

## Lauren N. Ross

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**Areas of  
Specialty** Causation and explanation. Philosophy of biology. Philosophy of medicine.

**Areas of  
Competence** Philosophy of neuroscience. History of biology and medicine. Bioethics.

**Academic  
Appointments** **University of California, Irvine**  
Assistant Professor of Logic and Philosophy of Science; 2017–Present.  
**Australia National University**  
Visiting Appointment, Philosophy Department; August 2020–reschedule Covid-19.  
**University of Calgary**  
Postdoctoral Fellow, Philosophy Department; 2016–2017.

**Education** **Ph.D.** History and Philosophy of Science, *University of Pittsburgh*; 2016.  
Dissertation: “Explanation in Contexts of Causal Complexity.”  
Committee: James F. Woodward (co-advisor), Kenneth F. Schaffner (co-advisor),  
Robert Batterman, William C. Wimsatt, and Mazviita Chirimuuta.  
**M.A.** Bioethics and Health Law, *University of Pittsburgh*; 2016.  
Thesis: “Stem Cell Development and the Pathway Model: Scientific Puzzles and  
Bioethical Issues.”  
Committee: Kenneth F. Schaffner (advisor), Lisa S. Parker, and Vishwajit L. Nim-  
gaonkar.  
**M.D.** School of Medicine, *University of California, Irvine*; 2011.  
Distinction in Arts and Humanities  
Program in medical education for the Latino community (PRIME-LC)  
**B.S.** Nutrition; Biology minor, *California Polytechnic State University, San Luis  
Obispo*; 2007. *magna cum laude*.

**Publications** A11. “Distinguishing Topological and Causal Explanation.” *Synthese*. (forthcom-  
ing)  
A10. “Explanation in Contexts of Causal Complexity: Lessons from Psychiatric  
Genetics.” *Minnesota Studies in Philosophy of Science* volume on “From Biologi-  
cal Practice to Scientific Metaphysics.” (forthcoming)

- A9. “Multiple Realizability from a Causal Perspective.” *Philosophy of Science*. (forthcoming)
- A8. “Causal Concepts in Biology: How Pathways Differ From Mechanisms and Why It Matters.” *The British Journal for the Philosophy of Science*. (forthcoming)
- A7. “Causal Explanation and the Periodic Table.” *Synthese*  
doi: <https://doi.org/10.1007/s11229-018-01982-0> (2018).
- A6. “Causal Control: A Rationale For Causal Selection.” *Minnesota Studies in Philosophy of Science* volume on “Causation in Biology.” (forthcoming)
- A5. “The Doctrine of Specific Etiology.” *Biology & Philosophy*. 33: 37.  
doi: <https://doi.org/10.1007/s10539-018-9647-x> (2018).
- A4. “Causal Selection and the Pathway Concept.” *Philosophy of Science*. 85(4), 551-572 (2018).
- A3. “Koch’s Postulates: An Interventionist Perspective,” with James F. Woodward. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*. 59, 35-46 (2016).
- A2. “Dynamical Models and Explanation in Neuroscience.” *Philosophy of Science* 82(1), 32-54 (2015).
- A1. “Kinetics and Regioselectivity of Ring Opening of 1-Bicyclo[3.1.0]hexanylmethyl Radical,” with E.J. Kantorowski, D.D. Le, C.J. Hunt, K.Q. Barry-Holson, and J.P. Lee. *Journal of Organic Chemistry* 73(4), 1593-6 (2008).

**Revise and resubmit: minor revisions**

- B1. “Tracers in Neuroscience: Causation, Constraints, and Connectivity.” *Synthese*

**Works In-Progress**

- W3. “The Explanatory Nature of Constraints.”
- W2. “Distinguishing Causal Structures: Mechanisms, Pathways, and Cascades.”
- W1. “Causes with Material Continuity.”

**Invited Talks**

- T22. “Tracers in neuroscience: Causation, constraints, and connectivity.” Philosophy Department, Tufts University Medford, MA; September 2020.
- T21. “The Explanatory Nature of Constraints.” Keynote speaker, Causation and Complexity Workshop; University of Salzburg; Salzburg, Austria; – reschedule Covid-19.

- T20. TBD Santa Fe Institute (SFI), Santa Fe, NM; –reschedule Covid-19.
- T19. TBD “Mechanisms and Pathways in Biology.” Reading Group for the History & Philosophy of Science; University of California Los Angeles; Los Angeles, CA; –reschedule Covid-19.
- T18. “The Distinctiveness of Disease Explanation.” Neurophilosophy Forum and GSU Neuroscience Institute; Georgia State University; Atlanta, GA; March 2020.
- T17. “The Distinctiveness of Disease Explanation.” History and Philosophy of Science and Medicine Colloquium. Washington University; St. Louis, MO; February 2020.
- T16. “Distinguishing Topological and Causal Explanation.” Keynote speaker, Scientific Explanations, Competing and Conjunctive. University of Utah; Salt Lake City, Utah; June 2019.
- T15. “Causation and Disease.” Pacific American Philosophical Association. Vancouver, Canada. April 2019.
- T14. “Causal Reasoning in Science.” Center for Complex Biological Systems, UC Irvine Retreat, Universal City, CA. March 2019.
- T13. “Causes with Material Continuity.” Ludwig-Maximilians-Universität München. Munich Center for Mathematical Philosophy. Munich, Germany. March 2019.
- T12. “Explanation in Contexts of Causal Complexity: Lessons from Psychiatric Genetics.” California Institute of Technology. Pasadena, CA. October 2018.
- T11. “An Analysis of Causal Complexity: Lessons from Psychiatric Genetics” Summer institute on the topic of “From Biological Practice to Scientific Metaphysics.” Taipei, Taiwan. July 2018.
- T10. “The Doctrine of Specific Etiology: The Influence of Germ Theory on Modern Medicine” Medical Humanities Colloquium. University of California, Irvine. Irvine, California. January 2018.
- T9. “Causal Concepts in Biology: How Pathways Differ from Mechanisms and Why it Matters.” Le Centre national de la recherche scientifique (CNRS), University of Bordeaux. Bordeaux, France. January 2018.
- T8. “The Doctrine of Specific Etiology.” Le Centre national de la recherche scientifique (CNRS), University of Bordeaux. Bordeaux, France. January 2018.
- T7. “Causal Selection in the Biological Sciences.” Department of Philosophy. University of Calgary. Alberta, Canada. October 2016.
- T6. Commencement Ceremony Address. University of Pittsburgh. Pittsburgh, PA. May 2016.
- T5. “Causal Control: A Rationale For Causal Selection.” Department of Philosophy Colloquium Series. Stanford University. Palo Alto, CA. February 2016.
- T4. “Causal Complexity, Causal Selection, and Disease Explanation.” Logic and Philosophy of Science Colloquium Series. University of California, Irvine. Irvine, CA. February 2016.

- T3. “Causal Complexity, Causal Selection, and Disease Explanation.” Department of Philosophy Colloquium Series. University of Utah. Salt Lake City, UT. January 2016.
- T2. “Dynamical Models: Mathematical Explanation in Neuroscience and Medicine.” International Advanced Seminar in the Philosophy of Medicine (IASPM). Paris, France. June 2013.
- T1. “Robert Koch’s Criteria for Disease Causation: Their Origin and Content.” American Society of Microbiology (ASM). Denver, CO. May 2013.

**Refereed  
Conference  
Presentations**

- R16. “Irreversible and reversible causation” with James F. Woodward. Philosophy of Science Association (PSA), Baltimore, Maryland; November 2020.
- R15. “Tracer methodology and mark transmission: Lessons from neuroscience.” Society for Philosophy of Science (SPSP); Michigan State University, East Lansing, MI; –reschedule Covid-19.
- R14. “Tracers in neuroscience: Causation, constraints, and connectivity.” NeuroTech Conference: An Interdisciplinary Early Career Workshop on Tools and Technology in Neuroscience. University of Pittsburgh. Pittsburgh, Pennsylvania. January 2020.
- R13. “Tracer and Tagging Experiments in Neuroscience.” Tool development in neuroscience: A science-in-practice workshop. Organized by John Bickle and Carl Craver with the Alabama Philosophical Society (APS). Pensacola Beach, Florida. September 2019.
- R12. “Distinguishing Causal Structures: Mechanisms, Pathways, and Cascades.” European Philosophy of Science Association (EPSA). Geneva, Switzerland. September 2019.
- R11. “Explanation in Contexts of Causal Complexity: Lessons from Psychiatric Genetics.” Philosophy of Science Association (PSA). Seattle, WA. November 2018.
- R10. “Causal Concepts in Biology: Distinguishing Pathways From Mechanisms,” Philosophy of Biology at the Mountains (POBAM) Workshop. University of Utah. Salt Lake City, Utah. May 2018.
- R9. “The Doctrine of Specific Etiology,” Conference on “Issues in Medical Epistemology.” University of Cologne. Cologne, Germany. December 2017.
- R8. “Causal Explanation in Biology: More Than Mechanisms.” Philosophy of Science Association (PSA). Poster Session. Atlanta, GA. November 2016.
- R7. “Causal Heterogeneity and the Final Common Pathway Model.” Canadian Philosophical Association (CPA). University of Calgary. Calgary, Canada. June 2016.
- R6. “Causal Explanations in Genetics and the Pathway Concept.” International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB). Université Du Québec à Montréal (UQAM). Montréal, Canada. July 2015.
- R5. “Neuropsychiatric Genetics: Advances in Explaining and Understanding Neuropsychiatric Disorders,” Early Career Scholars Conference in Philosophy of Psychiatry: Overcoming Mind-Brain Dualism in 21st Century Medicine. Pittsburgh, PA. November 2014.

- R4. “Koch’s Criteria of Disease Causation.” History of Science Society. Chicago, Illinois. November 2014.
- R3. “Dynamical Models and Explanation in Neuroscience.” Experimentation in Neuroscience. Pittsburgh, PA. November 2013. (Poster session.)
- R2. “Explanations and Explanatory Models in Biomedicine.” Fifth International Philosophy of Medicine Roundtable. New York, NY. November 2013.
- R1. “Value, Dysmenorrhea, and the Definition of Disease.” Fourth International Philosophy of Medicine Roundtable. San Sebastian, Spain. November 2011.

**Awards,  
Grants,  
and Honors**

- (2020) NSF Career Award; 1945647 “Causal Explanation in Biology and the Diversity of Causal Concepts,” NSF Science, Technology, and Society Research Grant, \$403,419; 2020-2025
- (2020) Alexander von Humboldt Research Fellowship for Experienced Researchers; Munich Center for Mathematical Philosophy (MCMP), \$21,697.
- (2020) Carl Friedrich von Siemens Research Fellowship \$2,100
- (2020) Faculty Summer Instructional Development Award; UCI \$1,700.
- (2020) Social Science Seed grant; UCI \$4,416, 2020-2021.
- (2020) Myint Zan ECR Fellowship Australia National University (ANU); \$4,900 (USD)—reschedule Covid-19.
- (2017-20) Recognition for “Outstanding teaching” at UCI: Courses ranked in top 15% all courses School of Social Sciences. “Philosophy of Medicine” (2017, 2018, 2019); “What is Disease?” (2020), and “Making Modern Science” (2019, 2020).
- (2018) UC Irvine Representative Athena/Wisdom NIH, NCI Grant
- (2017-19) Research Grant; Council Research, Computing, and Libraries; UCI
- (2018) Co-investigator John Templeton Grant “From Biological Practice to Scientific Metaphysics.” (#50191) Waters, Weber, Love & Wimsatt.
- (2017) Eyes High Postdoctoral Fellowship, University of Calgary
- (2016) Commencement Address University of Pittsburgh
- (2016) Dean’s Tuition Scholarship
- (2015) NSF Travel Grant for ISHPSSB
- (2015) Research Travel Grant American Society of Microbiology
- (2014) NSF Travel Grant for History of Science Society
- (2013, 2015) Wesley Salmon Fund Grant
- (2013) American Society of Microbiology Conference Travel Grant

**Teaching**

**University of California, Irvine, LPS**

- Fall 2019 · **Philosophy of Medicine** (LPS 140)
- Fall 2019 · **Independent Study** (LPS 298)
- Winter 2020 · **What is Disease?** (LPS H123)
- Winter 2020 · **Independent Study** (LPS 298)
- Spring 2020 · **Making Modern Science** (LPS 60)
- Spring 2020 · **Directed Research** (LPS 140)

Spring 2020 · **Causation and Explanation in Biology** (LPS 240) (with Jim Woodward)—rescheduled Covid-19.

Fall 2018 · **Philosophy of Medicine** (LPS 140)

Winter 2019 · **Biology, Behavior, and Genes** (LPS 240)

Winter 2019 · **What is Disease?** (LPS H123)

Spring 2019 · **Making Modern Science** (LPS 60)

Fall 2017 · **Philosophy of Medicine** (LPS 140)

Winter 2018 · **Scientific Explanation** (LPS 240)

Spring 2019 · **Making Modern Science** (LPS 60)

### **University of California, Irvine, School of Medicine (UCI-SOM)**

Fall 2018 · **History of Medicine Elective**

Class on Germ Theory and Modern Medicine; December 2018

### **University of Pittsburgh, HPS**

Spring 2015 · **Causal Reasoning**, Independent Teaching

Fall 2014 · **Mind and Medicine**, Independent Teaching

Spring 2013 · **Mind and Medicine**, Teaching Assistant for James Woodward

Fall 2012 · **Morality and Medicine**, Teaching Assistant for Sandra Mitchell

### **Professional Service**

**Poster reviewer:** Philosophy of Science Association (PSA). Baltimore, Maryland. November 2020.

**Symposium organizer:** “Distinctions within causation: Irreversibility, coherence, invariance and machine-likeness”. Philosophy of Science Association (PSA). Baltimore, Maryland. November 2020—reschedule Covid-19.

**Symposium organizer:** “Causal complexity in Functional Biology and Medicine,” (with Bill Bechtel). European Philosophy of Science Association (EPSA). Geneva, Switzerland. September 2019.

**Cocoon job-market mentoring program:** I advised one job-market candidate, who had little access to mentoring, for the 2019-20 year. This candidate ended up receiving multiple offers and ultimately accepted a tenure-track position.

**Symposium organizer:** “Strategies For Dealing With Causal Complexity,” (with J. Woodward, K. Kendler, N. Weinberger). Philosophy of Science Association Biennial Meeting. Seattle, Washington. November 2018.

**Organizing committee:** “From Biological Practice to Scientific Metaphysics,” (with K. Waters, A. Love, M. Weber, and W. Wimsatt), Taiwan. July 2018.

**Chair:** Panel Symposium on From Biological Practice to Scientific Metaphysics: “The pioneering work of William C. Wimsatt National Taiwan University, National Chung Cheng University. July 2018.

**Chair:** Pacific APA Session for Book Symposium: Anna Alexandrova, A Philosophy of Science of Well-being. March 2018.

**Program committee member:** British Society for the Philosophy of Science (BSPS). Oxford July 2017.

**Program committee member:** “Reductionism and Integration, Bioethics and Behavior: A Conference Celebrating the Career of Kenneth F. Schaffner,” (with J. Tabery, K. Tabb, and T. Cunningham), University of Pittsburgh, Center for Philosophy of Science, September 2016.

**Organizing committee:** “From Biological Practice to Scientific Metaphysics,” (with K. Waters, A. Love, M. Weber, and W. Wimsatt), University of Geneva, August 2016.

**Organizing committee:** “Practices of Individuation and Classification in Science,” (with K. Waters, A. Love, M. Weber, and W. Wimsatt), University of Calgary, June 2017.

**Selection committee member:** Poster Session Philosophy of Science Association (PSA) Meeting. Baltimore, Maryland.

**Referee For:** *Philosophy of Science, British Journal for the Philosophy of Science, Synthese; International Studies in the Philosophy of Science, Biology & Philosophy, Studies in History and Philosophy of Science Part C, Erkenntnis, Topics in Cognitive Science (topiCS), Science and Engineering Ethics, European Journal for Philosophy of Science, BioEssays.*

**University  
Service**

**Co-Colloquium director:** University of California, Irvine; Department of Logic and Philosophy of Science. 2017-19.

**Graduate Admissions Committee Member:** University of California, Irvine; Department of Logic and Philosophy of Science. 2018-19.

**Department Hiring Committee:** University of California, Irvine; Department of Logic and Philosophy of Science. 2018-19.

**Placement Director.** University of California, Irvine; Department of Logic and Philosophy of Science. 2019-2020

**Summer Diversity Program Co-Director:** University of California, Irvine; Department of Logic and Philosophy of Science. Winter 2019-20

**Chair:** “Cultivating your research process,” Hypatia conference “Woman and Academia,” University of California, Irvine. Irvine, California. May 2019.

**Presenter**, LPS Graduate Student Career Day, University of California, Irvine, Spring 2019, Spring 2020

**Advisory Committee**: Program in the Medical Education for the Latino Community (PRIME-LC), University of California, Irvine; School of Medicine (UCI-SOM).

**Graduate  
Student  
Committees**

**Alysha Kassam** (LPS) Advancement committee; Spring 2019

**Tyler Kerr** (Chemistry) Advancement committee; Fall 2019

**Margaret Farrell** (LPS) Advisor; Spring 2019

**Rachel Cooper** (Philosophy) Advancement committee; Summer 2020

**Likhwa Neube** (Philosophy, University of Johannesburg) External examination; Summer 2020