlife populations: (1) host heterogeneity: variation in host behavior and susceptibility, (2) contact heterogeneity: sociality that affects community structure within populations, and (3) spatial heterogeneity: patchiness in resource and host density across a landscape.

EDUCATION

University of Minnesota, Minneapolis-St. Paul, MN

Ph.D. Ecology, Evolution and Behavior

Sept. 2013-July 2018

GPA: 4.0

University of Virginia, Charlottesville, VA

B.S. Biomedical Engineering and B.A. Spanish

May 2012

Rodman Scholar; GPA: 3.98

University of Virginia Hispanic Studies Program, Valencia, Spain

Spanish coursework

Summer 2009

Spanish literature and culture

PROFESSIONAL APPOINTMENTS

Post-doctoral Research Fellow

August 2018-

National Socio-Environmental Synthesis Center (SESYNC)

present

College of Computer, Mathematical, and Natural Sciences

University of Maryland- College Park, Annapolis, MD

AWARDS & GRANTS

- Best Dissertation Award, University of Minnesota - Honorable Mention **2019**
- *Veterinary Sciences* Conference Travel Award- \$790 **2019**
- EEB Summer Travel Grant- \$900 **2018**
- Short list for Journal of Animal Ecology Sidnie Manton Award: Review by Lauren White, James Forester and Megan E. Craft: “Dynamic, spatial models of parasite transmission in wildlife: Their structure, applications and remaining challenges.” **2018**
- Infectious Disease Evolution Across Scales (IDEAS) Research Exchange (co-PI)-\$6,000 **2018**
- American Institute of Biological Sciences (AIBS) Emerging Public Policy Leadership Award (EPPLA) Honorable Mention **2018**
- University of Minnesota Informatics Institute-MnDRIVE Graduate Fellowship (\$35,042 salary and fringe + \$1,500 research and travel) **2017-2018**
- National Science Foundation Doctoral Dissertation Improvement Grant, “DISSERTATION RESEARCH: Using dynamic network models to reveal how heterogeneity in behavioral and immune

competence impact disease dynamics in an emerging wildlife disease,” (co- PI) \$15,620	
• National Science Foundation Graduate Research Fellowship- \$138,000	2013-2018
• ESA Student Section Travel Award- \$75	2017
• EEB Summer Travel Grant- \$1,000	2017
• University of Minnesota Institute on the Environment Mini Grant- \$2,859	2017
• One of the top four student abstracts- Allen D. Leman Swine Conference (based on scientific merit and originality)	2016
• Network Modeling for Epidemics Workshop Fee Waiver- \$500	2016
• EEB Special Training Grant- \$2,211	2016
• EEB Summer Travel Grant- \$862	2016
• AEGIS Conference Travel Grant- \$500	2016
• COGS Conference Travel and Career Development Grant- \$707	2015
• EEB Summer Travel Grant- \$778	2015
• GAPSA Student Travel Grant- \$200	2015
• Wally Dayton Wildlife Fellowship- \$2,500	2014
• EEB Summer Research Award- \$2,000	2014
• EEB Summer Fellowship- \$5,000	2014
• UVA Undergraduate Research and Design Symposium Finalist	2012
• Marie M. Giuliano Award- UVA Spanish Department- \$1,000	2011
• UVA Intermediate Honors (top 20% of class)	2010
• UVA Dean’s List	2008-2012
• Robert C. Byrd Federal Scholar Recipient (merit-based scholarship)- \$1,000/year for four years	2008-2012
• NOVEC Scholarship recipient- \$1,500	2008
• 4-H Ashby/Stowers Scholarship- \$500	2008

PUBLICATIONS

IN PREPARATION (full draft available upon request):

- **White, L.A.** and Mordechai, L. Modeling the Justinianic plague: boom or bust?
- Siva-Jothy, J., **White, L.A.**, Craft, M. E., and Vale, P. Population-level disease dynamics reflect individual heterogeneities in transmission.
- Gilbertson, M., **White, L.A.**, and Craft, M.E. Pitfalls of telemetry-derived contact networks of wildlife.
- Worsley-Tonks, K.E.L., Escobar, L.E., Biek, R., Craft, M.E., Streicker, D.G., **White, L.A.**, and Fountain-Jones, N.M. Using host traits to identify unknown bat and carnivore rabies reservoirs.

IN REVIEW

- Lee, N., Christensen-Dalsgaard, J., **White, L.A.**, Schrode, K.M., and Bee, M. Noise-control lungs help frogs solve a multi-species, cocktail party problem. *Nature*.

PEER-REVIEWED:

- **White, L.A.**, Forester, J. D. and Craft, M. E. (2018). Understanding pathogen dynamics as a function of individual movement behavior across a heterogeneous landscape. *PNAS*. doi: 10.1073/pnas.1801383115
 - **White, L.A.**, Forester, J. D. and Craft, M. E. (2018). The role of host heterogeneity in determining epidemic outcomes: Covariation between the physiological and behavioral components of transmission. *Oikos*, 127(4), 538-552. doi: 10.1111/oik.04527
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- **White, L.A.**, Forester, J. D. and Craft, M. E. (2018). REVIEW: Mechanistic, spatial models of parasite transmission in wildlife: their structure, applications, and remaining challenges. *J. Anim. Ecol.* 87(3), 559-580. doi: 10.1111/1365-2656.12761
 - Stadler, R., **White, L.A.**, Hu, K., Helmke, B., and Guilford, W. (2017). Direct measurement of cortical force generation and polarization in a living parasite. *Mol. Bio. Cell.* 28(14), 1912-1923. doi: 10.1091/mbc.E16-07-0518
 - **White, L.A.**, Torremorell, M. and Craft, M.E. (2017). Influenza A virus in swine breeding herds: Combination of vaccination and biosecurity practices can reduce likelihood of endemic piglet reservoir. *Prev. Vet. Med.*, 138, 55-69. doi: 10.1016/j.prevetmed.2016.12.013
 - **White, L.A.**, Forester, J.D. and Craft, M.E. (2017). Using contact networks to explore mechanisms of parasite transmission in wildlife. *Biol. Rev.*, 92, 389-409. doi:10.1111/brv.12236
 - Eads, D.A., Bowser, J., Poonamallee, M., Molina, S., Neill, J., and **White, L.A.** (2016). Black-tailed prairie dogs selectively countermark rabbit urine: The scent of competition between a rodent and a lagomorph? *Ethology, Ecology & Evolution*, 28(1), 102-109. doi: 10.1080/03949370.2014.999828
 - Ezenwa, V., Archie, E., Craft, M.E., Hawley, D., Martin, L., Moore, J. and **White, L.A.** (2016). Host behavior-parasite feedback: an essential link between animal behavior and disease ecology. *Proceedings B*, 283(1828), 20153078. doi: 10.1098/rspb.2015.3078.
 - **White, L.A.**, Ortiz, Z., Cuervo, L.G., and Reveiz, L. (2011). Clinical trial regulation in Argentina: Overview and analysis of regulatory framework, use of existing tools, and researchers' perspectives to identify potential barriers. *Rev. Panam. Salud Publica*, 30(5), 445-452. doi: 10.1590/S1020-49892011001100007

CONFERENCE PROCEEDINGS:

- **White, L.A.**, M. Torremorell & M.E. Craft. (2016) "Implications of management interventions on a model of influenza A virus persistence within swine breeding herds." Options IX for the Control of Influenza Conference, Abstract # P-357, Chicago, IL, USA, p. 207.
- **White, L.A.**, M. Torremorell & M.E. Craft. (2016) "A stochastic, mathematical model of influenza A virus within swine breeding herds: Implications of possible management interventions." Proceedings of the American Association of Swine Veterinarians, New Orleans, LA, p. 310.
- Stadler, R.V., **White, L.**, Helmke, B.P, Hu, K., and Guilford, W.H. "Measuring actomyosin function in a living parasite using a laser trap." *Biophysical Journal*, 106(2):787a. Presented at the Biophysical Society 58th Annual Meeting on February 19th 2014, San Francisco, CA. doi: 10.1016/j.bpj.2013.11.4313
- **White, L.**, Walton, D.B., and Guilford, W. "Multivalent systems of catch bonds exhibit ideal bond behavior." *Biophysical Journal*, 102(3):592. Presented at the Biophysical Society 56th Annual Meeting on February 28th 2012, San Diego, CA. doi: 10.1016/j.bpj.2011.11.3228

PRESENTATIONS

INVITED INTERNATIONAL SEMINARS:

- **White, L.A.** *The effects of heterogeneity in pathogen transmission on disease modeling predictions.* Research Seminar at Roslin Institute, University of Edinburgh. Presented March 12, 2019.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *Disease outbreak thresholds emerge from interactions between movement behavior, landscape structure, and epidemiology.*
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INVITED PRESENTATIONS:

- **White, L.A.** *The effects of heterogeneity in pathogen transmission on disease modeling predictions.* Colorado State University, Dept. of Microbiology, Immunology & Pathology seminar, April 18, 2019.
- **White, L.A.**, Craft, M.E., VandeWoude, S. *Integrating host movement, genomic, and spatial data to understand the effects of human-altered landscapes on pathogen spread.* Fagan lab meeting, University of Maryland College Park. April 11, 2019.
- **White, L.A.**, Craft, M.E., VandeWoude, S. *Integrating host movement, genomic, and spatial data to understand the effects of human-altered landscapes on pathogen spread.* NSF Program Offices, Washington, D.C. December 20, 2018.
- **White, L.A.** *Disease outbreak thresholds emerge from interactions between movement behavior, landscape structure, and epidemiology.* NSF EEID FELIDAE Project Retreat, CSU Mountain Campus, Fort Collins, CO, August 25, 2018.
- **White, L.A.** *The effects of heterogeneity in pathogen transmission on disease modeling predictions.* University of Edinburgh. May 22, 2018.
- **White, L.A.**, Forester, J.D. and Craft, M.E. *The effects of heterogeneity in pathogen transmission on disease modeling predictions.* Georgetown University, Washington, D.C. Shweta Bansal's lab meeting, October 4, 2017.
- **White, L.A.**, Forester, J.D. and Craft, M.E. *The role of host heterogeneity in determining epidemic outcomes: Covariation between the physiological and behavioral components of pathogen transmission.* Virginia Tech, Blacksburg, VA. Dana Hawley's lab meeting, October 27, 2017.

CONFERENCES:

- Gilbertson, M., **White, L.A.** and Craft, M.E. *Inferring contact behavior to predict pathogen spread: Pitfalls of telemetry-derived contact networks of wildlife.* To be presented at the 2019 ESA/USSEE Joint Meeting, August 11-16, 2019, Louisville, Kentucky.
 - Gilbertson, M., **White, L.A.** and Craft, M.E. *Pitfalls of telemetry-derived contact networks of wildlife.* To be presented at the 68th Annual International Wildlife Disease Association Conference scheduled August 4-9, 2019, Tahoe City, California.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *The role of host heterogeneity in determining epidemic outcomes: Covariation between the physiological and behavioral components of pathogen transmission.* Ecological Society of America, Portland, Oregon, August 8, 2017. *F1000Research* 2017, **6**:1853 (slides) (doi: [10.7490/f1000research.1114983.1](https://doi.org/10.7490/f1000research.1114983.1))
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *Understanding pathogen dynamics as a function of individual movement behavior across a heterogeneous landscape.* Ecology & Evolution of Infectious Disease Conference, Santa Barbara, California, June 25, 2017.
 - **White, L.A.**, Torremorell, M. and Craft, M.E. *Implications of management interventions on a model of influenza A virus persistence within swine breeding herds.* Oral talk presented at Lemna Swine Conference, Sept. 18, 2016, St. Paul, MN. *One of the top four student abstracts (based on scientific merit and originality)
 - **White, L.A.**, Torremorell, M. and Craft, M.E. *Modeling influenza virus in swine farms.* Oral talk presented at preconference workshop, Lemna Swine Conference, Sept. 18, 2016, St. Paul, MN.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *Covariation between the behavioral and physiological components of transmission on epidemic outcomes.* Oral talk presented at Animal Behavior Society 2016 Meeting, July 30-August 3, 2016, Columbia, MO.
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- **White, L.A.**, Forester, J.D. and Craft, M.E. *The effects of covariation between the behavioral and physiological components of transmission on epidemic outcomes*. Oral talk presented at ISVEE Conference, Nov 7, 2015, Mérida, Mexico.
 - Craft M.E., **White, L.A.**, Reynolds, J.J.H. and Torremorell, M. *Mathematical modeling of influenza A virus dynamics within swine farms and the effects of vaccination*. ISVEE Conference, Nov 7, 2015, Mérida, Mexico.

POSTERS

- **White, L.A.**, Craft, M.E. & VandeWoude, S. *A mechanistic, stigmergy model of territory formation in an asocial predator: consequences for pathogen transmission*. Ecology & Evolution of Infectious Disease Conference, Princeton, NJ, June 10-13, 2019.
 - Gilbertson, M., **White, L.A.** and Craft, M.E. *Pitfalls of telemetry-derived contact networks of wildlife*. Ecology & Evolution of Infectious Disease Conference, Princeton, NJ, June 10-13, 2019.
 - **White, L.A.**, Craft, M.E., Vickers, W. & VandeWoude, S. *Inferring contact behavior to predict pathogen spread in an asocial predator: preliminary explorations and challenges*. Movement Ecology of Animals, Gordon Research Conference, Lucca (Barga), Italy, March 4-5, 2019.
 - **White, L.A.**, Hawley, D.M., Adelman, J.S. & Craft, M.E. *Using dynamic network models to reveal how heterogeneity in behavioral and immune competence impact disease dynamics in an emerging wildlife disease*. Poster presented at Ecology & Evolution of Infectious Disease Conference, Glasgow, Scotland, May 29-June 1, 2018.
 - **White, L.A.**, Torremorell, M. and Craft, M.E. *A stochastic, mathematical model of influenza A virus within swine breeding herds: implications of possible management interventions*. Poster presented at iCOMOS Conference, Minneapolis, MN, April 30, 2018.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *The role of host heterogeneity in determining epidemic outcomes: Covariation between the physiological and behavioral components of pathogen transmission*. Poster presented at Jacques Monod Conference, Roscoff, France, October 30- November 3, 2017.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *Understanding pathogen dynamics as a function of individual movement behavior across a heterogeneous landscape*. Poster presented at Animal Behavior Society Conference, Toronto, Ontario, June 14, 2017.
 - **White, L.A.**, Torremorell, M. and Craft, M.E. *A stochastic, mathematical model of influenza A virus within swine breeding herds: implications of possible management interventions*. Poster presented at Minnesota Supercomputing Institute Poster Exhibition, St. Paul, MN, April 25, 2017.
 - **White, L.A.**, M. Torremorell & M.E. Craft. *Implications of management interventions on a model of influenza A virus persistence within swine breeding herds*. Leman Swine Conference, St. Paul, MN, Sept. 2016.
 - **White, L.A.**, M. Torremorell & M.E. Craft. *Implications of management interventions on a model of influenza A virus persistence within swine breeding herds*. Options IX for the Control of Influenza, Chicago, IL, Aug. 2016.
 - **White, L.A.**, Forester, J.D. and Craft, M.E. *Covariation between the behavioral and physiological components of transmission affects epidemic outcomes*. Poster presented at Ecology & Evolution of Infectious Disease Conference, Ithaca, NY, June 3-5, 2016.
 - **White, L.A.** Torremorell, M. & Craft, M.E. *A stochastic, mathematical model of influenza A virus within swine breeding herds: Implications of possible management interventions*. American Association of Swine Veterinarians, New Orleans, LA, Feb. 2016.
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- **White, L.A.**, Torremorell, M. and Craft, M.E. *A stochastic, mathematical model of influenza A virus within swine breeding herds: implications of possible management interventions.* Poster presented at Allen D. Lemam Swine Conference, St. Paul, MN, September 20, 2015.
- **White, L.A.**, Forester, J.D., and Craft, M.E. *Exploring the differences between observed and real contact networks: implications for pathogen transmission.* Poster presented at Ecology & Evolution of Infectious Disease Conference, Athens, GA, May 26-29, 2015.
- **White, L.A.**, Forester, J.D., and Craft, M.E. *Using networks to model plague dynamics in prairie dogs.* Poster presented at Ecology & Evolution of Infectious Disease Conference, Colorado State University, Fort Collins, CO, June 1-4, 2014.

TEACHING EXPERIENCE

Virginia Tech **October 2017**
Guest Lecturer

- Developed and presented a 75-minute lecture and discussion on “Contact network models in wildlife” to a class of 20 students enrolled in "Infectious Disease Ecology" (BIOL 4564/5564)

University of Minnesota **Spring 2014**
Teaching Assistant

- Lab instructor for two sections of BIOL 3408W: Ecology (20 hrs/wk)
- Developed and presented a 50-minute lecture on the “Ecology of Infectious Diseases” to a class of 150 students

University of Minnesota **Fall 2013**
Teaching Assistant

- Lab instructor for BIOL 2002: Foundations of Biology (20 hrs/wk)

MENTORSHIP

- Marie Gilberston, Ph.D. student, Department of Population Veterinary Medicine, University of Minnesota
- Meredith Meyers, high school student, Bryam Hills High School, NY

RELATED EXPERIENCE

Flow Yoga, Leesburg, VA **March 2016-July 2018**
Yoga Instructor, RYT 200

- Teaching and guiding classes of up to twenty students three times per week
- Conducting class sign-ins and retail purchases for studio clients

Leesburg Veterinary Hospital, Leesburg, VA **August 2012-May 2013**
Veterinary Assistant

- Created estimates for clients, obtained patient histories, filled prescriptions, answered questions about prescription use with clients, recorded and entered all charges and lab work relating to a patient’s appointment or hospitalization
- Ran diagnostic lab work: blood tests, ear cytologies, fecal floats and smears
- Prepared surgery packs and maintained dental and surgery areas and equipment for daily operations
- Helped with patient handling, restraint, and care; drew blood for diagnostics, administered SQ fluids, helped with placement of catheters and intubation

USGS and Colorado State University **June-August 2012**
Field Technician

- Set and maintained small animal traps in prairie dog colonies for sylvatic plague study
 - Handled, restrained, measured, and tagged prairie dogs
 - Made behavioral observations on grooming and foraging habits in prairie dogs
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Molecular Biomechanics Laboratory, University of Virginia

**Fall 2010-
Spring 2012**

Undergraduate Research Assistant

Advisor: Dr. William Guilford

- Senior thesis and Capstone project (Fall 2011-Spring 2012): “The mechanobiology of *Toxoplasma gondii*”- exploring how the motility of this parasite relates to its virulence
 - Culturing HFF cells, maintaining *T. gondii in vitro*
 - Use of laser trap system to quantify behavior of actin and myosin motor units in live parasites
 - Independent research (Spring & Summer 2011):
 - Pursued an independent computational project on the catch-slip bond behavior of E-selectins and their receptors in the phenomenon of leukocyte rolling and adhesion
 - Developed a Monte Carlo computational model and closed-form Markov Chain solutions to predict mean bond lifetime of catch-slip bonds using experimentally determined values for rate constants, molecule elasticity, and surface geometries
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Pan American Health Organization, Buenos Aires, Argentina

May-August, 2010

Intern

- Investigated clinical trial registration practices in the province of Buenos Aires, conducted research on currently registered trials and existing legislation
 - Designed and administered a survey instrument, interviewed 30+ investigators and sponsors in Spanish
 - Compiled results and presented findings at Washington D.C. headquarters
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Blue Ridge Veterinary Associates, Purcellville, VA

July-August, 2009

Veterinary Technician Assistant

- Monitored post-surgery patients, sterilized surgery pack, and ran basic in-house diagnostic tests
 - Admitted patients into hospital and filled prescriptions
 - Helped with large animal farm calls
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SKILLS

- **Language:** Spanish fluency, basic French
 - **Laboratory:** motility assays, gel electrophoresis, cell culture, PCR
 - **Computer:** proficient in MATLAB, Mathematica, Java, R, Microsoft Office, and WordPress, Git/GitHub
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PROFESSIONAL MEMBERSHIPS

- AAAS (2017-present)
 - British Ecological Society (2017-present)
 - Ecological Society of America (2017-present)
 - Animal Behavior Society (2016-present)
 - Tau Beta Pi Engineering Honor Society (2012-present)
 - University of Virginia Raven Society (2011-present)
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SCIENCE WRITING & COMMUNICATION

- Summary of the 2018 Ecology Evolution & Infectious Diseases Conferences for Journal of Animal Ecology blog on June 19, 2018: <https://bit.ly/2UbLbj0>
 - “The intersection of wildlife disease, conservation, and human health” for Journal of Animal Ecology blog on May 18, 2018: <https://bit.ly/2CO84hC>
 - “Spatial disease models: picking a ‘useful’ model for pressing ecological questions” for Journal of Animal Ecology blog on November 1, 2017: <https://bit.ly/2FIQ74O>
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- “Painted turtles” for the Loudoun County Wildlife Conservancy’s *Habitat Herald*, Spring 2017: <https://bit.ly/2UdN5PW>
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SCIENCE OUTREACH

- Skype-a-Scientist, May 24, 2019- thirty 4th & 5th grade girls in New York, NY
 - Letters to a Pre-Scientist with a 7th grader in Santa Ana, CA- Spring 2019
 - Skype-a-Scientist, Sept. 24, 2018- thirty 4th & 5th grade girls at Bethlehem Elementary School, Taylorsville, NC
 - Market Science (marketsci.org), May 5th 2018, Midtown Farmers Market, MN. Discussed and demonstrated parasites with ~200 members of the general public (61 kids + 156 adults, with 85 long visits).
 - Animal Behavior Society Outreach Fair, June 12th 2017, Toronto, Ontario, Canada. Discussed disease transmission and modeling using the Vax game with ~100 K-12 children.
 - Animal Behavior Society Outreach Fair, July 30th 2016, Colombia, MO. Educated families and K-12 children in telemetry and radio tracking methods for wildlife monitoring.
 - Visited with Representative Barbara Comstock’s staff to discuss funding for basic science research during American Institute of Biological Sciences Congressional Visits Day. Fall 2016 & 2017.
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PRESS COVERAGE

- Minnesota Supercomputing Institute (March 15, 2019). “Research spotlight: Modeling how diseases spread”: <https://bit.ly/2VexPyG>
 - University of Minnesota. (June 26, 2018). “Research brief: Habitat fragmentation can promote disease outbreaks”: <https://bit.ly/2Vke6ZC>
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