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AWARDS

———— April 25, 2023 ————



**RACKHAM
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Welcome

The quality and diversity of doctoral dissertations produced each year by Rackham students is key to the distinction that the University of Michigan has earned as one of the world's great research universities. Rackham's doctoral students contribute innovative research and scholarship at the highest level in many fields.

Each year truly exceptional dissertations are recognized with the ProQuest Distinguished Dissertation Awards. Faculty who have served as chairs of dissertation committees nominate outstanding students who have completed their dissertations. These nominations are reviewed by a faculty panel and then read closely by postdoctoral fellows who are members of the Michigan Society of Fellows, a unique interdisciplinary community of outstanding scholars.

The awards are co-sponsored by ProQuest, a global information-content and technology company based in Ann Arbor that publishes more than 200,000 dissertations and theses annually, including more than 800 by University of Michigan graduate students. We are delighted to have ProQuest as a partner in celebrating the accomplishments of these scholars and recognizing the excellence of their doctoral dissertations.

Mike Solomon

Dean and Vice Provost for Academic Affairs

Harsh Agarwal

*Charge Transfer of Transitional Metal Ions
for Flow Battery Applications*

Ph.D., Chemical Engineering, University of Michigan, 2022

B.Tech, Chemical Engineering, Indian Institute of Technology, 2017

In an era where energy efficiency is key for most human activities, batteries able to store energy efficiently and cost-effectively are in high demand. Harsh Agarwal's thesis focused on inorganic redox flow batteries (RFBs), which have been developed and improved for several decades, yet some of the physical principles underlying the functioning are still not well understood. Through a series of experimental studies, nicely complemented by computational work in collaboration with an undergraduate in their lab, Agarwal sought to shed light on the process of charge transfer on the electrodes in Vanadium-based RFBs. Several key properties of the interaction between electrodes and electrolytes were uncovered, which set the groundwork for future developments that could lead to significant improvements in RFB efficiency. These advances have clearly been received by the author's field with enthusiasm, as illustrated by the fact that four peer-reviewed papers have been published based on this dissertation. Agarwal's work nicely exemplifies the type of rigorous, innovative work with clear applications worthy of a ProQuest Distinguished Dissertation Award in Engineering.

Read by Roberto Márquez, Ecology and Evolutionary Biology

Dissertation Committee:

Nirala Singh, Chair
Bryan R. Goldsmith
Nicholas A. Kotov
Vincent L. Pecoraro

Freida Blostein

*Salivary Omics Measurements as Biomarkers in
Epidemiological Analyses*

Ph.D., Epidemiologic Science, University of Michigan, 2022

M.P.H., Epidemiology, University of Michigan, 2018

B.S., Evolutionary Anthropology, University of Michigan, 2016

Freida Blostein's dissertation advances public health applications of "omics" in two ways: first, by developing markers for cheaper and more accessible salivary samples rather than blood, and second, by isolating "tractable epidemiological measurements" from the high-dimensional data generated from "omics" methods. These efforts—the third and fourth chapters of the dissertation in particular—bring the growing appreciation for the role of the microbiome into clinical applications, especially given the longitudinal and integrative perspective taken here. In fact, Blostein titles an entire section "The importance of environment: omics data is not biological determinism" (5.1.3, p. 172) and their care in interpreting results is evident throughout the dissertation. They insist that practitioners consider the multifactorial nature of disease, arguing that epidemiology can be "a toolbox for critical thought" (175). I would argue that this claim distinguishes Blostein from biologists who emphasize how novel technologies lead to scientific progress without situating these tools in a complex social reality.

Read by Natalie Hofmeister, Ecology and Evolutionary Biology

Dissertation Committee:

Kelly Bakulski, Co-Chair
Betsy Foxman, Co-Chair
Colter Mitchell
Melissa Duhaime
Kerby Shedden

Tyler Gardner

Probing Unique Regimes of Exoplanet Science with Long Baseline Interferometry

Ph.D., Astronomy and Astrophysics, University of Michigan, 2022

M.S., Astronomy and Astrophysics, University of Michigan, 2018

B.A., Physics, Truman State University, 2016

With the detection of over 5,000 planets around stars other than our own Sun in the last two decades, great progress has been made in understanding how planets form and how common an Earth twin could be. However, current techniques limit the types of planets we can detect and characterize, preventing a full picture of the existing planetary diversity. Tyler Gardner has exploited the unique capabilities of long-baseline interferometry to fill two critical gaps in current planet observations: the detection of planets around stars more massive than the Sun and the characterization of planets that are extremely close to their host star. In a thorough and well-written dissertation, Gardner displays expertise in long-baseline interferometry observations, the development of data reduction routines, as well as in the scientific analysis and interpretation of the observations. Although the first planet detection has yet to be made, Gardner's work has resulted in the most precise measurements to date of the orbits of binary and triple star systems. Such observations are required to determine the mass of the stars—the property that determines a star's life cycle.

Read by Merel van 't Hoff, Astronomy

Dissertation Committee:

John Monnier, Chair

Emily Rauscher

Michael Meyer

Fred Adams

Robert Graham

Mechanisms of Action and Sources of Variability in Neurostimulation for Chronic Pain

Ph.D., Biomedical Engineering, University of Michigan, 2022

M.S.E., Biomedical Engineering, University of Michigan, 2018

B.S., Bioengineering, *cum laude*, George Mason University, 2016

Chronic pain management/prevention of various diseases is an essential task in the health science field. It is a research focus of the U.S. National Institute of Health, with individualized therapy to reduce patient pain being the ultimate goal. In this context, Robert Graham's findings have novelty and importance, which can be used to support future individualized, non-addictive pain relief treatment. The strong point of the study has shown a logical flow: Graham identified knowledge gaps of physiological mechanisms of electrical stimulation-induced pain relief and sources of variability affecting the neural response to stimulation. To address the knowledge gap, Graham captured the effect of anatomical differences in neural activation based on patients' donated human tissue and tested real clinical data. They established a novel framework for patient-specific field-cable models, and this provides a patient-specific approach and contributes insights to develop clinical neuro technologies. Also, Graham clearly indicated the study's limitations and next steps to overcome those limitations. Moreover, their four publications and one under preparation during dissertation work show capability as a researcher.

Read by Sungwon Park, Nursing

Dissertation Committee:

Susan Douglas, Chair

Christian Sandvig

Julia Sonnevend

Aswin Punathambekar

Jan Van Den Bulck

Youngrim Kim

Pandemic Data Publics: Surveillance Culture and Civic Action in Times of Public Health Emergencies

Ph.D., Communication and Media, University of Michigan, 2022

M.A., Communication Studies, Seoul National University, 2016

B.A., Media Studies, University of California, Berkeley, 2012

With its broad, government-sponsored screening and surveillance program and alliances of civic practices to set up COVID-19 data management, South Korea offers an ideal opportunity to manage the COVID-19 pandemic data/information, which has not been fully investigated. Having strong ethnographic experience at two time points (at MERS and at COVID-19), Youngrim Kim could show how to create the data and manage the data from both government and civic eyes, which involved not only her own experience but also interviews with various stakeholders. The overall study was well-structured, defined the data-related terminology clearly, and showed the connection between public health crisis information and politics to counter the pandemic situation. Kim also emphasized the balance of collaborations between government surveillance and civic projects. If Kim's dissertation can capture how the data management system has evolved and what challenges faced based on timeline (an early outbreak of the pandemic, trial and error, normalization, and maintenance), it could be easier for readers to understand how to improve their system and deal with concerns, and what is to improve for the future.

Read by Sungwon Park, Nursing

Dissertation Committee:

Susan Douglas, Chair

Christian Sandvig

Julia Sonnevend

Aswin Punathambekar

Jan Van Den Bulck

Özge Korkmaz

*Politics, Ethics, and Complicity in Turkey's Kurdistan:
Anxieties of an Era*

Ph.D., Anthropology, University of Michigan, 2022

**M.Sc., Social and Cultural Anthropology, awarded with distinction,
University College London, 2013**

B.A., Sociology, with honors, Istanbul Bilgi University, 2012

Özge Korkmaz's doctoral dissertation, "Politics, Ethics, and Complicity in Turkey's Kurdistan: Anxieties of an Era" is a spell-binding anthropological study of Kurdistan's long historical entanglement with Turkey. Located at the tense intersection of political anthropology, linguistic anthropology, and social theory, Korkmaz provides us with a "social analysis of unintended consequences," exploring the modes through which Kurdish accommodations to Turkish political rationales produces varied imaginations and discourses of ethical categorizations in lived life. These include, but are not exhausted by, the play of luck, misfortune, collaboration, betrayal or, indeed, autonomy and solidarity. Written with brave analytical acumen, linguistic deftness, and innovative anthropological finesse, Korkmaz opens new grounds for a politically grounded theory of collective life amidst contemporary dispossessions. An essential contribution to an emergent and essential field!

Read by Rijul Kochhar, Anthropology

Dissertation Committee:

Webb Keane, Chair

Andrew Shryock

Yasmin Moll

Fatma Muge Gocek

Francis Cody

Vincent Longo

A Hard Act to Follow: Live Performance in the Age of the Hollywood Studio System (1920-1950)

Ph.D., Film, Television, and Media, University of Michigan, 2022

B.A., Screen Arts and Cultures, University of Michigan, 2014

Vincent Longo's dissertation in Film, Television, and Media, is a sweeping examination of live theatre and its complicated relationship with changes in the film industry from the 1920s to the 1950s. Contrary to previous assumptions about vaudeville and the studio system at that time, Longo shows how instead of the film industry causing its demise, live performance in motion picture theaters not only survived but thrived, while providing a space for communities of color barred from many other entertainment outlets. What at first seems like a localized historical case-study about film and theater, the research is expansive in academic reach by deftly informing other disciplines and subfields such as culture, economic sociology, organizations, and race, particularly through their examination of the African American community's ability to endure and thrive in the face of marginalization. This important research shows the ways in which cultural history is much more complex than what is remembered, and how closely entertainment is intertwined with society, economy, and racial justice. Not only was there praise for its academic contributions, but the readers were also impressed with Longo's meticulous detail in historical research, clear writing, and their convincing substantiation of the claims made in the work.

Read by Jeff Sheng, Information

Dissertation Committee:

Matthew Solomon, Chair

Richard Abel

Maya Barzilai

Giorgio Bertellini

Kathryn Fuller-Seeley

Andrew McInnerney

The Argument/Adjunct Distinction and the Structure of Prepositional Phrases

Ph.D., Linguistics, University of Michigan, 2022

**B.A., Linguistics, *summa cum laude*, with honors,
Ohio State University, 2016**

Andrew McInnerney's doctoral thesis, "The Argument/Adjunct Distinction and the Structure of Prepositional Phrases" is a pathbreaking contribution to linguistics and analytical philosophy. In this study of syntax and natural language, McInnerney explores the human cognitive system, asking—"What do you know when you know a language?" Syntax, per McInnerney, is understood as the slippery gap between linguistic form and linguistic meaning, a slippage that has long been ascribed to the historical-epistemological split between Argument/Adjunct Distinction (A/AD). What McInnerney is proposing, instead, is nothing short of paradigm-shifting, opening to critical analysis what has long been taken for granted in the field. This insightful work, in turn, opens new and promising intellectual vistas; it promises to help practitioners grapple with a variety of "productive reanalyses of syntactic phenomena, ultimately bringing us closer to an account of human knowledge of language." A stellar analysis, finely argued, and creatively analyzed. A model of intellectual rigor, logical argumentation, and promissory insightfulness!

Read by Rijul Kochhar, Anthropology

Dissertation Committee:

Acrisio Pires, Chair
Ezra Keshet
Lisa Levinson
Richard L. Lewis
T. Daniel Seely

Weijing Tang

Statistical Learning for Large-Scale and Complex-Structured Data

Ph.D., Statistics, University of Michigan, 2022

M.A., Statistics, University of Michigan, 2018

B.Sc., Pure and Applied Mathematics, Tsinghua University, 2016

Our world is becoming progressively more dependent on, and driven by, colossal data sets. There is a drive and ability now to collect so much information that its scale now outstrips our capacity to use it as well as smaller and less complex data. Weijing Tang's dissertation aims to improve the way certain types of large, complicated, and often incomplete data are analyzed. For example, one of the chapters describes a machine learning approach to assist in classifying clinical data. These data could be gathered over years, written by different people, be missing information, and the information that does exist can be notes, lab results in a table, images of scans or x-rays, or even video. Combining these is a monumental task, and drawing conclusions about patient care requires a way to classify the data, a process which this dissertation improves by allowing classification to occur with a more forgiving level of missing information. Throughout the work, the motivations, process, and conclusions are clearly presented with mindful use of language. Math, statistics, and machine learning aren't often associated with clear storytelling, but this dissertation stands out for the excellent communication.

Read by Ellen Quarles, Molecular, Cellular and Developmental Biology

Dissertation Committee:

Ji Zhu, Chair

Gongjun Xu

Qiaozhu Mei

Liza Levina

Weichao Zhang

Mechanisms of Lysosome Biogenesis and Regulation

**Ph.D., Molecular, Cellular, and Developmental Biology,
University of Michigan, 2022**

M.S., Biotechnology, Northwestern University, 2016

**B.S., Molecular and Cellular Biology, University of Illinois at
Urbana-Champaign, 2013**

Everything eventually breaks down, and in our cells, lysosomes are responsible for recycling broken or unused components and communicating about this with other organelles. Weichao Zhang's dissertation answers important questions about how cells regulate the number and function of lysosomes. What is particularly impressive is the sheer range of techniques and biological models used in this study. Yeast and human cells are the primary focus, but zebrafish and other organisms are also used. Technical work ranging from cellular biology staples like sequencing and sub-cellular organelle purification are combined with transmission electron microscopy to generate a convincing picture about the changes in surface proteins on the lysosomal membrane. The figures are clear and include helpful summaries of the working models. While the science is thorough and interesting, what really sets this dissertation apart is the writing. Each chapter communicates not just the technical aspects of the work, but also places them firmly in the broader context of cellular biology.

Read by Ellen Quarles, Molecular, Cellular and Developmental Biology

Dissertation Committee:

Ming Li, Chair
Yanzhuang Wang
Haoxing Xu
Daniel Klionsky
Jacob Kitzman

Honorable Mentions

Sara Abelson, Health Behavior and Health Education

Maris Arthurs, Physics

Justin Barney, Classical Studies

Guus Duindam, Philosophy

Anna-Lisa Lawrence, Microbiology and Immunology

Christiana Mavroyiakoumou, Applied and
Interdisciplinary Mathematics

Anna Michmerhuizen, Cellular and Molecular Biology

Amin Reihani, Mechanical Engineering

Lydia Wileden, Sociology

Yi Zhu, Civil and Environmental Engineering

Distinguished Dissertation Award Nominees

Marisa Aikins, Pharmaceutical Sciences
April Apfelbaum, Cancer Biology
Sergio Barrera, American Culture
Duc Bui, Electrical Engineering and Computer Science
Jack Carlisle, Mathematics
Kenneth Hsien Yung Chung, Civil and
Environmental Engineering
Caroline Crockett, Electrical and Computer Engineering
Michael Frisby, Educational Studies
Sonal Gupta, Ecology and Evolutionary Biology
Stephanie Hall, Health Infrastructures and Learning Systems
Elissa Hult, Molecular and Integrative Physiology
Atsunori Kaneshige, Medicinal Chemistry
Sean Kramer, History of Art
Allyssa Memmini, School of Kinesiology
Anil Ramachandran Menon, Political Science
Dalia Murra, Neuroscience
Eli Olson, Immunology
Eitan Paul, Public Policy and Political Science
Caitlin Posillico, Psychology
Naganika Sanga, Taubman College of Architecture and
Urban Regional Planning
Jeff Spencer, Chemistry
Aaron Stone, English
Xin Sun, Combined Program in Education and Psychology
Toniann Trevino, History
Peter Vorissis, Comparative Literature
Xianing Zheng, Human Genetics

The Graduate School acknowledges the special contributions of Professor Susan Scott Parish and the readers from the Michigan Society of Fellows who devoted a significant amount of thoughtful time to review and recommend the nominations.

Readers from the Michigan Society of Fellows

Dmitri Brown, American Culture

Elizabeth Durham, Anthropology

Ben Green, Public Policy

Natalie Hofmeister, Ecology and Evolutionary Biology

Rijul Kochhar, Anthropology

Katsuo Kurabayashi, Professor, Mechanical Engineering

Roberto Márquez, Ecology and Evolutionary Biology

Sungwon Park, Nursing

Vyta Pivo, Architecture

Ellen Quarles, Molecular, Cellular, and Developmental Biology

Jessica Ruffin, Film, Television, and Media

Jeff Sheng, Information

Henry Stoll, Music, Theatre, and Dance

Merel van 't Hoff, Astronomy

ProQuest Dissertations & Theses began in 1939 to safeguard threatened scholarly resources and has been the dedicated steward of graduate works ever since. Working in partnership with universities all over the globe, we continue to ensure that dissertations and theses are discovered, used, and protected as a valuable contribution to the primary literature in every discipline.

As a committed supporter of graduate education, ProQuest Dissertations & Theses appreciates the opportunity to co-sponsor the Distinguished Dissertation Awards along with the University of Michigan's Rackham Graduate School.