



**DUKE**  
THE GRADUATE SCHOOL

**PH.D. HOODING  
CEREMONY**

SATURDAY, SEPTEMBER 25, 2021  
DUKE CHAPEL  
DURHAM, NORTH CAROLINA

# What Graduate Students Mean to Duke

Congratulations to the 2019-2020 and 2020-2021 Ph.D. graduates! They have persevered through challenges and uncertainty like few other graduates ever had to in the 95-year history of the Duke University Graduate School. As alumni of The Graduate School, they represent a powerful legacy. Since the establishment of the school in 1926, graduate students have been the intellectual glue of our community. They push academic boundaries, offer fresh perspectives in research approaches, and give voice to emerging fields. To echo James B. Duke’s founding Indenture of Duke University, students and alumni of The Graduate School are individuals of “outstanding character, ability and vision” who pursue “those areas of teaching and scholarship that would most help to develop our resources, increase our wisdom, and promote human happiness.” Duke has garnered an international reputation for excellence in research, teaching, and service, and its graduate students, as much as anyone, have contributed to the prominence that the university enjoys today.

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# Ph.D. Hooding Ceremony Program

Presiding. . . . . Paula D. McClain, Ph.D.  
*Dean of The Graduate School*  
*Vice Provost for Graduate Education*  
*Professor of Political Science and*  
*Public Policy*

Welcome Remarks . . . . . Paula D. McClain, Ph.D.

Presentation of the Academic Hoods. . . . . John Klingensmith, Ph.D.  
*Senior Associate Dean for*  
*Academic Affairs, The Graduate School*  
*Associate Professor of Cell Biology*

Closing Remarks. . . . . Paula D. McClain, Ph.D.

## About Your Commencement Gift

Each year, The Graduate School gives a gift to students who attend the Ph.D. hooding ceremony as a way to say congratulations and thank-you for their contributions to the university. The gift for the 2019-2020 and 2020-2021 graduates is a writing set with a ball pen and letter opener in solid rosewood with gold trim, placed within a wooden box in burl wood finish.

## Staying Connected to Duke

Here are a few simple steps to keep your connection to Duke strong and take advantage of the university's alumni resources:

- Update your contact information at [alumni.duke.edu](http://alumni.duke.edu)
- Star in a graduate alumni spotlight
- Become a regional Graduate School volunteer
- Serve as a career adviser for graduate students
- Complete The Graduate School's survey on alumni career paths
- Follow the school on social media ([gradschool.duke.edu/social](http://gradschool.duke.edu/social))
- Use Duke's career resources (you still have access to the Career Center)
- Email [grad-profdev@duke.edu](mailto:grad-profdev@duke.edu) about attending events in The Graduate School's Professional Development Series

More information: [gradschool.duke.edu/alumni](http://gradschool.duke.edu/alumni)

Questions: [grad-alumni@duke.edu](mailto:grad-alumni@duke.edu)

# Order of the Hooding Ceremonies

## Ph.D. candidates will be called in the order listed

Note: The list of candidates appearing in this program is not an officially certified list of graduates. Certification must come from the University Registrar.

### CEREMONY 1: HUMANITIES AND SOCIAL SCIENCES

#### ART, ART HISTORY AND VISUAL STUDIES

Kaylee P. Alexander

#### BUSINESS ADMINISTRATION

Aimee Michaela Chabot

Ahmet Degerli

Kelley Ann Gullo

David P. Hall

Wenxi Liao

Anyi Ma

Sarah Angelina Memmi

Jacqueline Renée Rifkin

#### CAROLINA-DUKE PROGRAM IN GERMAN STUDIES

Edana Ann Kleinhans-Junghahn

#### CLASSICAL STUDIES

Thomas Joseph Beattie Cole

Courtney Michelle Monahan

Laura E. Winters

#### CULTURAL ANTHROPOLOGY

Kelly Lynn Alexander

Joella Bitter

Yidong Gong

Carla Hung

Matthew Ryan Sebastian

#### ECONOMICS

Tiancheng Chen

Xiaoyu Chen

Jiayun Dong

Amanda Melina Grittner

Andrea Kiss

Jonathan Ronny Moreno Medina

#### ENGLISH

Nora Irene Nunn

Sasha Ann Panaram

Hannah Lee Rogers

#### HISTORY

Aaron Gregory Colston

Elsa Celestina Costa

Ashton Wynette Bagley Merck

#### LITERATURE

Cole Alexander Rizki

#### MUSIC

Elizabeth Anne Crisenbery

Benjamin Justin Daniels

Meredith Claire Graham

Osman Eren Gumrukcuoglu

Karen Elaine Hovey Messina

Yuxin Ouyang

Harrison Basil Russin

#### NURSING

Eunji Cho

Shaoqing Ge

Hyeyoung Park

Jing Wang

#### PHILOSOPHY

Hannah Bondurant

Bryce Scott Gessell

Heather Marie Wallace

#### POLITICAL SCIENCE

Joseph Wellington Brown

Margaret Jenkins Foster

Nura Ahmad Sediq

Tusi Wen

#### PSYCHOLOGY AND NEUROSCIENCE

Carina Lee Block

Elsa Anne Friis

Ali Giusto

Sara Victoria Maurer

#### PUBLIC POLICY STUDIES

Laura Elizabeth Bellows

Emily Lambright Pakhtigian

Nivedhitha Subramanian

Romina Eliana Tomé

**RELIGION**

Brad Boswell

**ROMANCE STUDIES**

Roger David Dulceany

Laurel Marie Iber

**SOCIOLOGY**

Steven Tyrell Jefferson

Miles S. Marsala

Emily Rachel Persons

Zimife Uchechukwu Umeh

Jessica Sayles West

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**CEREMONY 2:****BIOLOGICAL & BIOMEDICAL SCIENCES, PHYSICAL SCIENCES,  
AND ENGINEERING****BIOCHEMISTRY**

Grace Anne Beggs

Brittany Justine Bisnett

Alex Cole Broussard

Eileen Therese Malloy Burchfiel

Abhishek Chhetri

Brett Matthew Condon

Anthony Nguyen

**BIOLOGY**

Hsueh-Ling Chen

**BIOMEDICAL ENGINEERING**

Mercy Nyamewaa Asiedu

Daniela Fernanda Cruz Ordoñez

Cassio Mendes Fontes

Evan Michael Gates

Kelly Margaret Hainline

Nicole Amelia Pelot

Ruobing Qian

**BIostatISTICS AND  
BIOINFORMATICS**

John Andrew Pura

Tongrong Wang

**CELL BIOLOGY**

Anzhi Chen

Leyao Shen

John Dayland Thompson

Kathryn Katsue Walder-Christensen

**CHEMISTRY**

Kasie Lynn Collins

Mutya Aguila Cruz

Anita Đonlić

Ye Jin

Xiaoqi Lang

Hyunji Lee

Yangju Lin

Renze Ma

Feichen Yang

Yudi Zhang

**CIVIL AND ENVIRONMENTAL  
ENGINEERING**

Malarvizhi Arulraj

Nabil Michel Atallah

Trisha L. Dupnock

Faye A. Koenigsmark

Clay Michael Sanders

Savannah James Volkoff

**COMPUTATIONAL BIOLOGY  
AND BIOINFORMATICS**

Jingkang Zhao

**COMPUTER SCIENCE**

Benjamin Clark Malloy Burchfiel

Junyang Gao

Stavros Sintos

Shengbao Zheng

Zhenyu Zhou

**ECOLOGY**

Catherine Ann Chamberlin

## **ELECTRICAL AND COMPUTER ENGINEERING**

Enrique Tomas Barraza  
Zhuoqing Chang  
Zhihui Cheng  
Aditi Dighe  
Spencer David Ferguson  
Junfei Li  
Yiqian Mao  
Narayanan Rengaswamy  
Shalin Shah  
Callie Marie Woods  
Runren Zhang

## **ENVIRONMENT**

Rashmi Joglekar  
Matthew Ruis

## **EVOLUTIONARY ANTHROPOLOGY**

Ethan Lucas Fulwood

## **GENETICS AND GENOMICS**

Emily Josephine Bowie  
Jonathan P. Kastan  
Martine Wai-Yeng Tremblay  
Amy Katherine Webster

## **IMMUNOLOGY**

Lindsay Carvalho Dahora  
Shengjie Xu

## **MARINE SCIENCE AND CONSERVATION**

Melissa Sue Duvall  
Anastasia Compton Eluned Quintana  
Seth Thomas Sykora-Bodie  
Yin San Stacy Zhang

## **MATHEMATICS**

Shalla Hanson  
Didong Li  
Zhe Wang

## **MECHANICAL ENGINEERING AND MATERIALS SCIENCE**

Yaying Feng  
Hongtao Alex Guo  
Amy Elizabeth King  
Kai Mbali Kruger Bastos  
Brian Hyun-jong Lee  
Michael William Lee  
Kevin Andrew McHugh  
Matthew Braxton Tedesco  
Yawen Xu

## **MEDICAL PHYSICS**

Isabella Duarte

## **MOLECULAR CANCER BIOLOGY**

Jacob Peter Hoj  
Jieun Park

## **MOLECULAR GENETICS AND MICROBIOLOGY**

Ha Na Choe  
Rebekah Dumm  
Caitlin Noel Esoda  
Kyle Dane Gibbs  
Xiaoyang Serene Hu

## **NEUROBIOLOGY**

Maxwell Harrison Gillett  
Christopher Kozlowski  
Jingjing Wang  
Shawn Michael Willett

## **PATHOLOGY**

Byron William Hayes

## **PHARMACOLOGY**

Andrew Kang-Kang Lee

## **PHYSICS**

Weiyao Ke  
Xiaqing Li  
Weizhi Xiong  
Yingru Xu

## **STATISTICAL SCIENCE**

Jialiing Mao

# Dissertations Completed for Doctor of Philosophy

Graduate School Academic Year 2019–2020

## **Hasan Abbas**

“An Essential Role for Skeletal Muscle Progenitor Cells in Response to Ischemia in Vascular Disease.” (Pharmacology) Ann Marie Pendergast and Christopher Kontos, Advisers. May 2020.

## **Nabil Abboud**

“A Class of Tetrahedral Finite Elements for Complex Geometry and Nonlinear Mechanics: a Variational Multiscale Approach.” (Civil and Environmental Engineering) Guglielmo Scovazzi, Adviser. December 2019.

## **Kelly Lynn Alexander**

“Edible Cultures: The Politics and Ethics of Recuperating Food Waste.” (Cultural Anthropology) Anne Allison, Adviser. May 2020.

## **Irem Altan**

“Understanding the Structure and Formation of Protein Crystals Using Computer Simulation and Theory.” (Chemistry) Patrick Charbonneau, Adviser. December 2019.

## **Kaitlyn Jo Andreano**

“Exploiting Our Contemporary Understanding of the Molecular Pharmacology of the Estrogen Receptor to Develop Novel Therapeutics.” (Pharmacology) Donald McDonnell, Adviser. May 2020.

## **Joseph B. Andrews**

“Printed Carbon Nanotube Thin Films for Electronic Sensing.” (Electrical and Computer Engineering) Aaron Franklin, Adviser. September 2019.

## **Malarvizhi Arulraj**

“Quantifying and Elucidating the Physical Basis of Uncertainty in GPM-DPR Precipitation in Mountain Regions Using Multi-frequency Observations and Models.” (Civil and Environmental Engineering) Ana P. Barros, Adviser. December 2019.

## **Mercy Nyamewaa Asiedu**

“Development of a Toolbox for Automated, Speculum-Free, Self-Cervical Cancer Screening with Applications to Resource-Limited Settings.” (Biomedical Engineering) Nimmi Ramanujam, Adviser. September 2019.

## **Hunter Bachman**

“Flexural Wave Based Acoustofluidic Devices.” (Mechanical Engineering and Materials Science) Tony Huang, Adviser. May 2020.

## **Kwabena Agyeman Badu-Nkansah**

“Elaborating the Desmosome Proteome: Insights into Novel Mechanisms Essential for Regulating Epidermal Integrity and Homeostasis.” (Cell Biology) Terry Lechler, Adviser. May 2020.

## **Samagya Banskota**

“Development of Genetically Encoded Zwitterionic Polypeptides for Drug Delivery.” (Biomedical Engineering) Ashutosh Chilkoti, Adviser. December 2019.

## **Jena Ariel Barnes**

“Plasmon-Assisted Photothermal Catalysis.” (Mechanical Engineering and Materials Science) Nico Hotz, Adviser. September 2019.

## **Enrique Tomas Barraza**

“Foundational Studies of the Deposition of Metal-Halide Perovskite Thin Films by Resonant Infrared, Matrix-Assisted Pulsed Laser Evaporation.” (Electrical and Computer Engineering) Adrienne Stiff-Roberts, Adviser. May 2020.

## **Anita Nicole Bateman**

“Ethiopia in Focus: Photography, Nationalism, Diaspora, and Modernization.” (Art, Art History, and Visual Studies) Richard Powell, Adviser. May 2020.

**Matthew James Paul Beckett**

“Equivariant Nahm Transforms and Minimal Yang–Mills Connections.” (Mathematics) Mark Stern, Adviser. May 2020.

**Xiaoshu Bei**

“Understanding Firms’ Technology Sourcing Strategy: How is it Related to Complementary Assets and the Hiring of New Inventors.” (Business Administration) Sharon Belenzon, Adviser. September 2019.

**Michael Bell**

“Second-Order Families of Minimal Lagrangians in  $CP^3$ .” (Mathematics) Robert L. Bryant, Adviser. September 2019.

**Laura Elizabeth Bellows**

“Immigration Enforcement and Student Outcomes.” (Public Policy) Anna Gassman-Pines, Adviser. September 2019.

**Max Hanson Beninger**

“A Philosophical Examination of Working Memory.” (Philosophy) Karen Neander, Adviser. September 2019.

**Matthew Theodor Biegler**

“Developing Molecular Tools for Interrogating a Vocal Learning Avian Species.” (Neurobiology) Erich Jarvis, Adviser. May 2020.

**Oliver Binz**

“Managerial Response to Macroeconomic Uncertainty: Implications for Firm Profitability.” (Business Administration) William Mayew, Adviser. May 2020.

**Joella Bitter**

“Sounding the City: Aural Intimacies and Ecologies of Knowledge in Gulu, Uganda.” (Cultural Anthropology) Louise Meintjes, Adviser. May 2020.

**Joel Nils Bjornstad**

“Noisefield Estimation, Array Calibration and Buried Threat Detection in the Presence of Diffuse Noise.” (Electrical and Computer Engineering) Leslie M. Collins, Adviser. September 2019.

**Joshua B. Black**

“Epigenome Editing for Reprogramming Neuronal Cell Fate Specification.” (Biomedical Engineering) Charles A. Gersbach, Adviser. September 2019.

**Jeffrey Miles Blackburn**

“Advances in Selectivity of the Suzuki–Miyaura and Hofmann–Löffler–Freitag Reactions.” (Chemistry) Jennifer L. Roizen, Adviser. September 2019.

**Sandie Blaise**

“Transnational Trickster: Publishing, Representing, and Marketing Dany Laferrière.” (Romance Studies) Laurent Dubois, Adviser. September 2019.

**Rachael Jin Bloom**

“High-Throughput Isolation and Culture of Human Gut Bacteria with Droplet Microfluidics.” (Genetics and Genomics) Lawrence David, Adviser. September 2019.

**Aleah Charlotte Bowie**

“Adaptive Motivations Drive Concern for Common Good Resources.” (Evolutionary Anthropology) Brian A. Hare, Adviser. September 2019.

**Emily Josephine Bowie**

“TTBK2 and Primary Cilia are Required for Purkinje Cell Survival.” (Genetics and Genomics) Sarah Goetz, Adviser. December 2019.

**Jarron Daniel Bowman**

“Economic Insecurity, Political Inequality, and the Well-Being of American Families.” (Sociology) Angel Harris and Scott Lynch, Advisers. May 2020.

**Michael Boyarsky**

“Metasurface Antennas for Synthetic Aperture Radar.” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2019.

**Alex Cole Broussard**

“Control of Nucleotide-Sugar Metabolism in Glycan Biosynthesis and Cellular Physiology.” (Biochemistry) Michael Boyce, Adviser. September 2019.



**Joseph Wellington Brown**

“The Politics of Foreign Military Basing.” (Political Science) Peter Feaver and Kyle Beardsley, Advisers. May 2020.

**John Paul Bumpus**

“Essays on the Structural and Cultural Determinants of Youths’ Postsecondary Educational Outcomes.” (Sociology) Scott Lynch and Angel Harris, Advisers. May 2020.

**Benjamin Clark Malloy Burchfiel**

“3D Object Representations for Robot Perception.” (Computer Science) George Konidaris, Adviser. September 2019.

**Eileen Therese Malloy Burchfiel**

“Novel Protein Regulators of Heat Shock Transcription Factor 1 During Stress and Disease.” (Biochemistry) Margarethe Kuehn, Adviser. September 2019.

**Kyle Christian Burris**

“Advances in Survey Methodology and Sports Science.” (Statistical Science) Peter Hoff, Adviser. September 2019.

**Yu Cao**

“Analytical and Numerical Study of Lindblad Equations.” (Mathematics) Jianfeng Lu, Adviser. May 2020.

**Robert Gerard Carden, Jr.**

“Mechanistic Investigations of Gold(I)-catalyzed Carbene Transfer and Hydrofunctionalization Reactions.” (Chemistry) Ross A. Widenhoefer, Adviser. September 2019.

**Davide Guido Carozza**

“Risky Business: The Economy of Self-Management in Eighteenth-Century British Fiction.” (Literature) Nancy Armstrong, Adviser. May 2020.

**Morine Cebert-Saintval**

“Psychobiological, Clinical, and Sociocultural Factors that Influence Black Women to Seek, Initiate, and Complete Treatment for Infertility: A Mixed Methods Study.” (Nursing) Rosa Gonzalez-Guarda and Eleanor Stevenson, Advisers. May 2020.

**Catherine Ann Chamberlin**

“The Role of Ecology in Creating Diel Nitrate Concentration Patterns in Streams and Rivers.” (Ecology) James Heffernan, Adviser. May 2020.

**Zanetta Chang**

“On Mechanisms of Resistance in the Human Fungal Pathogen *Mucor circinelloides*.” (Molecular Genetics and Microbiology) Joseph Heitman, Adviser. May 2020.

**Zhuoqing Chang**

“Appearance-based Gaze Estimation and Applications in Healthcare.” (Electrical and Computer Engineering) Guillermo Sapiro, Adviser. May 2020.

**Chaofan Chen**

“Interpretability by Design: New Interpretable Machine Learning Models and Methods.” (Computer Science) Cynthia Rudin, Adviser. May 2020.

**Chen Chen**

“Performance Analysis in Large-Scale Stochastic Dynamic Programs.” (Business Administration) David Brown and Santiago Balseiro, Advisers. May 2020.

**Chong Chen**

“Rebel Interdependence: Essays on Ethnic Mobilization, Competition, and Inclusion.” (Political Science) Kyle Beardsley, Adviser. December 2019.

**Haohan Chen**

“The Micro-foundations of Authoritarian Rule Unveiled by Digital Traces: New Theories and Methods with Applications to Chinese Social Media.” (Political Science) Melanie Frances Manion, Adviser. December 2019.

**Hsueh-Ling Chen**

“Novel Features of *Drosophila* Sweet Taste System.” (Biology) Rebecca Chung-Hui Yang, Adviser. December 2019.

**Lee Hung Chen**

“Genomic and Molecular Characterization of Brainstem Glioma.” (Pathology) Hai Yan, Adviser. September 2019.

**Mingliu Chen**

“Stochastic Optimization in Market Design and Incentive Management Problems.” (Business Administration) Peng Sun, Adviser. May 2020.

**Zhihui Cheng**

“Modification and Scaling of Metal Contacts to 2D Materials Using an In-Situ Argon Ion Beam.” (Electrical and Computer Engineering) Aaron Franklin, Adviser. September 2019.

**Abhishek Chhetri**

“The Role of (1,3)- $\beta$ -D-Glucan Synthase in Fungal Cell Wall Biosynthesis.” (Biochemistry) Kenichi Yokoyama, Adviser. May 2020.

**Eunji Cho**

“Human Flourishing in Adolescents and Young Adults with Cancer.” (Nursing) Sharron Docherty, Adviser. May 2020.

**Ha Na Choe**

“Estrogen’s Impact on the Specialized Transcriptome, Brain, and Vocal Learning Behavior of a Sexually Dimorphic Songbird.” (Molecular Genetics and Microbiology) Erich Jarvis and Hiroaki Matsunami, Advisers. May 2020.

**Pakawat Chongsathidkiet**

“Characterizing and Arresting Bone Marrow T-cell Sequestration in the Setting of Glioblastoma and Other Intracranial Tumors.” (Pathology) Peter Fecci, Adviser. May 2020.

**Chia-chieh Chu**

“Targeting Alternative Conformational States of the HIV-1 Rev Response Element Stem IIB using Small Molecules.” (Biochemistry) Hashim M. Al-Hashimi, Adviser. May 2020.

**William Richard Cioffi**

“Social behavior of the Cuvier’s Beaked Whale (*Ziphius cavirostris*) Investigated by Telemetry and Photo-Identification.” (Ecology) Andrew Read, Adviser. May 2020.

**Erez Cohen**

“Developmental Regulation of Injury-Induced Cell Cycles in the *Drosophila* Hindgut.” (Cell Biology) Donald Fox, Adviser. May 2020.

**Thomas Joseph Beattie Cole**

“Beyond Republicanism: Political Thought in Tacitus’ Minor Works.” (Classical Studies) Jed W. Atkins, Adviser. December 2019.

**Steven Edward Conklin López**

“Insight into How the Coordination Environment of Cu Influences Chemical and Biological Activity of the Antifungal Peptide Histatin-5.” (Chemistry) Katherine J. Franz, Adviser. September 2019.

**Cherie Conley**

“Determining Health: Using Dyadic Peer Support to Promote Health in African American Faith Communities.” (Nursing) Issac Lipkus, Adviser. May 2020.

**Molly Copeland**

“When Peers Help and Harm: Adolescent Social Structure and Mental Health.” (Sociology) James Moody, Adviser. May 2020.

**Amanda Helen Cox**

“Investigating the Role of Calcium Dynamics and the Gap Junction Subunit Innexin3 in *Drosophila* Epithelial Morphogenesis.” (Biology) Daniel P. Kiehart, Adviser. December 2019.

**Ben Dillon Cox**

“Investigating Dynamics of Tissue Regeneration via Live Imaging of Zebrafish Scales.” (Genetics and Genomics) Kenneth Poss and Stefano Di Talia, Advisers. September 2019.

**Bridget Mackenzie Crawford**

“Plasmonic Nanoplatfoms for Sensing, Diagnostics, and Therapy.” (Biomedical Engineering) Tuan Vo-Dinh, Adviser. May 2020.

**Elizabeth Anne Crisenbery**

“Performing Fascism: Opera, Politics, and Masculinities in Fascist Italy, 1935-1941.” (Music) Bryan Gilliam, Adviser. May 2020.

**Joshua Cruz**

“Examples of the Local  $L^2$ -Cohomology of Algebraic Varieties.” (Mathematics) Les Saper, Adviser. May 2020.

**Mutya Aguila Cruz**

“Synthesis and Applications of Copper Nanowires and Nanoplates.” (Chemistry) Benjamin Wiley, Adviser. December 2019.

**Daniela Fernanda Cruz Ordoñez**

“Enhancement of Fluorescence-Based Immunoassay for Point-of-Care Testing Using the Plasmonic Nanopatch Metasurface.” (Biomedical Engineering) Maiken Mikkelsen and Tuan Vo-Dinh, Advisers. May 2020.

**David Lee Cunefare**

“A Comprehensive Framework for Adaptive Optics Scanning Light Ophthalmoscope Image Analysis.” (Biomedical Engineering) Sina Farsiou, Adviser. September 2019.

**Vanessa Theresa Curlee**

“Gender and Racial/Ethnic Disparities in Mental Health, Substance Use Disorders, and Behavioral Health Treatment Utilization in US Parolees and Probationers.” (Nursing) Susan Silva, Adviser. May 2020.

**Sarah Alena Curzi**

“Lilacs: Digital Songs and Poems for Voice, Clarinet, Percussion, Electric Guitar, and Electronics, and Ethical Considerations for the Design and Documentation of Wearable Technologies, Responsive Textiles, and Haptic Sound Art.” (Music) Stephen Jaffe and John Supko, Advisers. May 2020.

**Hattie Christine Cutcliffe**

“*In vivo* Mechanical Metrics for the Quantitative Assessment of Cartilage Health.” (Biomedical Engineering) Louis E. DeFrate, Adviser. December 2019.

**Michelle D’Aguillo**

“Ecological and Evolutionary Consequences of Habitat Tracking through Germination Phenology.” (Biology) Kathleen Donohue, Adviser. May 2020.

**Annu Dahiya**

“The Conditions of Emergence: Towards a Feminist Philosophy of the Origins of Life.” (Literature) Elizabeth Grosz and Mark Hansen, Advisers. May 2020.

**Joanne Dai**

“Epstein-Barr Virus Infection Phenocopies Apoptosis Regulation in Germinal Center B Cells.” (Molecular Cancer Biology) Micah Luftig, Adviser. December 2019.

**Benjamin Justin Daniels**

“*Lumpy Gravy* by Frank Zappa—A Comparative Analysis.” (Music) Scott Lindroth, Adviser. May 2020.

**Nandini Datta**

“To Eat or Not to Eat: An Investigation of Meal Skipping on Cognitive Functioning.” (Psychology and Neuroscience) Nancy L. Zucker, Adviser. September 2019.

**Michael Thomas Davidson**

“Exploring the Role of Mitochondrial Bioenergetics and Metabolism in Heart Failure.” (Pharmacology) Deborah M. Muoio and Christopher B. Newgard, Advisers. May 2020.

**Ahmet Degerli**

“Essays on Banking.” (Business Administration) Manju Puri, Adviser. May 2020.

**Yuan Deng**

“Dynamic Mechanism Design in Complex Environments.” (Computer Science) Vincent Conitzer, Adviser. May 2020.

**Paige Merritt Dexter**

“The Functional and Pathophysiological Consequences of Transducin  $\gamma$ -Subunit Knockout.” (Pharmacology) Vadim Y. Arshavsky, Adviser. December 2019.

**Aditi Dighe**

“Integrated Fluorescence Sensing in a Digital Microfluidic System Using Thin Film Silicon Photodetectors.” (Electrical and Computer Engineering) Nan M. Jokerst, Adviser. May 2020.

**Bushu Dong**

“Chemical Biology Approaches to Interrogate Heat Shock Transcription Factor 1 Regulation in Cancer.” (Biochemistry) Pei Zhou, Adviser. May 2020.

**Jiayun Dong**

“Essays on Decision Theory.” (Economics) Todd Sarver, Adviser. May 2020.

**Anita Đonlić**

“Insights, Assays, and Strategies for Small Molecule-Based Modulation of the MALAT1 RNA Triple Helix.” (Chemistry) Amanda Hargrove, Adviser. May 2020.

**Anna Jeannine Dowell**

“Crafting an Egyptian Evangelicalism: Revolution, Revival, and Reform.” (Cultural Anthropology) Rebecca Stein, Adviser. May 2020.

**Joshua Franklin Doyle**

“Getting From Trust to Cooperation: The Moderating Role of Cultural Trust.” (Sociology) Stephen Vaisey, Adviser. May 2020.

**Mark Theodore Draelos**

“Robotics and Virtual Reality for Optical Coherence Tomography-Guided Ophthalmic Surgery and Diagnostics.” (Biomedical Engineering) Joseph Izatt, Adviser. May 2020.

**Isabella Duarte**

“Investigation of Deformable Image Registration Based Lung Ventilation Mapping for Radiation Therapy Using a Hybrid Hyperpolarized Gas MRI Technique.” (Medical Physics) Jing Cai and Fang-Fang Yin, Advisers. May 2020.

**Rebekah Dumm**

“Non-lytic Clearance of Influenza B Virus as a Host Defense Mechanism.” (Molecular Genetics and Microbiology) Nicholas Heaton, Adviser. May 2020.

**William Michael Duncan**

“Homeostasis-Bifurcation Singularities and Identifiability of Feedforward Networks.” (Mathematics) Michael C. Reed, Adviser. May 2020.

**Iara Alejandra Dundas**

“For God and King: Jesuit Ephemeral Spectacles in France under the First Bourbons.” (Art, Art History, and Visual Studies) Sara Galletti, Adviser. December 2019.

**Trisha L. Dupnock**

“Development of a High Performance, Biological Trickling Filter to Upgrade Raw Biogas to Renewable Natural Gas.” (Civil and Environmental Engineering) Marc A. Deshusses, Adviser. December 2019.

**Marielle DuToit**

“Implementing Electrochemical Impedance Spectroscopy for the In Situ Analysis of Conducting Membrane Fouling.” (Civil and Environmental Engineering) Mark R. Wiesner, Adviser. December 2019.

**Melissa Sue Duvall**

“The interaction Between Multi-scale Topography and Flow in Shallow-water Coral Reefs.” (Marine Science and Conservation) James Hench, Adviser. May 2020.

**Michael James Dzuricky**

“Application of Repetitive Protein Polypeptides with an Upper Critical Solution Temperature at Various Length Scales.” (Biomedical Engineering) Ashutosh Chilkoti, Adviser. December 2019.

**Allison Edgar**

“Specification of Mesodermal Lineages Was Altered in the Evolution of the Lecithotrophic Sea Urchin *Heliocidaris erythrogramma*.” (Biology) Gregory A. Wray, Adviser. September 2019.

**Lee Elizabeth Edsall**

“Novel Methods to Identify Chromatin Accessibility Differences across Primates.” (Genetics and Genomics) Gregory Crawford, Adviser. December 2019.

**William James Eldridge**

“Development of Optical Tools for the Assessment of Cellular Biomechanics.” (Biomedical Engineering) Adam Wax, Adviser. September 2019.

**Matthew Joseph Elia**

“Ethics in the Afterlife of Slavery: Race, Augustinian Politics, and the Enduring Problem of the Christian Master.” (Religion) J. Kameron Carter, Adviser. September 2019.

**Syed Faaiz Enam**

“Engineering Cytokine and Macrophage Enrichment at Sites of Injury.” (Biomedical Engineering) Ravi Bellamkonda, Adviser. December 2019.

**Zoë Alexandra Englander**

“3D dynamic *in vivo* Imaging of Joint Motion: Application to Measurement of Anterior Cruciate Ligament Function.” (Biomedical Engineering) Louis E. DeFrate, Adviser. December 2019.

**Caitlin Noel Esoda**

“Aminopeptidase-Dependent Modulation of Bacterial Biofilms by *Pseudomonas aeruginosa* Outer Membrane Vesicles.” (Molecular Genetics and Microbiology) Margarethe Kuehn, Adviser. December 2019.

**Scott Tedmund Espenschied**

“Chemical and Microbial Regulation of Epithelial Homeostasis and Innate Immunity.” (Molecular Genetics and Microbiology) John F. Rawls, Adviser. September 2019.

**Sean Barrett Fath**

“Exploring Preferences for ‘Blinding’ One’s Own Judgment.” (Business Administration) Richard Larrick and Aaron Kay, Advisers. May 2020.

**Yaying Feng**

“Transition Metal Chalcogenide (Cadmium Sulfide) Nanoparticles: (Bio)synthesis, Characterization and Photoelectrochemical Performance.” (Mechanical Engineering and Materials Science) Stefan Zauscher, Adviser. December 2019.

**Guilherme Ferreira Pelúcio Salomé**

“Using High-Frequency Options Data to Evaluate Economic Trading Models.” (Economics) George Tauchen, Adviser. May 2020.

**Margaret Jenkins Foster**

“Between a Hammer and an Anvil: Bottom-Up Organizational Transformation.” (Political Science) David Siegel, Adviser. May 2020.

**Michelle Scotton Franklin**

“Examination of Health Care Transition, Health Status, and Functional Outcomes Among Adolescents and Young Adults with Intellectual Disability.” (Nursing) Sharron Docherty, Adviser. May 2020.

**Marcel Frenkel**

“Combined Computational, Experimental, and Assay-Development Studies of Protein:Protein and Protein:Small Molecule Complexes, with Applications to the Inhibition of Enzymes and Protein:Protein Interactions.” (Biochemistry) Bruce R. Donald, Adviser. December 2019.

**Forrest Quinn Lister Friesen**

“Exclusive Photodisintegration of  $^3\text{He}$ .” (Physics) Calvin Howell, Adviser. September 2019.

**Ethan Lucas Fulwood**

“Lemur Teeth in Three Keys: Dietary Adaptation, Ecospace Occupation, and Macroevolutionary Dynamics.” (Evolutionary Anthropology) Douglas Boyer, Adviser. September 2019.

**Michael Thomas Gaffney**

“Our Ice Age: The Geohistorical Imagination in the Northern Hemisphere.” (Literature) Michael Hardt, Adviser. May 2020.



**David Andres Gallegos**

“Psychostimulant-Regulated Epigenetic Plasticity in Interneurons of the Nucleus Accumbens.” (Neurobiology) Anne E. West, Adviser. December 2019.

**Anastasia Lauren Gant Kanegusuku**

“Harnessing the Reactivity of Sulfamate Esters and Sulfamides in Photoredox-Mediated Bond-Forming Reactions.” (Chemistry) Jennifer L. Roizen, Adviser. May 2020.

**Chelsea Elizabeth Conner Garber**

“Essays in Low-Income Community Development.” (Economics) Patrick Bayer, Adviser. May 2020.

**Evan Michael Gates**

“Vinculin-mediated Mechanocoupling in Epithelial Sheet Expansion.” (Biomedical Engineering) Brenton Hoffman, Adviser. May 2020.

**Shaoqing Ge**

“Cognitive Function and Decline Among Older Adults: The Roles of Sensory Loss and Psychosocial Factors.” (Nursing) Eleanor S. McConnell, Adviser. September 2019.

**Rudy Geelen**

“Towards Simulations of Pervasive Fracture Across Structural Scales.” (Mechanical Engineering and Materials Science) John Dolbow, Adviser. May 2020.

**Benjamin Ryan Geib**

“Memory Encoding and Retrieval: The Role of Attention, Representations and Networks.” (Psychology and Neuroscience) Roberto Cabeza and Marty Woldorff, Advisers. May 2020.

**Chuhang Yin Geissler**

“Essays in Urban Economics.” (Economics) Christopher Timmins, Adviser. May 2020.

**Bryce Scott Gessell**

“Materia Mentis: How the Brain Sculpts the Mind.” (Philosophy) Andrew Janiak, Adviser. September 2019.

**John Thomas Gill**

“Wild Politics: Political Imagination in German Romanticism.” (Carolina-Duke Joint Program in German Studies) Gabriel Trop, Adviser. May 2020.

**Caslin Anne Gilroy**

“Controlled Release Systems for Treating Type 2 Diabetes and Their Application Toward Multi-Agonist Combination Therapies.” (Biomedical Engineering) Ashutosh Chilkoti, Adviser. September 2019.

**Ali Giusto**

“Development and Piloting of an Intervention to Reduce Alcohol Use and Improve Family Engagement Among Fathers in Kenya.” (Psychology and Neuroscience) Eve S. Puffer, Adviser. September 2019.

**Nandan Satish Gokhale**

“N6-methyladenosine (m6A) at the RNA Virus-Host Interface.” (Molecular Genetics and Microbiology) Stacy Horner, Adviser. December 2019.

**Yidong Gong**

“Beyond ‘Revolutionary Humanitarianism’: Chinese Doctors in South Sudan.” (Cultural Anthropology) Charles Piot and Ralph Litzinger, Advisers. September 2019.

**Katya Gorecki**

“Split Reality: Virtual Worlds of American Culture from 1692-2017.” (English) Priscilla Wald, Adviser. May 2020.

**Shai Gorsky**

“Nonparametric Methods for Analysis and Modeling of Complex Multivariate Distributions.” (Statistical Science) Li Ma, Adviser. May 2020.

**Vinay Ramachandra Gowda**

“Metasurface Apertures for Wireless Power Transfer and Computational Imaging.” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2019.

**Alyssa Madeline Granacki**

“Boccaccio’s Women Philosophers: Defining Philosophy, Debating Gender in the *Decameron* and Beyond.” (Romance Studies) Martin Eisner, Adviser. May 2020.

**George Harlin Greene**

“Selective mRNA Translation during the Plant Immune Response.” (Genetics and Genomics) Xinnian Dong, Adviser. May 2020.

**Lydia Kathryn Greene**

“The Ecology and Evolution of the Folivore Gut Microbiome in Madagascar’s Lemurs.” (Ecology) Christine Drea, Adviser. September 2019.

**Amanda Melina Grittner**

“Essays in Labor Economics: Effects of Immigration Policy on Vulnerable Populations.” (Economics) Marjorie McElroy, Adviser. May 2020.

**Yue Guan**

“Nonlinear Behavior of Systems with Multiple Equilibria.” (Mechanical Engineering and Materials Science) Lawrence N. Virgin, Adviser. September 2019.

**Kelley Ann Gullo**

“A Multi-Dimensional Approach to Social Relationships in Consumer Behavior.” (Business Administration) Gavan Fitzsimons and James Bettman, Advisers. May 2020.

**Osman Eren Gümrükçüoğlu**

“*Pareidolia* for Clarinet / Tenor Saxophone, Percussion / Drum Set, Piano / Synthesizers, String Quartet, and Electronics; Implied Reharmonizations in Postbop Improvisations over the Twelve-Bar Blues.” (Music) John Supko, Adviser. May 2020.

**Hongtao Alex Guo**

“Bursting of Volatile Sessile Drops Induced by Ambient Moisture.” (Mechanical Engineering and Materials Science) Chuan-Hua Chen, Adviser. May 2020.

**Rahul Raj Gupta**

“Essays on Entrepreneurship and Local Labor Markets.” (Business Administration) Aaron Chatterji, Adviser. May 2020.

**Huseyin Gurkan**

“Dynamic Mechanism Design without Money.” (Business Administration) Peng Sun, Adviser. September 2019.

**David P. Hall**

“Essays on Technological Change: Firm Organization, Problem Selection, and Diffusion.” (Business Administration) Victor Bennett, Adviser. May 2020.

**Matthew Hambro**

“Redrawing Time: Temporality in German-Language Graphic Narratives.” (Carolina Duke Program in German Studies) Ruth von Bernuth, Adviser. September 2019.

**Stephanie Cheng Hammel**

“Evaluating Exposures to Semi-Volatile Organic Compounds in Indoor Environments Using Silicone Wristbands.” (Environment) Heather M. Stapleton, Adviser. September 2019.

**Joshua Abram John Hinds Hammer**

“Achieving Dynamic Control over Cell Culture Hydrogels Using Engineered Proteins.” (Biomedical Engineering) Jennifer West, Adviser. May 2020.

**Shalla Hanson**

“Mathematical Modelling of Immuno-Oncology and Related Immunology.” (Mathematics) Michael C. Reed, Adviser. September 2019.

**Matthew Christopher Harris**

“Continents in Cognition.” (Philosophy) Andrew Janiak, Adviser. September 2019.

**Shannan Lee Hayes**

“An Aesthetic Disposition: Art, Social Reproduction, and Feminist Critique.” (Literature) Michael Hardt, Adviser. May 2020.

**Benjamin Aaron Heebsh**

“Essays on the Industrial Organization of Health Care Markets.” (Economics) Allan Collard-Wexler, Adviser. May 2020.

**William Edward Heffley II**

“Evidence for Reinforcement Learning Signals in the Climbing Fiber Pathway Expands the Possible Repertoire of Cerebellar Learning Rules.” (Neurobiology) Court Hull, Adviser. September 2019.

**Farah Fadel Hegazi**

“Authoritarian Governance and the Provision of Public Goods: Water and Wastewater Services in Egypt.” (Environmental Policy) Erika Weinthal, Adviser. December 2019.

**Nicholas Trubiano Henderson**

“How Yeast Cells Find Their Mates.” (Pharmacology) Daniel Lew, Adviser. December 2019.

**Jeffrey Alden Hertel**

“Liberating Laughter. Dramatic Satire and the German Public Sphere, 1790-1848.” (Carolina-Duke Joint Program in German Studies) Jakob Norberg, Adviser. May 2020.

**David Jonathan Hicks**

“Autonomous Symmetry Analysis and Structure Prototyping for Materials Discovery.” (Mechanical Engineering and Materials Science) Stefano Curtarolo, Adviser. December 2019.

**Alyson Marie Hoffman**

“Macromolecular Organization of the Rough Endoplasmic Reticulum During Homeostasis and Stress.” (Biochemistry) Christopher Nicchitta, Adviser. September 2019.

**Jacob Peter Hoj**

“The Characterization of Tyrosine Kinase-Dependent Signaling Networks Required for Lung Cancer Brain Metastasis.” (Molecular Cancer Biology) Ann Marie Pendergast, Adviser. May 2020.

**Peter Horvath**

“Econometric Methods for Expected Shortfall and Value-at-Risk.” (Economics) Andrew Patton, Adviser. May 2020.

**Xiaoyang Serene Hu**

“Concentration-dependent Recruitment of Mammalian Odorant Receptors.” (Molecular Genetics and Microbiology) Hiroaki Matsunami, Adviser. September 2019.

**Weifeng Huang**

“Accurate and Efficient Methods for the Scattering Simulation of Dielectric Objects in a Layered Medium.” (Electrical and Computer Engineering) Qing Huo Liu, Adviser. December 2019.

**Zhiqin Huang**

“Metamaterial Waveguide Holography and Optical Bistability.” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2019.

**Kelly T. Hughes**

“Fates of HIV-infected Renal Epithelial Cells Following Virus Acquisition from Infected Macrophages.” (Molecular Genetics and Microbiology) Mary Klotman, Adviser. May 2020.

**Samuel William Hulbert**

“Using Genetically Modified Mutant Mice to Model Autism Spectrum Disorder and Determine Its Developmental Pathogenesis.” (Neurobiology) Yong-hui Jiang, Adviser. December 2019.

**Carla Hung**

“The Politics of Asylum Among Eritrean Refugees in Italy.” (Cultural Anthropology) Engseng Ho, Adviser. September 2019.

**Elizabeth White Hunsaker**

“Insight into the Role of Metal Homeostasis in Fungal Adaptation to Drug Stress.” (Chemistry) Katherine J. Franz, Adviser. December 2019.



**Andrew Ryan Hutchins**

“Machine Learning Applications for Objectively Assessing Surgical Skill and Instrument Dynamics.” (Mechanical Engineering and Materials Science) Brian P. Mann, Adviser. September 2019.

**Laurel Marie Iber**

“Troubles in Representation: (Con)figuring Non-Binary Sex in Nineteenth-Century French Literature, Art, and Medicine.” (Romance Studies) David Bell and Anne-Gaëlle Salot, Advisers. May 2020.

**Alexandros Stavros Iliopoulos**

“All-Near-Neighbor Search Among High-Dimensional Data via Hierarchical Sparse Graph Code Filtering.” (Computer Science) Xiaobai Sun, Adviser. May 2020.

**Joshua Abraham Jacobs**

“Essays on Dynamic Game Theory.” (Economics) Curtis Taylor, Adviser. May 2020.

**Michael Alan Jauch**

“Random Orthogonal Matrices with Applications in Statistics.” (Statistical Science) Peter Hoff, Adviser. September 2019.

**Steven Tyrell Jefferson**

“Race, Gender and Perceived Barriers: How Beliefs About the Opportunity Structure Shape Postsecondary Pathways.” (Sociology) Eduardo Bonilla-Silva, Adviser. May 2020.

**Patrick James Jensen**

“Accelerated Multi-Criterial Optimization in Radiation Therapy using Voxel-Wise Dose Prediction.” (Medical Physics) Q. Jackie Wu, Adviser. May 2020.

**Janice Hyeju Jeong**

“Between Shanghai and Mecca: Diaspora and Diplomacy of Chinese Muslims in the Twentieth Century.” (History) Engseng Ho, Adviser. December 2019.

**Li-Feng Jiang-Xie**

“A Shared Neural Substrate for Diverse General Anesthetics and Sleep.” (Neurobiology) Fan Wang, Adviser. September 2019.

**Miaomiao Jin**

“Role of Mouse Visual Cortex in Perception of Stimulus Features.” (Neurobiology) Lindsey Glickfeld, Adviser. December 2019.

**Ye Jin**

“Quantum Chemistry: from Theory to Application.” (Chemistry) David N. Beratan and Weitao Yang, Advisers. September 2019.

**Rashmi Joglekar**

“The Epigenetic and Neurodevelopmental Consequences of Maternal Tobacco Smoke Exposure.” (Environment) Joel Meyer, Adviser. December 2019.

**Bada Kang**

“A Mixed Methods Study of Behavioral Symptoms of Dementia among Older Veterans with and without Posttraumatic Stress Disorder in Residential Long-Term Care Settings.” (Nursing) Eleanor S. McConnell, Adviser. May 2020.

**Tzu-Tong Kao**

“Evolution and Diversification of Farinose Ferns in Xeric Environments: A Case Study Using *Notholaena standleyi* Maxon as a Model.” (Biology) Kathleen M. Pryer, Adviser. May 2020.

**Weiyao Ke**

“Partonic Transport Model Application to Heavy Flavor.” (Physics) Steffen A. Bass, Adviser. September 2019.

**Matthew Gene Kearney**

“An Actor-Critic Circuit in the Songbird Enables Vocal Learning.” (Neurobiology) Richard Mooney, Adviser. May 2020.

**Daniel Patrick Keeley**

“Regulation of Basement Membrane Composition and Dynamics during Organ Growth and Tissue Adhesion.” (Biology) David R. Sherwood, Adviser. December 2019.

**Stephanie Marie Fogerson Keeley**

“Genetic, Genomic, and Biophysical Investigations on the Robust Nature of Morphogenesis: A Study of *Drosophila* Dorsal Closure.” (Biology) Daniel P. Kiehart, Adviser. May 2020.

**Jacqueline A. Kellish**

“Experiments in Violence: The Problem of Oppositional Politics in Late Twentieth and Twenty-First Century Fiction.” (English) Nancy Armstrong, Adviser. May 2020.

**Joshua Michael Khani**

“Cortical and Thalamic Representations of Artificial Sensation Projected onto Primary Somatosensory Cortex.” (Biomedical Engineering) Miguel A. L. Nicolelis, Adviser. May 2020.

**Nana Kim**

“Mechanistic Analysis of Gold(I) Catalysis through Generation and Direct Observation of Reactive Intermediate Analogues.” (Chemistry) Ross A. Widenhoefer, Adviser. December 2019.

**Amy Elizabeth King**

“Multinomial Probabilistic Modeling for Decompression Sickness using Gas Content and Bubble Volume Models.” (Mechanical Engineering and Materials Science) Laurens Howle, Adviser. May 2020.

**Ewan David Kingston**

“Bad Goods: On the Political Morality of Production and Consumption in Global Supply Chains.” (Philosophy) Wayne Norman, Adviser. December 2019.

**Tyler Steven Klann**

“Development of High-throughput Methods for Screening the Non-coding Genome.” (Biomedical Engineering) Charles A. Gersbach, Adviser. December 2019.

**Daniel Dewran Kocak**

“Genome Engineering Tools to Dissect Gene Regulation.” (Biomedical Engineering) Charles A. Gersbach, Adviser. December 2019.

**Stephanie Elizabeth Komoski**

“Judgments of Others’ Trait Self-Control.” (Psychology and Neuroscience) Rick H. Hoyle, Adviser. December 2019.

**Ios Kotsogiannis**

“Query Answering in Multi-Relational Databases Under Differential Privacy.” (Computer Science) Ashwin Machanavajjhala, Adviser. September 2019.

**Christopher Kozlowski**

“Cellular and Molecular Mechanisms of Retinal Neuron Spatial Patterning.” (Neurobiology) Jeremy Kay, Adviser. December 2019.

**Kai Mbali Kruger Bastos**

“Computational Studies of Buffet and Fluid-Structure Interaction in Various Flow Regimes.” (Mechanical Engineering and Materials Science) Earl Dowell, Adviser. May 2020.

**Matthew Ryan Kubic**

“The Benefits of Mandatory Disclosure: Evidence from Regulation S-X Article 11.” (Business Administration) Katherine Schipper and William Mayew, Advisers. May 2020.

**Jennifer Boae Kwon**

“Genome Engineering in Stem Cells for Skeletal Muscle Regeneration.” (Genetics and Genomics) Charles A. Gersbach, Adviser. May 2020.

**Jeffrey Michael LaComb**

“Asymptotic Analysis and Rare Event Simulation for Failure Probabilities in Discrete Random Media.” (Mathematics) Jianfeng Lu, Adviser. September 2019.

**Patrick Stephenson Lang**

“A God in the Mechanism: German Language Theater and the Atomic Bomb, 1945-65.” (Carolina Duke Program in German Studies) Jakob Norberg, Adviser. September 2019.

**Benjamin A. LaRiviere**

“Spatially Resolved Diffuse Reflectance Spectroscopy of Intestinal Tissue Using Concentric Silicon Thin Film Photodiode Arrays.” (Electrical and Computer Engineering) Nan M. Jokerst, Adviser. September 2019.

**Isaac Samuel Lavine**

“Bayesian Computation for Variable Selection and Multivariate Forecasting in Dynamic Models.” (Statistical Science) Mike West, Adviser. May 2020.

**Andrew Kang-Kang Lee**

“Endogenous Retroviruses as a Key Modulator of Immune Response to Cancer Therapies.” (Pharmacology) Chuan-Yuan Li, Adviser. May 2020.

**Honggi Lee**

“Essays on Knowledge Spillovers and Transfer of Technical Knowledge.” (Business Administration) Sharon Belenzon, Adviser. May 2020.

**Hyunji Lee**

“Design and Synthesis of Natural and Unnatural Macrocycles.” (Chemistry) Jiyong Hong, Adviser. December 2019.

**Michael William Lee**

“On Improving the Predictable Accuracy of Reduced-order Models for Fluid Flows.” (Mechanical Engineering and Materials Science) Earl Dowell, Adviser. May 2020.

**Jessica Charlene Leete**

“Sex-specific Computational Models of Blood Pressure Regulation.” (Computational Biology and Bioinformatics) Anita Layton, Adviser. May 2020.

**Vuk Lesi**

“Design of Secure and Safe Cyber-Physical Systems.” (Electrical and Computer Engineering) Miroslav Pajic, Adviser. December 2019.

**Junfei Li**

“Highly Efficient Wavefront Transformation with Acoustic Metasurfaces.” (Electrical and Computer Engineering) Steven Cummer, Adviser. May 2020.

**Xiaohan Li**

“Coded Memory Effect Imaging.” (Electrical and Computer Engineering) Michael E. Gehm, Adviser. September 2019.

**Yitong Li**

“Learning to Transfer Knowledge from Multiple Sources of Electrophysiological Signals.” (Electrical and Computer Engineering) Lawrence Carin and David Carlson, Advisers. May 2020.

**Mengke Lian**

“Belief Propagation with Deep Unfolding for High-dimensional Inference in Communication Systems.” (Electrical and Computer Engineering) Henry Pfister, Adviser. December 2019.

**Kevin J Liang**

“Deep Automatic Threat Recognition: Considerations for Airport X-Ray Baggage Screening.” (Electrical and Computer Engineering) Lawrence Carin, Adviser. May 2020.

**Wenxi Liao**

“Innovation and Asset Prices.” (Business Administration) Ravi Bansal, Adviser. May 2020.

**Seth Francis Roller Ligo**

“Fear and Fruition: Bhairava in Text, Art, and Practice.” (Religion) Leela Prasad, Advisor. December 2019.

**Kevin Hao-Yu Lin**

“Using CRISPR/Cas9 Screens to Define Organizing Principles that Govern Drug Sensitivity in Acute Myeloid Leukemia.” (Pharmacology) Kris Wood, Adviser. September 2019.

**Rong-Chien Lin**

“Evolution and Genetics of Floral Color Polymorphisms in *Clarkia gracilis* ssp. *sonomensis* and *Erythronium umbilicatum*.” (Biology) Mark Rausher, Adviser. May 2020.

**Yangju Lin**

“Molecular-Level Engineering of Stress-Responsive Materials.” (Chemistry) Stephen Craig, Adviser. May 2020.

**Yufei Lin**

“Soft Risk Disclosure with Feedback Effect.” (Business Administration) Qi Chen, Adviser. May 2020.

**Jared Andrew Little**

“Parametric Identification of Delay Systems from Empirical Stability Information.” (Mechanical Engineering and Materials Science) Brian P. Mann, Adviser. December 2019.

**Antong Liu**

“The Modernization of Honor in Eighteenth-Century Political Theory.” (Political Science) Ruth W. Grant, Adviser. September 2019.

**Chi Liu**

“Tunable Electronic Excitations in Hybrid Organic-Inorganic Materials: Ground-State and Many-Body Perturbation Approaches.” (Chemistry) Volker Blum, Adviser. September 2019.

**Howard Liu**

“The Politics of Protest and State Repression in Authoritarian Regimes.” (Political Science) Kyle Beardsley, Adviser. September 2019.

**Zhao Liu**

“Essays in Quantitative Economics.” (Economics) Craig Burnside, Adviser. May 2020.

**Willie Jie Long**

“Backscatter Spatial Coherence for Ultrasonic Image Quality Characterization: Theory and Applications.” (Biomedical Engineering) Gregg Trahey, Adviser. May 2020.

**Sean Michael Lonnquist**

“The Influence of Legal and Regulatory Context on Perceptions of Hydraulic Fracturing Risks.” (Environment) Deborah Rigling Gallagher, Adviser. May 2020.

**Kuan-Yi Lu**

“*Plasmodium falciparum* Chaperones and Stress Response.” (Molecular Genetics and Microbiology) Emily Derbyshire, Adviser. May 2020.

**Nicholas Adam Lusk**

“Mediodorsal Thalamus Contributes to the Timing of Instrumental Actions.” (Psychology and Neuroscience) Henry Yin, Adviser. May 2020.

**Anyi Ma**

“The Motivation-Influence-Ability (MIA) Model of Agency for Gender and Leadership.” (Business Administration) Ashleigh Rosette, Adviser. May 2020.

**John Rajiv Malik**

“A Geometric Approach to Biomedical Time Series Analysis.” (Mathematics) Hau-tieng Wu, Adviser. May 2020.

**Varun Mallampalli**

“Essays on Theoretical Methods for Environmental and Developmental Economics Policy Analysis.” (Civil and Environmental Engineering) Mark Borsuk, Adviser. May 2020.

**John McDevitt Mallard**

“Hydrologic Functioning of Low-Relief, Deep Soil Watersheds and Hydrologic Legacies of Intensive Agriculture in the Calhoun Critical Zone Observatory, South Carolina, USA.” (Environment) Brian McGlynn, Adviser. May 2020.

**Lisa Nicole Mansfield**

“Social Determinants of HPV Vaccine Completion among Adolescents.” (Nursing) Rosa Gonzalez-Guarda, Adviser. May 2020.

**Mao Mao**

“Biologically Improved Electroporation for Gene Delivery and Genome Editing.” (Biomedical Engineering) Fan Yuan, Adviser. December 2019.

**Georgios Mappouras**

“Integrating Computer Architecture and Coding Theory to Advance Emerging Memory Technologies.” (Electrical and Computer Engineering) Daniel J. Sorin, Adviser. May 2020.

**Sara Victoria Maurer**

“Dietary Choline, Inflammation, and Neuroprotection Across the Lifespan.” (Psychology and Neuroscience) Christina Williams, Adviser. May 2020.

**Devin Hillman McCarthy**

“Resisting the Partisan Temptation: Public Opinion on Election Laws in a Polarized Era.” (Political Science) Christopher Johnston, Adviser. May 2020.

**Kevin Andrew McHugh**

“Large Deflection Inextensible Beams and Plates and their Responses to Nonconservative Forces: Theory and Computations.” (Mechanical Engineering and Materials Science) Earl Dowell, Adviser. May 2020.

**Kenneth Zachery McKenna**

“The Physiological Basis of Developmental Plasticity.” (Biology) H. Frederik Nijhout, Adviser. December 2019.

**Edgar Mauricio Medina Tovar**

“The Animal-fungi Hybrid Cell Cycle of the Zoospore Fungus *Spizellomyces punctatus* – a New Model to Understand Evolution of Eukaryotic Cell Cycle Control.” (Genetics and Genomics) Nicolas E. Buchler, Adviser. September 2019.

**Sarah Angelina Memmi**

“The Benefits of Budgeting Time First for Multiple Goal Setting and Pursuit.” (Business Administration) Jordan Etkin, Adviser. May 2020.

**Romel Ivan Menacho Melgar**

“Overcoming Long-Standing Challenges in Recombinant Protein Expression.” (Biomedical Engineering) Michael Lynch, Adviser. May 2020.

**Rebecca Mendelson**

“Fierce Practice, Courageous Spirit, and Spiritual Cultivation: The Rise of Lay Rinzai Zen in Modern Japan.” (Religion) Richard Jaffe, Adviser. May 2020.

**Fatma Derya Mentes**

“Governing the Air: Regulation of Commercial Aviation in the Middle East.” (Cultural Anthropology) Engseeng Ho, Adviser. May 2020.

**Ashton Wynette Bagley Merck**

“The Fox Guarding the Henhouse: Coregulation and Consumer Protection in Food Safety, 1946 – 2002.” (History) Edward Balleisen, Adviser. May 2020.

**Friedolin Merhout**

“Consequences and Corrections of Misperceptions in Intergroup Relations.” (Sociology) Christopher Bail, Adviser. September 2019.

**Joshua Edward Messinger**

“Transcriptomic and Metabolic Heterogeneity during Epstein-Barr Virus Latency Establishment.” (Molecular Genetics and Microbiology) Micah Luftig, Adviser. December 2019.

**Yasha Miami**

“Essays on Information Economics.” (Economics) Attila Ambrus, Adviser. September 2019.

**Shane Henry Miller**

“Essays on the Temporal Structure of Risk.” (Business Administration) Ravi Bansal, Adviser. May 2020.

**Aaron Michael Mitchell-Dick**

“Effects of Prolonged Mitosis on Neural Stem Cells in vivo During Development.” (Cell Biology) Debra Silver, Adviser. May 2020.

**Jeffrey Thomas Mohl**

“Multisensory Integration, Segregation, and Causal Inference in the Superior Colliculus.” (Neurobiology) Jennifer Groh, Adviser. May 2020.

**Zachary Adam Monge**

“Age-Related Differences in Mnemonic Neural Representations: Perceptual and Semantic Contributions.” (Psychology and Neuroscience) Roberto Cabeza, Adviser. May 2020.



**Kelly Renee Moran**

“Advances in Bayesian Factor Modeling and Scalable Gaussian Process Regression.” (Statistical Science) Amy Herring, Adviser. May 2020.

**Matthew Robert Morgan**

“Covariance Decomposition of Ultrasonic Backscatter: Application to Estimation-based Image Formation.” (Biomedical Engineering) Gregg Trahey and William Walker, Advisers. May 2020.

**Mohammad Mubeen Mosaheb**

“Genetically Stable Poliovirus Vectors Activate Dendritic Cells and Prime Antitumor CD8 T Cell Immunity.” (Molecular Genetics and Microbiology) Matthias Gromeier, Adviser. December 2019.

**Hannah Alicia Moshontz de la Rocha**

“Understanding Ordinary Goal Pursuit: Describing and Predicting Success in New Year’s Resolutions.” (Psychology and Neuroscience) Rick H. Hoyle, Adviser. May 2020.

**Casey Joseph Moure**

“IDH1<sup>R132H</sup> Mutations Actively Contribute to the Epigenetic State of Glioma Cells.” (Pathology) Hai Yan, Adviser. September 2019.

**Sean Michael Murray**

“Accelerated Motion Planning Through Hardware/Software Co-Design.” (Electrical and Computer Engineering) Daniel J. Sorin, Adviser. September 2019.

**Christian Clark Nadell**

“Dynamic Metamaterials for Far-Infrared Imaging and Spectroscopy.” (Electrical and Computer Engineering) Willie J. Padilla, Adviser. September 2019.

**Luis Alexander Navarro**

“Synthesis and *Grafting To* of Biomimetic Bottlebrush Polymers.” (Mechanical Engineering and Materials Science) Stefan Zauscher, Adviser. May 2020.

**Sonia Devdutt Nayak**

“Cruel Operators: History, Empire, and Affect in the Global Anglophone Novel.” (English) Aarthi Vadde, Adviser. May 2020.

**Julie Nicole Newberry**

“You Will Have Joy and Gladness: A Narrative Analysis of the Conditions that Lead to Lukan Joy.” (Religion) C. Kevin Rowe, Adviser. May 2020.

**Jeffrey Edward Nicolaisen**

“Equality of Life: Thinking with Multi-Species Relationships in Taiwan.” (Religion) Hwansoo Kim, Adviser. December 2019.

**Kent Windsor Nixon**

“Secure and Power-Efficient Computing on Mobile Platforms.” (Electrical and Computer Engineering) Yiran Chen, Adviser. December 2019.

**Zachary Lee Nolan**

“Essays on the Industrial Organization of Telecommunications Markets.” (Economics) Allan Collard-Wexler, Adviser. May 2020.

**Danton Roberto Noriega-Goodwin**

“Doubled SNAP Dollars and Nudges: An Analysis of Two Pilot Programs Aimed at Increasing the Purchase of Healthy Foods.” (Public Policy) Anna Gassman-Pines and Matthew Harding, Advisers. September 2019.

**Chase Lemond Nuñez**

“Forecasted Afrotropical Forest Responses to Climate Change Diverge from Neotropical Predictions with Consequences for Biodiversity Conservation and Carbon Storage.” (Ecology) John R. Poulsen, Adviser. September 2019.

**Nora Irene Nunn**

“Engendering Genocide: Representations of Violence in the Long Twentieth Century.” (English) Priscilla Wald, Adviser. May 2020.

**Tinashe Edward Nyanhete**

“Mechanisms of Immune Control in HIV-1 Virus Controllers.” (Immunology) Georgia Tomaras, Adviser. May 2020.

**Rudolf-Harri Oberg**

“Essays on Quantitative Marketing and Empirical Industrial Organization.” (Economics) Carl Mela, Adviser. May 2020.

**Andrey Ordín**

“Policy Implications of Auction Design for Imperfectly Competitive Markets.” (Economics) James Roberts, Adviser. May 2020.

**Erika Ordog**

“Minimal Resolutions of Monomial Ideals.” (Mathematics) Ezra Miller, Adviser. May 2020.

**Guillermo Alexis Ortuno Crespo**

“Opportunities for Enhancing an Ecosystem-based Approach to Pelagic Fisheries Management in the High Seas.” (Marine Science and Conservation) Patrick Halpin, Adviser. May 2020.

**Yuxin Ouyang**

“*Lü* for String Quartet; *Extrication* for Clarinet, Percussion, Violin and Cello; and Qigang Chen’s Approach to Pentatonicism in *Reflet D’un Temps Disparu* and *Luan Tan*.” (Music) Scott Lindroth, Adviser. May 2020.

**Emily Lambright Pakhtigian**

“Air Pollution, Water, and Sanitation: Household Response to Environmental Risk.” (Public Policy) Subhrendu Pattanayak, Adviser. May 2020.

**Sasha Ann Panaram**

“The Space in Between: Middle Passage Movement and Black Women’s Literature.” (English) Tsitsi Jaji, Adviser. May 2020.

**Razvan Ioan Panea**

“A Cloud-Based Infrastructure for Cancer Genomics.” (Computational Biology and Bioinformatics) Sandeep Dave, Adviser. May 2020.

**Wubin Pang**

“Optical Design for Parallel Cameras.” (Electrical and Computer Engineering) David Brady, Adviser. May 2020.

**Hyeyoung Park**

“Using Life Course Perspective in Making Health Care Decisions in Later Life Among Older Korean Immigrants.” (Nursing) Cristina C. Hendrix, Adviser. September 2019.

**Jieun Park**

“Investigating the Molecular Mechanisms of Protein Absorption in the Vertebrate Gut by Lysosome Rich Enterocytes.” (Molecular Cancer Biology) Michel Bagnat, Adviser. May 2020.

**Andrew Ryan Passer**

“Diversity of Species and Sexual Reproduction in the Fungal Genus *Cryptococcus*.” (Molecular Genetics and Microbiology) Joseph Heitman, Adviser. September 2019.

**Sayan Patra**

“Constrained Bayesian Inference through Posterior Projection with Applications.” (Statistical Science) David B. Dunson, Adviser. September 2019.

**Sarah Elizabeth Ritchey Patterson**

“Extensions of the Immersed Interface Method to Open Tube Interfaces and Hemodynamic Models.” (Mathematics) Anita Layton, Adviser. September 2019.

**Nicole Amelia Pelot**

“Quantifying the Effects of Kilohertz Frequency Electrical Signals on Small Autonomic Nerve Fibers: Computational Modeling and *in vivo* Electrophysiology AKA Applying Fast Signals to Slow Nerves.” (Biomedical Engineering) Warren M. Grill, Adviser. September 2019.

**Bernadette Alyce Perchalski**

“Descending Locomotion in Primates.” (Evolutionary Anthropology) Douglas Boyer, Adviser. September 2019.

**Emily Rachel Persons**

“School Closings, Openings and Restructurings: Implications for Schools and Neighborhoods.” (Sociology) Martin Ruef and Angel Harris, Advisers. May 2020.

**Elijah Anderson Petter**

“The Role of Dopamine in Operant Learning.” (Psychology and Neuroscience) Henry Yin, Adviser. May 2020.

**John Paul Powers**

“Emotion Regulation Through Distancing: Developing a Novel Neurocognitive Model.” (Psychology and Neuroscience) Kevin S. LaBar, Adviser. September 2019.

**Katherine Margaret Price**

“On the Impact and Growth of Plasma-enhanced Atomic Layer Deposition High-κ Dielectrics on 2D Crystals.” (Electrical and Computer Engineering) Aaron Franklin, Adviser. September 2019.

**Anastasia Compton Eluned Quintana**

“A Spark for Collective Action: Challenges and Opportunities for Self-governance in Temporary Fisher-designed Fish Refuges in Mexico.” (Marine Science and Conservation) Xavier Basurto Guillermo, Adviser. May 2020.

**Renee Michelle Ragin**

“Dwelling in the Barzakh: Mad Archives of the Lebanese Civil War.” (Literature) Miriam Cooke and Ranjana Khanna, Advisers. May 2020.

**Jane Lynne Ralphe**

“Temperature Instability Over Time and Respiratory Morbidity in the Very Premature Infant.” (Nursing) Debra Brandon, Adviser. May 2020.

**Christopher Bautista Ramos**

“Disorientations: Experimental Form in Asian American Literature.” (English) Priscilla Wald, Adviser. December 2019.

**Maria Cristina Ramos Flor**

“Identities and Meaning Structures.” (Sociology) James Moody and Lynn Smith-Lovin, Advisers. May 2020.

**Joshua Brimhall Rasmussen**

“College Enrollment, Graduation, and Financing: The Role of Parental Income and Wealth.” (Economics) V. Joseph Hotz, Adviser. September 2019.

**Margaret Suzanne Hamilton Reif**

“Disruptive Organizers: Wild Children in German Realism (1850-1900).” (Carolina-Duke Joint Program in German Studies) Eric Downing, Adviser. May 2020.

**Narayanan Rengaswamy**

“Classical Coding Approaches to Quantum Applications.” (Electrical and Computer Engineering) Henry Pfister and Arthur Calderbank, Advisers. May 2020.

**Ben James Richardson**

“Objective Poetics: Victorian Literature and the Aesthetics of Science.” (English) Kathy Psomiades, Adviser. May 2020.

**Jacqueline Renée Rifkin**

“Putting ‘Time’ Back in ‘Me-Time’: Exploring the Relationships between Time Perceptions, Self-Gifting, and Well-Being.” (Business Administration) Keisha Cutright and James Bettman, Advisers. May 2020.

**Joshua Griffin Rivenbark**

“How Social Status Permeates Inequalities in Health: Three Studies on Experiences of Social Disadvantage.” (Public Policy) Candice Odgers and Kathryn Whetten, Advisers. May 2020.

**Cole Alexander Rizki**

“State Violence and Transgender Cultural Politics in Post-Dictatorship Argentina.” (Literature) Robyn Wiegman and Antonio Viego, Advisers. May 2020.

**Jordan Paul Roberts**

“State Preferences, Viable Alternatives, and Covert Action.” (Political Science) Kyle Beardsley, Adviser. May 2020.



**Hannah Lee Rogers**

“More Than a Feeling: How the Nineteenth-Century British Novel Reformed the Passions.” (English) Nancy Armstrong and Kathy Psomiades, Advisers. May 2020.

**Adrienne Lynn Romer**

“Identifying Neural, Genetic, and Behavioral Correlates of the p Factor.” (Psychology and Neuroscience) Ahmad Hariri, Adviser. September 2019.

**Rosalia Romero**

“Anarchism and Visual Culture in Greater Mexico, 1910-1950.” (Art, Art History, and Visual Studies) Esther Gabara, Adviser. December 2019.

**Weston Allan Ross**

“Adaptive Control of Volumetric Laser Photoblation Surgery (Mechanical Engineering and Materials Science) Patrick Codd, Adviser. September 2019.

**Cullen Jon Navarre Roth**

“Genome-wide Analyses of Recombination and the Genetic Architecture of Virulence Traits in *Cryptococcus*.” (Genetics and Genomics) Paul Magwene, Adviser. May 2020.

**Yair Yitzhak Rubinstein**

“The Logistical Mode of Production: Logistics as a Total Way of Life.” (Literature) Michael Hardt, Adviser. May 2020.

**Nicolás Sánchez-Rodríguez**

“The Minted-City: Money, Value, and Crises of Representation in Nineteenth-Century Colombia (1822-1903).” (Romance Studies) Richard Rosa, Adviser. May 2020.

**Sydney Morgan Sanderson**

“Characterization of Gene-Environment Interactions that Govern Metabolic Adaptation.” (Pharmacology) Jason Locasale, Adviser. December 2019.

**Scott Arthur Scarneo**

“Pharmacological Inhibition of TAK1 as a Therapeutic Target to Reduce Inflammation and Pain.” (Pharmacology) Timothy Haystead and Andrea Nackley, Advisers. May 2020.

**Jonathan Drew Schaefer**

“GxE = ‘p’? Using Hierarchical Measures of Psychopathology to Capture the Effects of Environmental Stressors and Gene-Environment Interplay.” (Psychology and Neuroscience) Terrie Moffitt, Adviser. September 2019.

**Teilo Heinz Dietrich Schaller**

“Bench to Bedside: A Bispecific Antibody for Treating Brain Tumors.” (Pathology) John H. Sampson, Adviser. December 2019.

**Jewel L. Scott**

“Social Contributors to the Cardiovascular Health of Young Adult Black Women.” (Nursing) Rosa Gonzalez-Guarda and Leigh Ann Simmons, Advisers. May 2020.

**Matthew Alexander Scult**

“The Role of Cognitive Deficits in Vulnerability to Depression and Anxiety: An Individual Differences and Neuroimaging Approach (Psychology and Neuroscience) Timothy Strauman, Adviser. September 2019.

**Nura Ahmad Sediqe**

“Ummah: The Identity Negotiations of Muslims in the United States.” (Political Science) Paula D. McClain, Adviser. September 2019.

**Karl Matthew Seltzer**

“Long-Term Ambient Ozone Exposure: Magnitude, Trends, and Impacts.” (Earth and Ocean Sciences) Drew Shindell, Adviser. December 2019.

**Andrew Michael Seredinski**

“Interference Effects in Graphene Josephson Junctions Subject to Magnetic Field.” (Physics) Gleb Finkelstein, Adviser. May 2020.

**Shalin Shah**

“Programming DNA for Molecular-Scale Temporal Barcoding and Enzymatic Computation.” (Electrical and Computer Engineering) John Reif, Adviser. May 2020.

**Shan Shan**

“Probabilistic Models on Fibre Bundles.” (Mathematics) Ingrid Daubechies, Adviser. September 2019.

**Dinghan Shen**

“Deep Latent-Variable Models for Natural Language Understanding and Generation.” (Electrical and Computer Engineering) Lawrence Carin, Adviser. May 2020.

**Melanie Ann Short**

“Harnessing the Reactivity of Sulfamate Esters and Sulfamides to Enable Position-Selective C-H Halogenation Processes.” (Chemistry) Jennifer L. Roizen, Adviser. September 2019.

**Gleb Sinev**

“Constraining Non-Standard Neutrino Interactions and Estimating Future Neutrino-Magnetic-Moment Sensitivity With COHERENT.” (Physics) Kate Scholberg, Adviser. May 2020.

**Yasmine Singh**

“Goddess in Flux: Devotional Intimacy and Everyday Life at a Regional Indian Pilgrimage Site.” (Religion) Leela Prasad, Adviser. September 2019.

**Latasha Lynn Smith**

“Environmental Toxicant Effects on the Dopaminergic System in the Nematode *Caenorhabditis elegans*: Strengths and Limitations of Various Approaches to Analysis.” (Pharmacology) Joel Meyer, Adviser. September 2019.

**Nicole Chanel Solomon**

“Extending Probabilistic Record Linkage.” (Biostatistics and Bioinformatics ) Sean O’Brien, Adviser. May 2020.

**Jacob Guion Wade Soule**

“The City Novel After the City: Planetary Metropolis, World Literature.” (Literature) Michael Hardt, Adviser. December 2019.

**Jeremy Samuel Spater**

“Identities, Proximity, and Mobilization in Indian Slum Neighborhoods.” (Political Science) Erik Wibbels, Adviser. December 2019.

**Aarthi Sridhar**

“Modeling and Probabilistic Optimization of Rolling Isolation System for Seismic Hazard Mitigation.” (Civil and Environmental Engineering) Henri P. Gavin, Adviser. September 2019.

**Jessica Quick Stark**

“Picturing Poetics: Seriality, Comics, and the Cartoon in US Experimental Poetry.” (English) Priscilla Wald, Adviser. May 2020.

**Nivedhitha Subramanian**

“Essays in Empirical Development Economics.” (Public Policy) Manoj Mohanan, Adviser. May 2020.

**Janani Sundararajan**

“Mechanisms of Movement-Related Changes in Auditory Detection.” (Neurobiology) Richard Mooney, Adviser. September 2019.

**Joseph D. Swinney**

“Conservatism and Culture: The Transformation of the U.S. Army After Vietnam.” (History) Dirk Bönker, Adviser. September 2019.

**Eric Stephen Szymanski**

“DNA Conformational Equilibria in Replication Fidelity.” (Biochemistry) Hashim M. Al-Hashimi, Adviser. September 2019.

**Jun Jie Eugene Tan**

“Essays in Macroeconomics and Entrepreneurship.” (Economics) Andrea Lanteri, Adviser. September 2019.

**Tao Tang**

“Forcing, Precipitation and Cloud Responses to Individual Forcing Agents.” (Earth and Ocean Sciences) Drew Shindell, Adviser. May 2020.

**Matthew Braxton Tedesco**

“Aeroelastic Modeling of Blade Vibration and its Effect on the Trim and Optimal Performance of Helicopter Rotors using a Harmonic Balance Approach.” (Mechanical Engineering and Materials Science) Kenneth Hall, Adviser. May 2020.

**Ruijie Darius Teo**

“Biological Charge Transfer in Redox Regulation and Signaling.” (Chemistry) David N. Beratan, Adviser. May 2020.

**Kyle Thicke**

“Accelerating the Computation of Density Functional Theory’s Correlation Energy under Random Phase Approximations.” (Mathematics) Jianfeng Lu, Adviser. September 2019.

**Romina Eliana Tomé**

“Three Essays on Pre-natal Experiences and Human Capital Accumulation.” (Public Policy) Marcos Rangel, Adviser. May 2020.

**Guangyu Tong**

“Topics in Selective Migration and Economic Assimilation of New Immigrants.” (Sociology) Angel Harris, Adviser. May 2020.

**Do Tran**

“Sampling from Stratified Spaces.” (Mathematics) Ezra Miller, Adviser. May 2020.

**Thomas Huong Tran**

“Secondary Terms in Asymptotics for the Number of Zeros of Quadratic Forms.” (Mathematics) Jayce Getz, Adviser. May 2020.

**Isak Dwyer Tranvik**

“Beyond Moderation: The Politics of Nonviolence in a Violent World.” (Political Science) Jack Knight, Adviser. May 2020.

**Vinay Tripuraneni**

“Interrogating Chromatin Dynamics Surrounding a DNA Double-Strand Break and Ensuing Non-Homologous End-Joining Mediated Repair.” (Pharmacology) David M. MacAlpine, Adviser. May 2020.

**Amalia Anne Turner**

“Particle Attachment Efficiency: Investigations into a Functional Assay to Predict Mobility and Plant Accumulation of Nanoparticles in Soils.” (Civil and Environmental Engineering) Mark R. Wiesner, Adviser. December 2019.

**Phillip John Turner**

“The Importance of Biodiversity in Deep-Sea Chemosynthetic Ecosystems: An Assessment of Ecosystem Functioning and Services.” (Marine Science and Conservation) Cindy L. Van Dover, Adviser. September 2019.

**Sungwoo Um**

“The Virtues of Intimate Relationships.” (Philosophy) Owen Flanagan and Gopal Sreenivasan, Advisers. September 2019.

**Zimife Uchechukwu Umeh**

“Gender, Institutions, and Punishment: Examining the Experiences of Formerly Incarcerated Women.” (Sociology) Martin Ruef, Adviser. May 2020.

**Lauren Ashley Valentino**

“What is a ‘Good’ Job? Cultural Logics of Occupational Prestige.” (Sociology) Stephen Vaisey, Adviser. September 2019.

**Christine Vazquez**

“Novel Mechanisms of Antiviral Innate Immune Regulation by the Hepatitis C virus NS3-NS4A Protease.” (Molecular Genetics and Microbiology) Stacy Horner, Adviser. December 2019.

**Diana Vera Cruz**

“Understanding the Interplay Between Viral and Host Dynamics.” (Computational Biology and Bioinformatics) Katharina Koelle, Adviser. May 2020.

**Taurus Patrick Vilgalys**

“Evolution of Gene Regulation in *Papio* Baboons.” (Evolutionary Anthropology) Jenny Tung, Adviser. December 2019.

**Khoi Dai Vo**

“Evaluating the Role of Attention in Decision Making.” (Psychology and Neuroscience) Scott Huettel and Marty Woldorff, Advisers. May 2020.

**Jan P. Vogler**

“The Political Economy of Public Bureaucracy: The Emergence of Modern Administrative Organizations.” (Political Science) Mathew D. McCubbins, Adviser. September 2019.

**Savannah James Volkoff**

“Engineering a Biofilm for the Biodegradation of Polycyclic Aromatic Hydrocarbons in Estuarine Sediment.” (Civil and Environmental Engineering) Claudia K. Gunsch, Adviser. September 2019.

**Heidi Vreeland**

“Filter Sampling of Particulate Matter in Exposure-relevant Settings.” (Civil and Environmental Engineering) Michael H. Bergin, Adviser. December 2019.

**Kathryn Katsue Walder-Christensen**

“Giant Ankyrins Awake: Select Roles of Giant Ankyrins in Axons of the Central Nervous System.” (Cell Biology) Vann Bennett, Adviser. September 2019.

**Andrea Nicole Walens**

“The Role of the Tumor Microenvironment in Breast Cancer Dormancy and Recurrence.” (Molecular Cancer Biology) James Alvarez, Advisor. September 2019.

**Brett Walenz**

“Perturbation Analysis of Database Queries.” (Computer Science) Jun Yang, Adviser. September 2019.

**Heather Marie Wallace**

“The Other’s Freedom: Existential Vulnerability in the Philosophy of Simone de Beauvoir.” (Philosophy) Toril Moi and Owen Flanagan, Advisers. May 2020.

**Erin Galgay Walsh**

“Sanctifying Boldness: New Testament Women in Narsai, Jacob of Serugh, and Romanos Melodos.” (Religion) Lucas Van Rompay, Adviser. September 2019.

**Guoyin Wang**

“Applications of Deep Representation Learning to Natural Language Processing and Satellite Imagery.” (Civil and Environmental Engineering) David Carlson and Lawrence Carin, Advisers. May 2020.

**Jing Wang**

“Person-Centered Care of Older Adults with Cognitive Impairment and Their Care Partners: Cultural Relevance and Dyadic Experience in China.” (Nursing) Kirsten N. Corazzini, Adviser. September 2019.

**Jingjing Wang**

“Function and Molecular Biology of the MEGF10 Cell Surface Protein in Retinal Neurons and Glia.” (Neurobiology) Jeremy Kay, Adviser. September 2019.

**Wen Wang**

“Environmental Gentrification.” (Economics) Christopher Timmins, Adviser. May 2020.

**Wenlin Wang**

“Deep Generative Models for Vision, Languages and Graphs.” (Electrical and Computer Engineering) Lawrence Carin, Adviser. September 2019.

**Ziyi Wang**

“Quantitative Hyperpolarized  $^{129}\text{Xe}$  Gas exchange MRI: Development and Applications.” (Biomedical Engineering) Bastiaan Driehuys, Adviser. May 2020.

**Kena Navin Wani**

“Remaking Capital: Business, Technology and Development Ambitions in Twentieth-Century Western India.” (History) Sumathi Ramaswamy, Adviser. May 2020.

**Ceri Joanna Weber**

“Initiation and Maintenance of Temperature-Dependent Sex Determination in the *Red-Eared Slider Turtle*.” (Cell Biology) Blanche Capel, Adviser. May 2020.

**Wei Wen**

“Efficient and Scalable Deep Learning.” (Electrical and Computer Engineering) Hai Li, Adviser. December 2019.

**Joshua D. Wheaton**

“Control of Regulatory T Cell Functional Specialization by AP-1 Transcription Factors.” (Immunology) Maria Ciofani, Adviser. December 2019.

**Matthew Steven Whitehouse Gordillo**

“Fictional Timing: Neoliberalism and Time in the Contemporary Latin American Novel.” (Romance Studies) Richard Rosa, Adviser. May 2020.

**Ashley Marie Wilson**

“Separable Codes for Read-Out of Mouse Primary Visual Cortex across Attentional States.” (Neurobiology) Lindsey Glickfeld, Adviser. December 2019.

**Laura E. Winters**

“Schools of Greek Mathematical Practice.” (Classical Studies) Joshua Sosin, Adviser. May 2020.

**Brad Anthony Wood**

“All in the Same Boat: Fighting for Capital in Gadsden, Alabama, 1900-Present.” (History) Sarah Deutsch, Adviser. May 2020.

**Karolina Iga Woroniecka**

“T Cell Exhaustion in Glioblastoma.” (Pathology) Peter Fecci, Adviser. May 2020.

**Xinchang Xie**

“Optimal and Near-optimal Policies of Sequential Decision Problems under Uncertainty.” (Business Administration) Alessandro Arlotto and Alexandre Belloni, Advisers. May 2020.

**Weizhi Xiong**

“A High Precision Measurement of the Proton Charge Radius at JLab.” (Physics) Haiyan Gao, Adviser. May 2020.

**Shengjie Xu**

“Sentinel Functions of Tissue Resident Macrophages During Early Fungal Infections.” (Immunology) Mari Shinohara, Adviser. May 2020.

**Yingru Xu**

“Data-driven Analysis of Heavy Quark Transport in Ultra-relativistic Heavy-ion Collisions.” (Physics) Steffen A. Bass, Adviser. September 2019.

**Wen-Hsuan Yang**

“Molecular Mechanisms of TAZ-regulating Ferroptosis in Cancer Cells and tRNA Fragment in Erythrocytes.” (Biochemistry) Jen-Tsan Ashley Chi, Adviser. December 2019.

**Xiaojun Yao**

“Application of Effective Field Theory in Nuclear Physics.” (Physics) Berndt O. Müller, Adviser. September 2019.

**Farren Elizabeth Yero**

“Laboratories of Consent: Vaccine Science in the Spanish Atlantic World, 1779-1840.” (History) Peter Sigal, Adviser. May 2020.

**Mingzhe Yi**

“Essays in Housing Markets.” (Economics) Patrick Bayer, Adviser. May 2020.

**Roberto Zecca**

“Symphotic Devices: Volumetric Electromagnetic Metamaterials for Information Processing.” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2019.

**Matthew Jason Zeller**

“Planal Analysis and the Emancipation of Timbre: *Klangfarbenmelodie* and Timbral Function in Mahler, Schoenberg, and Webern.” (Music) R. Larry Todd, Adviser. May 2020.

**Yuze Zeng**

“Design of Biomaterials toward Endogenous Skeletal Tissue Repair.” (Mechanical Engineering and Materials Science) Shyni Varghese, Adviser. May 2020.

**Carolyn Zhang**

“Information Encoding and Decoding in Bacteria.” (Biomedical Engineering) Lingchong You, Adviser. December 2019.

**Congshan Zhang**

“Volatility, Noise, and Market Microstructure: Econometric Analysis Using High-Frequency Data.” (Economics) Jia Li, Adviser. May 2020.

**Mengqi Zhang**

“Gene set-based Signal-Detection Analyses with Goodness-of-Fit Statistics and Their Application in Complex Diseases.” (Computational Biology and Bioinformatics) Andrew S. Allen, Adviser. September 2019.

**Xinyuan Zhang**

“The Influence of Structural Information on Natural Language Processing.” (Electrical and Computer Engineering) Lawrence Carin, Adviser. May 2020.

**Yin San Stacy Zhang**

“Incorporation of Species Interactions in Seagrass Conservation and Restoration.” (Marine Science and Conservation) Brian Reed Silliman, Adviser. December 2019.

**Yudi Zhang**

“From Molecular to Macroscopic Mechanochemical Responses.” (Chemistry) Stephen Craig, Adviser. May 2020.

**Yiqiu Zhao**

“An Experimental Study of the Jamming Phase Diagram for Two-dimensional Granular Materials.” (Physics) Joshua Socolar, Adviser. May 2020.

**Pengfei Zheng**

“Artificial Intelligence for Understanding Large and Complex Datacenters.” (Computer Science) Benjamin Lee, Adviser. May 2020.

**Shengbao Zheng**

“Improving Network Security with Low-Cost and Easy-to-Adopt Solutions.” (Computer Science) Xiaowei Yang, Adviser. May 2020.

**Zhenyu Zhou**

“Improving System Availability for Better Services.” (Computer Science) Xiaowei Yang and Theophilus Benson, Advisers. May 2020.

**Maria Boya Zhu**

“Essays in the Economics of Education.” (Economics) Peter Arcidiacono, Adviser. September 2019.

**Tong Zhu**

“First-Principles Studies of Electronic, Optical and Defect Properties of Photovoltaic Materials.” (Mechanical Engineering and Materials Science) Volker Blum, Adviser. December 2019.

**Sarah Bess Jones Zigler**

“MPA: Marine Protected Area or Marine Pluriversive Area? A Political Ontology of Large Scale Marine Conservation in Rapa Nui (Easter Island Chile).” (Marine Science and Conservation) Lisa Campbell, Adviser. May 2020.



# Dissertations Completed for Doctor of Philosophy

Graduate School Academic Year 2020–2021

## **Nathan Joseph Adamson**

“The Development of Palladium-Catalyzed Regio- and Enantioselective Hydrofunctionalizations of Conjugated Dienes and Enynes” (Chemistry) Steven J. Malcolmson, Adviser. September 2020.

## **Kaylee P. Alexander**

“In Perpetuity: Funerary Monuments, Consumerism and Social Reform in Paris (1804–1924)” (Art, Art History, and Visual Studies) Neil McWilliam, Adviser. May 2021.

## **Moiez Ali**

“Overcoming Therapeutic Resistance by Targeting Oncogene-Driven and Targeted-Therapy Induced Cancer Dependencies” (Molecular Cancer Biology) Kris Wood, Adviser. May 2021.

## **Reza Alijani**

“Algorithms for Two-sided Online Marketplaces” (Computer Science) Kamesh Munagala, Adviser. September 2020.

## **Brian William Allen**

“High-Strength, 3D-Printed Antibiotic-Eluting Spacer to Treat Periprosthetic Joint Infection” (Mechanical Engineering and Materials Science) Ken Gall, Adviser. December 2020.

## **Robert Phillip Allred**

“Politics as Usual: Congress and the Intelligence Community” (Political Science) Peter Feaver and Kyle Beardsley, Advisers. May 2021.

## **Hussain Abdulraouf Alshammasi**

“Essays in Environmental Economics and Policy” (Environmental Policy) Stephen C. Sexton, Adviser. December 2020.

## **Jonnathan Singh Alvarado**

“Neural Dynamics in the Basal Ganglia Underlying Birdsong Practice and Performance” (Neurobiology) Richard Mooney, Adviser. May 2021.

## **Alejandro Luis Antonia**

“Understanding Mechanisms and Diversity of Leishmania-Mediated CXCL10 Suppression” (Molecular Genetics and Microbiology) Dennis Ko, Adviser. May 2021.

## **Torang Asadi**

“Quantum Regimes: Genealogies of Virtual Matter and Healing the New Age Body” (Religion) David Morgan, Adviser. May 2021.

## **Nabil Michel Atallah**

“The Second Generation Shifted Boundary Method with Applications to Porous Media Flow and Solid Mechanics” (Civil and Environmental Engineering) Guglielmo Scovazzi, Adviser. September 2020.

## **Suraj Kumar Ayer**

“Nitrogen-Oxidants Enable Group-Transfer Reactions” (Chemistry) Jennifer Roizen, Adviser. May 2021.

## **Suzanne Elise Bartholf DeWitt**

“Loss of the Chromatin Remodeler, ATRX, Promotes Aggressive Features of Osteosarcoma and Activates NF- $\kappa$ B Signaling and Integrin Receptor Binding” (Pathology) Benjamin Alman, Adviser. May 2021.

## **Ramin Bashizade**

“Accelerating Data Parallel Applications via Hardware and Software Techniques” (Computer Science) Alvin Lebeck, Adviser. December 2020.

## **Patricia Barclay Bass**

“Iconicity and the Objective Image: Crime in France, 1880 - 1914” (Art, Art History, and Visual Studies) Mark Olson, Adviser. December 2020.

**Michael John Becker**

“The Rule of the Lash and the Rule of Law: Amelioration, Enslaved People’s Politics and the Courts in Jamaica, 1780-1834” (History) David Barry Gaspar, Adviser. May 2021.

**Grace Anne Beggs**

“Biochemical and structural mechanisms of multidrug efflux pump transcription regulators, *Neisseria gonorrhoeae* MtrR and *Escherichia coli* MprA” (Biochemistry) Richard Brennan, Adviser. May 2021.

**Christina Helene Bejjani**

“Learning Context-Sensitive Control” (Psychology and Neuroscience) Tobias Egner, Adviser. May 2021.

**Brinnae Marie Bent**

“Discovering Digital Biomarkers of Glycemic Health from Wearable Sensors” (Biomedical Engineering) Jessilyn Dunn, Adviser. May 2021.

**Kevin Charles Bierlich**

“Incorporating Photogrammetric Uncertainty in UAS-based Morphometric Measurements of Baleen Whales” (Marine Science and Conservation) David Johnston, Adviser. May 2021.

**Brian Robert Bigler**

“Shock Propagation in Mechanical Models of Traumatic Brain Injury” (Biomedical Engineering) Cameron Bass, Adviser. September 2020.

**Christian Moritz Binder**

“Novel Tensor Network Methods for Interacting Quantum Matter and Its Dynamical Response” (Physics) Thomas Barthel, Adviser. September 2020.

**Muath Bishawi**

“Effect of Radiation on Cardiovascular Function” (Biomedical Engineering) George Truskey, Adviser. September 2020.

**Brittany Justine Bisnett**

“Regulation of Sec24 by O-GlcNAcylation” (Biochemistry) Michael Boyce, Adviser. December 2020.

**Carina Lea Block**

“Prenatal Environmental Stressors Impair Postnatal Microglia Function and Adult Behavior in Males” (Psychology and Neuroscience) Staci Bilbo, Adviser. December 2020.

**Hannah Bondurant**

“How Others Inform and Transform One’s Sense of Self” (Philosophy) David Wong, Adviser. May 2021.

**Adam David Patrick Booth**

“Mother Jesus: The Contribution of Maternal Imagery to the Soteriology and Christology of First Peter” (Religion) J. Ross Wagner, Adviser. May 2021.

**Brad Boswell**

“Cyril Against Julian: Traditions in Conflict” (English) J. Warren Smith, Adviser. May 2021.

**Michael Boutros**

“Household Heterogeneity and Unanticipated Income Shocks” (Economics) Francesco Bianchi, Adviser. May 2021.

**Tyler W. Bradshaw**

“Statistical Inference and Community Detection in Proximity and Spatial Proteomics: Resolving the Organization of the Neuronal Proteome” (Neurobiology) Scott Soderling, Adviser. May 2021.

**Gregory Ryan Brennan**

“The Serial Imagination: Novel Form, Serial Format, and Victorian Reading Publics” (English) Nancy Armstrong and Kathy Psomiades, Advisers. May 2021.

**Alexander David Stine Breslav**

“Learning the Value of Food: Mechanisms of Decision Making in Appetitive Behavior” (Psychology and Neuroscience) Scott Huettel and Nancy Zucker, Advisers. May 2021.

**Hannah Elizabeth Brown**

“Identifying the Connection between the Cell Surface and pH-Sensing in a Human Fungal Pathogen” (Molecular Genetics and Microbiology) Andrew Alspaugh, Adviser. December 2020.



**Devin Jane Buckley**

“Romanticism as Religion: Beyond the Secularization Narrative in Readings of British Romantic Poetry” (English) Thomas Pfau, Adviser. May 2021.

**George Erastus Bullard**

“Nanoscale Systems for Optical, Electro-Optic, and Spintronic Applications” (Chemistry) Michael J. Therien, Adviser. December 2020.

**Jackson Bunting**

“Essays on the Econometrics of Dynamic Discrete Choice” (Economics) Federico Bugni, Adviser. May 2021.

**Tim Burkhardt**

“Death is Nothing! A Defense of Epicureanism” (Philosophy) Jennifer Hawkins, Adviser. September 2020.

**Nicole Dominique Calhoun**

“Chronic Disease Management and Healthcare Utilization Among the Justice Involved Population” (Nursing) Devon Noonan and Janice Humphreys, Advisers. May 2021.

**William Lucas Calkins**

“Passive Acoustic Localization and Tracking with Mobile Robots” (Mechanical Engineering and Materials Science) Michael Zavlanos, Adviser. May 2021.

**Xuenan Cao**

““Chinese Whispers”? The “China” that Disappears from Lossy Communications” (Literature) Rey Chow and Mark Hansen, Advisers. May 2021.

**Orsola Antonietta Capovilla-Searle**

“Exact Lagrangian Fillings of Legendrian links and Weinstein 4-manifolds” (Mathematics) Lenhard Ng, Adviser. May 2021.

**Jorge Antonio Cárdenas**

“In-Place Printing of Carbon Nanotube Transistors at Low Temperature” (Electrical and Computer Engineering) Aaron Franklin, Adviser. September 2020.

**Lauren Nicole Carley**

“Ecological Contexts of Balancing Selection in Nature” (Ecology) Thomas Mitchell-Olds and William F. Morris, Advisers. September 2020.

**Andrew Carr**

“The Measurement and Social Consequences of U.S. Income Inequality” (Sociology) Martin Ruef, Adviser. May 2021.

**Alice Marie Carter**

“Shifting Thermal and Metabolic Regimes in a Low Gradient, Temperate River Network” (Biology) Emily Bernhardt and James Heffernan, Advisers. May 2021.

**Erasmus Castellani**

“Negotiating Sovereignty through Petitions in the Early Modern Mediterranean: Patterns of Political Expression in the Venetian Stato da Mar” (History) John Martin, Adviser. May 2021.

**Aimee Michaela Chabot**

“The Pursuit of Health, Wealth, and Well-Being through Minimalist Consumption” (Business Administration) James R. Bettman and Gavan J. Fitzsimons, Advisers. December 2020.

**Soudipta Chakraborty**

“Operations of Innovative Business Models” (Business Administration) Robert Swinney, Adviser. September 2020.

**Yushi Chang**

“Development of an eXtended Modular ANthropomorphic (XMAN) phantom for Imaging and Treatment Optimization in Radiotherapy” (Medical Physics) Fang-Fang Yin, Adviser. May 2021.

**Ash-Girl Chapfuwa**

“Probabilistic Time-to-Event Modeling Approaches for Risk Profiling” (Electrical and Computer Engineering) Lawrence Carin and Ricardo Henao, Advisers. May 2021.

**Anzhi Chen**

“Regulation of Tissue Regeneration in Zebrafish by Vitamin D Signaling” (Cell Biology) Kenneth Poss, Adviser. December 2020.

**Chuyi Chen**

“Acoustics-induced Fluid Motions” (Mechanical Engineering and Materials Science) Tony Jun Huang, Adviser. May 2021.

**Fan Chen**

“In-Memory Computing Architecture for Deep Learning Acceleration” (Electrical and Computer Engineering) Yiran Chen and Hai Li, Advisers. December 2020.

**Liquan Chen**

“Learning Deep Models via Optimal Transport Distance” (Electrical and Computer Engineering) Lawrence Carin, Adviser. May 2021.

**Mark Shuo Chen**

“Myxoid Liposarcoma: Models and Mechanisms of Sarcomagenesis and Response to Radiation Therapy” (Molecular Cancer Biology) David G. Kirsch and Michael B. Kastan, Advisers. May 2021.

**Rui Chen**

“Essays on Financial Econometrics” (Economics) Andrew Patton, Adviser. September 2020.

**Tiancheng Chen**

“Essays on the Industrial Organization of Retail Markets” (Economics) Allan Collard-Wexler and Yi (Daniel) Xu, Advisers. May 2021.

**Xiaoyu Chen**

“Essays on Firm Investment and Misallocation” (Economics) Yi Xu, Adviser. May 2021.

**Yanyou Chen**

“Essays in Industrial Organization and Environmental Economics” (Economics) Allan Collard-Wexler and Yi Xu, Advisers. September 2020.

**Zehua Chen**

“On Improving Density Functional Approximations: When Optimization Matters” (Chemistry) Weitao Yang, Adviser. May 2021.

**Pengyu Cheng**

“Improving Natural Language Understanding via Contrastive Learning Methods” (Electrical and Computer Engineering) Lawrence Carin, Adviser. May 2021.

**Chia-Han Chiang**

“Developing Chronically Reliable, High-Resolution, Flexible Neural Interfaces for Human and Animal Research” (Biomedical Engineering) Jonathan Viventi, Adviser. May 2021.

**Moohyung Cho**

“Rethinking Judicial Independence in Democracy and Autocracy” (Political Science) Georg Vanberg, Adviser. September 2020.

**Seoyoung Cho**

“Direct and Modular Access to Functionalized Arenes and Cyclohexenes Mediated by Deprotonative C–H Zincation” (Chemistry) Qiu Wang, Adviser. May 2021.

**Laura Son Christian Resly**

“Understanding the Role of Circulating and Tissue-Resident T cells in Cancer and Autoimmunity” (Immunology) Qi-Jing Li, Adviser. May 2021.

**Tom Jay Cinq-Mars**

“In Search of “Friendship”: Energy Policy, Trade, and Varieties of Socialism in the Soviet Bloc, 1872-1984” (History) Edward Balleisen, Adviser. September 2020.

**Manuella Rossette Clark-Cotton**

“Mechanisms of Chemotropism in Fungi: *Saccharomyces cerevisiae* as a Model” (Cell Biology) Daniel Lew, Adviser. May 2021.

**Kasie Lynn Collins**

“Development of a Generalizable Assay for Probing the Effects of Mechanical Force on the Function of Fluorescent Proteins within Molecular Tension Sensors” (Chemistry) Brenton Hoffman and Jennifer West, Advisers. May 2021.

**Aaron Gregory Colston**

“The World’s Problem’s Are Your Own: Septima Clark, Elza Freire and Grassroots Freedom Education in the American Decade of Development (1960-1970)” (History) Sarah Deutsch, Adviser. September 2020.

**Brett Matthew Condon**

“Characterization of the O-GlcNAc Modification on the COPII Outer Coat” (Biochemistry) Michael Boyce, Adviser. September 2020.

**Elsa Celestina Costa**

“The Bourbon Ideology: Civic Eudaemonism in Habsburg and Bourbon Spain, 1600-1800” (History) John French and Malachi Hacohen, Advisers. May 2021.

**Courtney Aileen Cox**

“Computational Modeling of the Lumbar Spine: Active Musculature and Intra-abdominal Pressure in Compressive Loading” (Biomedical Engineering) Cameron Bass, Adviser. September 2020.

**Rachel Marylee Coyte**

“Factors Affecting the Occurrence of Redox-Sensitive Elements in Groundwater Systems” (Environment) Avner Vengosh, Adviser. May 2021.

**Sarah Harrington Cross**

“Exploring Hospice Live Discharges in the Carolinas” (Public Policy) Jr. Taylor, Adviser. May 2021.

**Erika Lyn Cunningham**

“A Data-Retaining Framework for Tail Estimation” (Statistical Science) Surya Tokdar, Adviser. September 2020.

**Lindsay Carvalho Dahora**

“The Impact of Antibody Biophysical Properties on Antigen Recognition and Fc Effector Functions” (Immunology) Georgia D. Tomaras, Adviser. May 2021.

**Tracy C d’Arbeloff**

“The Relationship between Fitness and Structural Brain Integrity in Midlife: Implications for Biomarker Development and Aging Interventions” (Psychology and Neuroscience) Ahmad R. Hariri, Adviser. May 2021.

**Timothy Ryan Darlington**

“Motor Preparation in the Macaque Smooth Pursuit Eye Movement System” (Neurobiology) Stephen Lisberger and Lindsey Glickfeld, Advisers. May 2021.

**Douglas Raymond Davis**

“A Measurement of the Production Cross Section of a Single Top Quark in Association with a W-Boson at  $\sqrt{s} = 13$  TeV with the ATLAS Detector at the Large Hadron Collider” (Physics) Mark Kruse, Adviser. December 2020.

**Bryson Keith Deanhardt**

“Chromatin-based Reprogramming of Courtship Regulators with Social Experience” (Neurobiology) Pelin Volkan, Adviser. May 2021.

**Dripto Mazumdar Debroy**

“Quantum Error Correction for Physically Inspired Error Models” (Physics) Kenneth Brown, Adviser. May 2021.

**Matthew Robert Detter**

“Investigating the Pathogenesis and Response to Therapy of Cerebral Cavernous Malformations Using Transgenic Murine Models” (Molecular Genetics and Microbiology) Douglas A. Marchuk, Adviser. May 2021.

**Aaron Vincent Diebold**

“Coherence in Dynamic Metasurface Aperture Microwave Imaging Systems” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2020.

**Evan Michael Donahue**

“Android Linguistics: How Machines Do Things with Words” (Art, Art History, and Visual Studies) Mark Hansen, Adviser. May 2021.

**Spencer Steven Dorsey**

“Machine Learning and Security Studies” (Political Science) Peter Feaver and Scott de Marchi, Advisers. December 2020.

**Brian James Douthit**

“Optimizing the Integration of Health Apps with the Electronic Health Record by Quantifying Data Readiness and Interoperability” (Nursing) Sharron Docherty, Adviser. May 2021.

**Kimberley Laverne Elisabeth  
Claudie Drouin**

“Investigating the Upper-Ocean Pathways, Dynamics, and Geometry of the South Atlantic” (Earth and Ocean Sciences) Susan Lozier, Adviser. May 2021.

**Emily Zilda Dubie**

““Loving Your Neighbor Professionally”: Theology, Social Work, and the Limits of Moral Agency” (Religion) Luke Bretherton, Adviser. May 2021.

**Dean Gerard Cabana Dulay**

“Traditional Institutions and the Political Economy of the Philippines” (Political Science) Timur Kuran and Edmund Malesky, Advisers. September 2020.

**Roger David Dulceany**

“Caribbean Iconographies of Cultural Nationalism: Haiti, Cuba, Puerto Rico” (Romance Studies) Richard Rosa, Adviser. September 2020.

**Gabriel Joseph Earle**

“Stratified MCMC Sampling of Non-Reversible Dynamics” (Mathematics) Jonathan Mattingly, Adviser. December 2020.

**Christopher Paul Eckersley**

“Cavitation in Blunt Traumatic Brain Injury” (Biomedical Engineering) Cameron Bass, Adviser. May 2021.

**Drake Scott Edwards**

“Novel Understandings of How Cancer Prevents and Responds to DNA Damage” (Molecular Cancer Biology) Scott R. Floyd, Adviser. May 2021.

**Masih Eghdami**

“Elucidating Atmospheric Turbulence Across Scales in Numerical Models: Land-Atmosphere Interaction Controls of Moist Processes” (Civil and Environmental Engineering) Ana Barros, Adviser. September 2020.

**Rana Osama Abdelelah Gaber  
Elnaggar**

“Security and Survivability of Heterogeneous SoCs” (Electrical and Computer Engineering) Krishnendu Chakrabarty, Adviser. December 2020.

**Can Evren**

“Global Sport, Territorial Ambition: How Professional Soccer Remade Turkey” (Cultural Anthropology) Orin Starn, Adviser. December 2020.

**Stewart Ryan Farling**

“Development of a Hyperbaric Intravascular Membrane Oxygenator Catheter” (Civil and Environmental Engineering) Marc Deshusses, Adviser. May 2021.

**Bradley Feiger**

“Investigating Vascular Disease Treatment and Progression using Multiscale Hemodynamic Modeling and Machine Learning Algorithms” (Biomedical Engineering) Amanda Randles, Adviser. May 2021.

**Minyu Feng**

“Search for Heavy Boson Resonances in Final States with a W or Z Boson and a Photon Using 139 fb<sup>-1</sup> of Proton-Proton Collision Data at  $\sqrt{s} = 13$  TeV Collected with the ATLAS” (Physics) Alfred Goshaw, Adviser. December 2020.

**Benjamin Andrew Fenton**

“Protein and Ligand Dynamics in Drug Development and Resistance” (Biochemistry) Pei Zhou, Adviser. September 2020.

**Spencer David Ferguson**

“Design Rules for Complex Emulsion Targets in Resonant Infrared, Matrix-Assisted Pulsed Laser Evaporation of Polymer Thin Films” (Electrical and Computer Engineering) Adrienne Stiff-Roberts, Adviser. September 2020.

**Federico Ferrari**

“Bayesian Interaction Estimation with High-Dimensional Dependent Predictors” (Statistical Science) David Dunson, Adviser. May 2021.

**Joel Thomas Finney**

“Fate Decisions During B-Lymphocyte Development and Activation” (Immunology) Garnett Kelsoe, Adviser. May 2021.

**Cassio Mendes Fontes**

“A Point-of-Care Immunoassay for Ultra-Sensitive Detection of Ebolavirus” (Biomedical Engineering) Ashutosh Chilkoti, Adviser. September 2020.

**Douglas Bingham Fox**

“Metabolic Adaptations in Tumor Recurrence” (Molecular Cancer Biology) James Alvarez, Adviser. December 2020.

**Robert Franco**

“Revolution in the Sheets: The Politics of Sexuality and Tolerance in the Mexican Left, 1919-2001” (History) Jocelyn Olcott, Adviser. December 2020.

**Elsa Anne Friis**

“Development and Evaluation of a Web Application to Support Remote Clinical Supervision of Lay Counselors in Kenya” (Psychology and Neuroscience) Eve Puffer, Adviser. September 2020.

**Chandler Thomas Fry**

“Reasoning Rebellion and Reformation: Natural Law and the Ethics of Power and Resistance in Late Medieval English Literature” (English) David Aers, Adviser. May 2021.

**Dionna Monique Gamble**

“Homologous Recombination Outcomes of Double-Strand Break- Initiated Events in *Saccharomyces cerevisiae*” (Genetics and Genomics) Sue Jinks-Robertson, Adviser. September 2020.

**John Gustave Ganley**

“Investigation of Specialized Metabolites in Apicomplexan Parasite Life Cycles” (Chemistry) Emily Derbyshire, Adviser. May 2021.

**Junyang Gao**

“Durability Queries on Temporal Data” (Computer Science) Jun Yang, Adviser. September 2020.

**Jamie Nicole Garcia**

“Vacuole Formation Guides the Regenerative Path of the Zebrafish Notochord” (Cell Biology) Michel Bagnat and Kenneth Poss, Advisers. May 2021.

**Alejandro J. García Lozano**

“Weaving Governance Narratives: Multi-Level Cooperativist Institutions and the Governance of Small-Scale Fisheries in Mexico” (Marine Science and Conservation) Xavier Basurto, Adviser. September 2020.

**Daniel G. Garrett**

“Essays in Public Finance” (Economics) Juan Carlos Suarez Serrato, Adviser. May 2021.

**Jacqueline Rebecca Gerson**

“Geochemical, Biological, and Landscape Controls on Mercury Fate, Transport, and Impact in Natural Ecosystems” (Ecology) Emily Bernhardt, Adviser. May 2021.

**Rachel Alison Gevlin**

“Divorcing the Rake: Male Chastity and the Rise of the Novel, 1753-1857” (English) Charlotte Sussman, Adviser. September 2020.

**Debraj Ghose**

“Experimentally Informed Bottom-up Model of Yeast Polarity Suggests How Single Cells Respond to Chemical Gradients” (Computational Biology and Bioinformatics) Daniel Lew, Adviser. May 2021.



**Kyle Dane Gibbs**

“Natural Genetic Variants in Humans and Salmonellae Underlie Variable Infection Outcomes” (Molecular Genetics and Microbiology) Dennis Ko, Adviser. May 2021.

**Maxwell Harrison Gillett**

“Learning and Retrieval of Sequential Activity Using Temporally Asymmetric Hebbian Learning Rules” (Neurobiology) Nicolas Brunel, Adviser. May 2021.

**Jessica F. Gokhberg**

“Doktor Zhivago’s Cold War” (Literature) Robyn Wiegman, Adviser. May 2021.

**Sinan Cem Goknur**

“Figuring a Queer Aesthetics and Politics of Urban Dissent in Istanbul” (Computational Media, Arts & Cultures) Mark Olson, Adviser. December 2020.

**Meredith Claire Graham**

“Multi-Text Anthology in the Choral Music of Ralph Vaughan Williams, Herbert Howells, Grace Williams, and Elizabeth Maconchy, 1919–1979” (Music) Philip Rupprecht, Adviser. May 2021.

**Lea Helena Greenberg**

“Curious Daughters: Language, Literacy, and Jewish Female Desire in German and Yiddish Literature from 1793 to 1916” (Carolina-Duke Graduate Program in German Studies) Ruth von Bernuth, Adviser. May 2021.

**Michael Remedios Grigoni**

“The Gun in US American Life: An Ethnographic Christian Ethics” (Religion) Luke Bretherton, Adviser. December 2020.

**Yuyang Gu**

“Exploiting the Interplay of Acoustic Waves and Fluid Motion for Particle Manipulation” (Mechanical Engineering and Materials Science) Tony Jun Huang, Adviser. May 2021.

**Brian Guay**

“Misinformed? The Implications of Measurement for Assessing Citizen Competence” (Political Science) D. Sunshine Hillygus, Adviser. May 2021.

**Luis Miguel Guirola**

“Long-Run Relationships, Economic Shocks and Political Disagreement - The Political Economy of Populism and Polarization” (Political Science) Pablo Beramendi, Adviser. May 2021.

**Attila Gyetvai**

“Essays in Job Mobility” (Economics) Peter Arcidiacono, Adviser. May 2021.

**Kelly Margaret Hainline**

“Supramolecular Peptide and Protein Assemblies for Applications in Immunotherapy and 3D Cell Culture” (Biomedical Engineering) Joel Collier, Adviser. May 2021.

**Kathleen Clare Hansen**

“The Politics of Local Service Provision in the United States” (Environment) Megan Mullin, Adviser. May 2021.

**Lanie Elizabeth Happ**

“Integrating Genomic and Biological Understandings of Disease to Improve Patient Outcome in Mature B Cell Lymphoma” (Computational Biology and Bioinformatics) Sandeep Dave, Adviser. May 2021.

**Alfred Theodore Harding**

“Viral- and Host-Targeted Interventions to Improve Influenza Disease Outcomes” (Molecular Genetics and Microbiology) Nicholas Heaton, Adviser. December 2020.

**Arianna Rose Harrington**

“Encephalic Arterial Canals and Their Functional Significance” (Evolutionary Anthropology) Douglas Boyer, Adviser. September 2020.

**Gabrielle Maxine Harris Walker**

“Parenting After Stroke” (Nursing) Janet Prvu Bettger, Adviser. September 2020.

**Anna Katherine Hatstat**

“Chemical Biology Approaches to Probe Protein Networks for Alleviation of Trafficking Defects in Parkinson’s Disease” (Chemistry) Dewey McCafferty, Adviser. May 2021.

**Byron William Hayes**

“Hyperinnervation and Chronic Mast Cell Activity in Bladder Pain Syndrome” (Pathology) Soman Abraham, Adviser. May 2021.

**Linchen He**

“The Role of Melatonin in Pathophysiologic Responses to Air Pollution Exposure” (Environment) Junfeng Zhang, Adviser. December 2020.

**Wumeng He**

“Three Essays on Evaluating Forest Conservation Programs in Developing Countries” (Environmental Policy) Jeffrey Vincent, Adviser. May 2021.

**Ida Bæk Hjermitsev**

“Perceptions of Partnership: Three Essays on Coalition Formation and Ideological Information Processing” (Political Science) Herbert Kitschelt, Adviser. September 2020.

**Jonathan Riggs Holt**

“America’s Evolving Relationship with Trees: A Statistical Analysis of Social, Economic, and Environmental Drivers of Forest Management” (Civil and Environmental Engineering) Mark Borsuk, Adviser. May 2021.

**Liad Holtzman**

“Development and Application of Novel CRISPR-Based Epigenome Editors” (Biomedical Engineering) Charles A. Gersbach, Adviser. May 2021.

**Eric Jeffrey Hopper**

“Cyclotomic and Elliptic Polylogarithms and Motivic Extensions of  $Q$  by  $Q(m)$ ” (Mathematics) Richard Hain, Adviser. May 2021.

**Christopher William Howell**

“Designer Science: A History of Intelligent Design in America” (Religion) David Morgan, Adviser. May 2021.

**Jocelyn Mary Hoye**

“Truth-Based Radiomics for Prediction of Lung Cancer Prognosis” (Medical Physics) Ehsan Samei, Adviser. December 2020.

**Thuy Hua**

“General Anesthetics Activate a Central Pain-Suppression Circuit in the Amygdala” (Neurobiology) Fan Wang, Adviser. September 2020.

**Bohao Huang**

“Using Synthetic Satellite Imagery from Virtual Worlds to Train Deep Learning Models for Object Recognition” (Electrical and Computer Engineering) Leslie Collins, Adviser. May 2021.

**Jing Huang**

“Optimal Stress Tests in Financial Networks” (Business Administration) S Viswanathan and Adriano Rampini, Advisers. September 2020.

**Xiangying Huang**

“Contact Process on Random Graphs and Trees” (Mathematics) Richard Durrett, Adviser. May 2021.

**Ryan Nathaniel Hughes**

“A New Experimental and Conceptual Approach to Understanding the Ventral Tegmental Area and Its Regulation of Motivated Behaviors” (Psychology and Neuroscience) Henry Yin, Adviser. May 2021.

**Brandon Hunter**

“Sanitation Justice: Community-Inspired Academic Research Conducted Under Different Theories of Change” (Civil and Environmental Engineering) Marc Deshusses, Adviser. December 2020.

**Jay Im**

“Essays on Multinationalization and Corporate Investment Policy” (Business Administration) Ravi Bansal and Daniel Xu, Advisers. May 2021.

**Özgün Eylül Iscen**

“The Geopolitical Aesthetic of Computational Media: Media Arts in the Middle East” (Art, Art History, and Visual Studies) Mark Hansen, Adviser. September 2020.

**Abigail Caitlin Jackson**

“Targeting Drug-Resistant Bacteria with Metal-Binding Compounds for Antibacterial Activity and Metallo- $\beta$ -Lactamase Inhibition” (Chemistry) Katherine Franz, Adviser. September 2020.

**Xiaomeng Jia**

“Directional Dependence and Polarization Anisotropy in Pump-probe Microscopy” (Physics) Warren Warren, Adviser. May 2021.

**Jun Jiang**

“Extending the Reach and Contrast of Pump-Probe Microscopy” (Biomedical Engineering) Warren Warren, Adviser. December 2020.

**Ryan Michael Juskus**

“The Ecolitics of Truth and Sacrifice: An Ethnographic and Theological Study of Citizen Science, Environmental Justice, and Christian Witness in Coal’s Sacrifice Zones” (Religion) Luke Bretherton, Adviser. May 2021.

**Jonathan P. Kastan**

“Diverse Strategies Deployed by Poliovirus to Cope with Host Antiviral Responses” (Genetics and Genomics) Matthias Gromeier, Adviser. December 2020.

**Cambre Nicole Kelly**

“Characterization of High Strength, High Porosity Gyroid-sheet Scaffolds” (Biomedical Engineering) Ken Gall, Adviser. September 2020.

**Sean Hunter Kelly**

“Molecular and Macroscale Engineering of Sublingual Nanofiber Vaccines” (Biomedical Engineering) Joel Collier, Adviser. December 2020.

**Oliver Kelsey Tough**

“Asymptotic Behaviour of the Fleming-Viot Process” (Mathematics) James Nolen, Adviser. May 2021.

**Christopher Scott Kennedy**

“The Use and Abuse of Technology: Reconsidering the Ethics of Civil Disobedience, Leaking, and Intellectual Property for the Information Age” (Political Science) Jack Knight, Adviser. September 2020.

**Gray Fielding Kidd**

“Surrendering to the Streets in Mid-Century Recife: The Living Legacies of Slavery in Black and White” (History) John French, Adviser. May 2021.

**Kevin Robert Kiley**

“Three Papers on Culture, Time, and Attitudes” (Sociology) Stephen Vaisey, Adviser. May 2021.

**Namsoo Kim**

“Striatal Microcircuits Underlying Control of Actions” (Psychology and Neuroscience) Henry Yin, Adviser. December 2020.

**Taehoon Kim**

“Essays in Macroeconomics and Firm Dynamics” (Economics) Daniel Yi Xu and Matthias Kehrig, Advisers. May 2021.

**Young-Joong Kim**

“Volumetric Acoustic Radiation Force Impulse Imaging Using Intracardiac Echocardiography” (Biomedical Engineering) Patrick Wolf, Adviser. September 2020.

**Andrea Kiss**

“Essays in Behavioral Labor Economics” (Economics) Robert Garlick and Scott Huettel, Advisers. May 2021.

**Edana Ann Kleinhans-Junghahn**

“Love, Power, and the Sovereign in Female Courtly Biographies of the Habsburg Empire. Venus and Her Scepter: Tu Fexlix Austria” (Carolina-Duke Graduate Program in German Studies) Ruth von Bernuth, Adviser. May 2021.



**Faye A. Koenigsmark**

“From Source to Surveillance: An Assessment of Liquid Elemental Mercury Mobilization in Soil, Downstream Reactivity, and Biomarkers of Exposure” (Civil and Environmental Engineering) Heileen Hsu-Kim, Adviser. May 2021.

**Christopher Luke Krapu**

“Development of Novel Bayesian Models of Environmental Systems with Application to the Prairie Wetlands of North America” (Civil and Environmental Engineering) Mark Borsuk, Adviser. September 2020.

**Taylor Kalei Krebs**

“Identification of Endocrine Therapy Induced Targetable Vulnerabilities in Cancer” (Molecular Cancer Biology) Donald McDonnell, Adviser. May 2021.

**Caley Jane Burrus Lane**

“Understanding the Role of Huntingtin in Central Nervous System Development and Function” (Neurobiology) Cagla Eroglu, Adviser. September 2020.

**Xiaoqi Lang**

“Uncovering the “Shape” of Intracellular Water by Hyperspectral Stimulated Raman Scattering Microscopy” (Chemistry) Kevin Welsher, Adviser. May 2021.

**Son Cong Le**

“Regulatory and Gating Mechanisms of TMEM16A Chloride Channel” (Biochemistry) Huanghe Yang, Adviser. May 2021.

**Trieu Phuong Hai Le**

“Investigating the Molecular Mechanisms of TMEM16F – a Ca<sup>2+</sup> Activated Phospholipid Scramblase and Ion Channel” (Biochemistry) Huanghe Yang, Adviser. May 2021.

**Matthew Roger LeBlanc**

“Symptom Burden and Health-Related Quality of Life in Adults with Multiple Myeloma” (Nursing) Sophia Smith, Adviser. May 2021.

**Brian Hyun-jong Lee**

“Self-Assembly of Polymer-Grafted Anisotropic Nanoparticles” (Mechanical Engineering and Materials Science) Gaurav Arya, Adviser. May 2021.

**Chiyoung Lee**

“Cardiovascular Health Disparities among Older Adults in South Korea” (Nursing) Hyeoneui Kim and Eun-Ok Im, Advisers. September 2020.

**Pak Hong (James) Leung**

“Robust Ion Trap Quantum Computation Enabled by Quantum Control” (Physics) Kenneth Brown, Adviser. September 2020.

**Dani Levin**

“Convolution and Volterra Series Approach to Reduced Order Modelling of Unsteady Aerodynamic Loads and Improving Piezoelectric Energy Harvesting of an Aeroelastic System” (Mechanical Engineering and Materials Science) Earl Dowell, Adviser. September 2020.

**Bai Li**

“Privacy and Robustness of Deep Neural Networks” (Statistical Science) Lawrence Carin and Jerry Reiter, Advisers. May 2021.

**Didong Li**

“Learning and Exploiting Low-Dimensional Structure in High-Dimensional Data” (Mathematics) David B. Dunson, Adviser. September 2020.

**Haofang E. Li**

“The Functional Organization of the Mesencephalic Locomotor Region Locomotion” (Psychology and Neuroscience) Henry Yin, Adviser. December 2020.

**Jianghao Li**

“Design and Monitoring of Clinical Trials with Clustered Time-to-Event Endpoint” (Biostatistics and Bioinformatics) Sin-Ho Jung, Adviser. September 2020.

**Qingran Li**

“Three Essays in Environmental Economics and Policy” (Environmental Policy) Steven Sexton, Adviser. May 2021.

**Siqi Li**

“Elucidating the Mechanisms Underlying the Mutational Bias of RAS Genes in Cancer Using a Chemical Carcinogenesis Mouse Model” (Pharmacology and Cancer Biology) Christopher Counter, Adviser. December 2020.

**Xiaqing Li**

“Compton Scattering and Nucleon Polarizabilities at HI $\gamma$ S” (Physics) Haiyan Gao, Adviser. December 2020.

**Defei Liao**

“Development of a Vertically Deployed Surface-Acoustic-Wave (VD-SAW) Transducer Platform for Activating Piezo Mechanosensitive Channels” (Mechanical Engineering and Materials Science) Pei Zhong, Adviser. May 2021.

**Irene Ting Liao**

“Evolutionary Genetics of Reduced Nectar Production in the Selfing Morning Glory, *Ipomoea lacunosa* (Convolvulaceae)” (Biology) Mark Rausher, Adviser. May 2021.

**Yufen Lin**

“Multiple Co-occurring Symptoms in Patients with Gastrointestinal Cancers” (Nursing) Donald Bailey, Adviser. May 2021.

**Yuh-Chen Lin**

“Two-Dimensional Negative Capacitance-FETs with Ferroelectric HfZrO<sub>2</sub>” (Electrical and Computer Engineering) Aaron Franklin, Adviser. December 2020.

**Adrian Carl Linden-High**

“Enslaved and Freed Persons in Roman Military Communities under the Principate (27 BCE–284 CE)” (Classical Studies) Mary Boatwright, Adviser. December 2020.

**Mengqian Liu**

“Design of Biomaterials towards Endogenous Bone Regeneration” (Mechanical Engineering and Materials Science) Ken Gall, Adviser. December 2020.

**Mengyun Liu**

“Adaptive Methods for Machine Learning-Based Testing of Integrated Circuits and Boards” (Electrical and Computer Engineering) Krishnendu Chakrabarty, Adviser. September 2020.

**Tatiana Michelle Lluent**

“Empirical Essays on Gender in Organizations” (Business Administration) Aaron Chatterji, Adviser. May 2021.

**Xusheng Luo**

“Scalable Control Synthesis for Multi-Robot Systems under Temporal Logic Specifications” (Mechanical Engineering and Materials Science) Michael Zavlanos, Adviser. December 2020.

**Renze Ma**

“Development and Application of Large-Scale Protein Folding Stability Analysis in Drug Target Identification and Disease Biomarker Discovery” (Chemistry) Michael Fitzgerald, Adviser. September 2020.

**Joshua Gene Macopson-Jones**

“Assessing Nucleocytoplasmic Transport in Spinocerebellar Ataxia type 7” (Neurobiology) Albert La Spada, Adviser. May 2021.

**Megan Cathleen Madonna**

“Harnessing Optical Imaging for Assessing Metabolic Reprogramming in Breast Cancer” (Biomedical Engineering) Nirmala Ramanujam, Adviser. December 2020.

**Gabriel James Madson**

“How Voters Use Issues” (Political Science) D. Sunshine Hillygus, Adviser. May 2021.

**Ronald Charles Malone**

“Measurement of the Neutron-Neutron Quasifree Scattering Cross Section in Neutron-Deuteron Breakup at 10.0 and 15.6 MeV” (Physics) Calvin Howell, Adviser. September 2020.

**Jiachen Mao**

“Efficient Neural Network Based Systems on Mobile and Cloud Platforms” (Electrical and Computer Engineering) Yiran Chen and Hai Li, Advisers. September 2020.

**Jialiang Mao**

“Advances in Bayesian Hierarchical Modeling with Tree-based Methods” (Statistical Science) Li Ma, Adviser. September 2020.

**Yiqian Mao**

“Fast Large-Scale Electromagnetic Simulation of Doubly Periodic Structures in Layered Media” (Electrical and Computer Engineering) Qing Huo Liu, Adviser. December 2020.

**Miles S. Marsala**

“Essays on the Complexities of Social Inequalities and Health Disparities” (Sociology) Scott Lynch, Adviser. September 2020.

**Kathleen Kelsey Maxymuk**

“Resonant Wandering Forms: Tracing the Trajectories of the Cinemas of Jean-Luc Godard, Éric Rohmer and Jacques Rivette” (Romance Studies) Anne-Gaëlle Saliot, Adviser. May 2021.

**Vaishakhi Mayya**

“Fundamental Limits for Community Detection in Labelled Networks” (Electrical and Computer Engineering) Galen Reeves, Adviser. December 2020.

**Colleen Michelle McClean**

“Novel Methods of Mycobacterial Control via Manipulation of Host Lipid Bioavailability” (Immunology) David Tobin, Adviser. September 2020.

**Kelsey Rae McDonald**

“Computational Modeling of Multi-Agent, Continuous Decision Making in Competitive Contexts” (Psychology and Neuroscience) John Pearson and Scott Huettel, Advisers. May 2021.

**Emily Josephine McFadden**

“Structure-Function Relationships of Long Non-Coding RNA in Prostate Cancer” (Biochemistry) Amanda Hargrove, Adviser. December 2020.

**Michael James McFadden**

“Characterizing Novel Molecular Regulators of Antiviral Gene Expression” (Molecular Genetics and Microbiology) Stacy Horner, Adviser. December 2020.

**Amelia Claire Meier**

“Forest Elephant Group Dynamics, Social Interactions, and Population Monitoring” (Environment) John Poulsen and Susan Alberts, Advisers. May 2021.

**Francisco Meneses**

“Three Essays in Political Economy of Public Goods in Chile” (Public Policy) Marcos Rangel, Adviser. May 2021.

**Karen Elaine Hovey Messina**

“Dramatic Impulse: Diegetic Music in the Operas of Giacomo Puccini” (Music) Philip Rupprecht, Adviser. December 2020.

**Allison Elizabeth Meyer**

“Is Everything Really Okay?: Anxious Reassurance Seeking as a Predictor of Stress Generation” (Psychology and Neuroscience) John F. Curry, Adviser. September 2020.

**Justin David Mitchell**

“The Death and Life of the American Novel: Radicalism and the Transformation of U.S. Literature in the 1960s” (English) Nancy Armstrong, Adviser. September 2020.

**Courtney Michelle Monahan**

“Matrona Visa: Women’s Public Visibility and Civic Identity in Hispania Tarraconensis” (Classical Studies) Mary Boatwright, Adviser. September 2020.

**Jonathan Ronny Moreno Medina**

“Essays on Economics of Media and Informal Institutions” (Economics) Patrick Bayer, Adviser. May 2021.

**Britany Lauren Morgan**

“The Balance of Parental Effects and Within Generation Plasticity: The Role of Parent and Offspring DNA Methylation on Response to Cues of Neighbor Presence” (Ecology) Kathleen Donohue, Adviser. May 2021.

**Kelsey Teresa Morgan**

“Expanding the Ramoplanin Family of Antimicrobial Peptides” (Chemistry) Dewey McCafferty, Adviser. December 2020.

**Robert Allan Morhard**

“Development of an Injectable Ablative Therapy for Resource-Limited Settings: Applications in Tumor Ablation” (Biomedical Engineering) Nirmala Ramanujam, Adviser. December 2020.

**Assaad Mrad**

“Plant Water Transport and Photosynthesis in Water-Limited Environments” (Environment) Gabriel Katul, Adviser. December 2020.

**David Lazar Kalinich Murphy**

“Oculomotor Influence on the Mechanics of Hearing: Eye Movement-Related Eardrum Oscillations and Their Potential Role in Audio-Visual Spatial Integration” (Psychology and Neuroscience) Jennifer Groh, Adviser. December 2020.

**Joseph Richard Nelson**

“A Defense of Basic Prudential Hedonism” (Philosophy) Walter Sinnott-Armstrong, Adviser. December 2020.

**Anthony Nguyen**

“Structural Basis of GPCR-Transducer Signaling” (Biochemistry) Robert Lefkowitz, Adviser. May 2021.

**Dieu Linh Thi Nguyen**

“Wages, Work Hours, and Work Effort: How Tax Rates Affect Taxpayers’ Occupational Choice” (Economics) Vincent Joseph Hotz, Adviser. May 2021.

**Corrine Nief**

“Designing a Low-Cost Cancer Therapeutic with Ethanol Ablation and Immunomodulation” (Biomedical Engineering) Nirmala Ramanujam, Adviser. May 2021.

**Jacqueline Nikpour**

“Practice Patterns and Influential Factors of Nurse Practitioners Managing Chronic Pain” (Nursing) Marion Broome, Adviser. May 2021.

**Peter Adriaan Novello**

“Understanding Active Sites in Plasmonic Enhanced Catalysis” (Chemistry) Jie Liu, Adviser. December 2020.

**Steven Gary Noyce**

“Mapping Sensitivity of Nanomaterial Field-Effect Transistors” (Electrical and Computer Engineering) Aaron Franklin, Adviser. September 2020.

**Tessa Ashlin Nunn**

“Writing Women Dance” (Romance Studies) Toril Moi, Adviser. May 2021.

**Soo Min Oh**

“Geography and Incentives: The Logic of Subnational Public Goods Provision in the Developing World” (Political Science) Pablo Beramendi, Adviser. May 2021.

**Myles Oldershaw**

“Uses of Influence” (English) Toril Moi, Adviser. May 2021.

**Hannah Margaret Ontiveros**

“Caring for Korea: Engendering War and Aid in the American Century” (History) Nancy MacLean, Adviser. May 2021.

**Nichole Orench-Rivera**

“Differential Packaging of Outer Membrane Proteins of Enterotoxigenic Escherichia coli into Outer Membrane Vesicles under Oxidative Stress Conditions Reveals a Potential Mechanism for Vesicle Cargo Selectivity” (Biochemistry) Margarethe Kuehn, Adviser. September 2020.

**David Solomon Orenstein**

“A Contemporary Analysis of Shifting Contours of Jewish and Christian Identities” (Religion) Laura Lieber and Yaakov Ariel, Advisers. May 2021.

**Han Sang Park**

“Development of Quantitative Phase Imaging as a Diagnostic Modality with High-Throughput Implementation” (Biomedical Engineering) Adam Wax, Adviser. December 2020.

**Nora Grace Peterson**

“Multinuclear and Mononuclear Polyploidy in the Drosophila Hindgut and Heart” (Cell Biology) Donald Fox, Adviser. May 2021.

**Amy Jiayue Petty**

“Dissecting the Role of Hedgehog Signaling in Tumor-associated Macrophages and Immunosuppression in the Tumor Microenvironment” (Molecular Cancer Biology) Yiping Yang, Adviser. May 2021.

**Bryan Thomas Piatkowski**

“From Genes to Traits and Ecosystems: Evolutionary Ecology of Sphagnum (Peat Moss)” (Biology) A. Jonathan Shaw, Adviser. December 2020.

**Stoney Lee Portis**

“Troy in America: Soldier Suicide in American War Literature” (English) Priscilla Wald, Adviser. May 2021.

**Thomas Ryan Prendergast**

“In Defense of Empire: Habsburg Sociology and the European Nation-State, 1870-1920” (History) Malachi Hacoheh, Adviser. December 2020.

**John Andrew Pura**

“Multiple Testing Embedded in an Aggregation Tree With Applications to Omics Data” (Biostatistics and Bioinformatics) Jichun Xie, Adviser. September 2020.

**Ruobing Qian**

“Development of Novel Optical Design and Signal Processing Approaches in Optical Coherence Imaging” (Biomedical Engineering) Joseph A. Izatt, Adviser. September 2020.

**Emily Kathleen Rains**

“Negotiating Informality: Essays on Policy Needs and Political Problem-Solving in Indian Slums” (Public Policy) Anirudh Krishna, Adviser. May 2021.

**Maxwell Colin Ramage**

“Transcendental Oscillations in Popular and Classical Music Since the 1800s” (Music) Nicholas Stoia, Adviser. May 2021.

**Leith John Rankine**

“On the Utility of  $^{129}\text{Xe}$  Gas Exchange Magnetic Resonance Imaging for Assessing, Classifying, and Preventing Fibrotic Lung Diseases” (Medical Physics) Bastiaan Driehuys and Shiva Das, Advisers. May 2021.

**Claire Elise Ravenscroft**

“Fossil Capitalist Realism: Petrofiction, Climate Change and the Endless Twentieth Century” (English) Priscilla Wald, Adviser. September 2020.

**Justin Lee Raybern**

“Characterization of the MARS Neutron Detector” (Physics) Kate Scholberg, Adviser. May 2021.

**Kristen Michelle Renberg**

“Bureaucrats in Black Robes” (Political Science) Mathew McCubbins, Adviser. September 2020.

**Hannah Morgan Sigurdson Ridge**

“Political and Economic Understandings of Democracy in the Middle East” (Political Science) Mathew McCubbins, Adviser. May 2021.

**Lucas Rocha Melogno**

“Practical Monitoring Strategies for Drinking Water and Bioaerosols in Resource-Limited Settings” (Civil and Environmental Engineering) Marc Deshusses, Adviser. May 2021.



**Muye Ru**

“Pollution, Health, and the Economy: Understanding and Modeling Their Interactions” (Earth and Ocean Sciences) Drew Shindell, Adviser. December 2020.

**Xuyan Ru**

“Nanometer to Micrometer Electron Transfer: Incoherent Hopping in Biomolecular Systems” (Chemistry) David Beratan, Adviser. December 2020.

**Kiersten Ruda**

“Retinal Ganglion Cell Population Codes from Starlight to Sunlight” (Neurobiology) Greg Field, Adviser. December 2020.

**Matthew Ruis**

“Using in vitro and in vivo Placental Models to Investigate the Localization of Brominated Flame Retardants and Implications for Thyroid Hormone Homeostasis” (Environment) Heather Stapleton, Adviser. May 2021.

**Harrison Basil Russin**

“‘I Believe’: The Credo in Music, 1300 to 1500” (Music) Thomas Brothers, Adviser. May 2021.

**Ellen Elizabeth Salmon**

“A Tissue-Engineered Blood Vessel Model for Vascular Aging” (Biomedical Engineering) George Truskey, Adviser. May 2021.

**Erick Jerard Sam**

“The Right of Exit: Emigration, Secession and the Structure of International Taxation” (Philosophy) Walter Sinnott-Armstrong, Adviser. May 2021.

**Clay Michael Sanders**

“Inverse-Problem Inspired Approaches in the Design of Solids for Frequency-Domain Dynamics” (Civil and Environmental Engineering) Wilkins Aquino, Adviser. September 2020.

**Jonathan Taylor Sapp**

“The Aristocratic Body and the Memory Economy of Church Reform, 900-1300 C.E.” (History) Jehangir Malegam, Adviser. May 2021.

**Rachel Claire Sayers**

“Essays in Development Economics” (Economics) Robert Garlick, Adviser. September 2020.

**Rose Sabrina Schrott**

“The Effects of Cannabis sativa on the Sperm Epigenome” (Environment) Susan Murphy, Adviser. May 2021.

**Filippo Screpanti**

“Renegades, Slaves, and Pirates: the Representation of Mediterranean Corsair Wars and Barbary in Early Modern Western Literature and Culture” (Romance Studies) Michèle Longino, Adviser. September 2020.

**Matthew Ryan Sebastian**

“Securing Youth: Humanitarian Futures in Post-Conflict Uganda” (Cultural Anthropology) Charles Piot, Adviser. May 2021.

**Carolina Seguí**

“Analysis of the Stability and Response of Deep-Seated Landslides by Monitoring Their Basal Temperature” (Civil and Environmental Engineering) Manolis Veveakis, Adviser. December 2020.

**Madeline Graham Sell**

“Targeting Borrelia burgdorferi’s Heat Shock Protein for the Diagnosis and Treatment of Lyme Disease” (Pharmacology) Cynthia Kuhn, Adviser. December 2020.

**Sourav Sen**

“Observation of Higgs Boson Production through Vector Boson Fusion in the WW\* Channel at the ATLAS Detector” (Physics) Ashutosh Kotwal, Adviser. December 2020.



**Mikhail Shalaev**

“Metamaterials and Topology Enabled Light-Matter Interactions and Photonic Devices” (Electrical and Computer Engineering) Natalia Litchinitser, Adviser. December 2020.

**Lia Sheer**

“Essays on Corporate Investment in Scientific Research” (Business Administration) Sharon Belenzon and Ashish Arora, Advisers. May 2021.

**Chao Shen**

“Robust and Scalable Unsupervised Learning via Landmark Diffusion, from Theory to Medical Application” (Mathematics) Hau-Tieng Wu, Adviser. May 2021.

**Leyao Shen**

“Amino Acid Transporters Regulate Bone Formation” (Cell Biology) Courtney Karner, Adviser. May 2021.

**Qixin Shen**

“Manipulation of Nonlinear Optical Processes in Plasmonic Nanogap Cavities” (Physics) Maiken Mikkelsen, Adviser. September 2020.

**Jun Ukita Shepard**

“Global Energy Systems and International Trade” (Earth and Ocean Sciences) Lincoln Pratson, Adviser. December 2020.

**Adam Shoffner**

“Cardiac Mitogen Signaling During Zebrafish Heart Regeneration” (Cell Biology) Kenneth Poss, Adviser. December 2020.

**Stephen Kenneth Siecinski**

“The Genetic and Epigenetic Landscape of Oxytocin Signaling in the Social Brain of Humans and Mice” (Genetics and Genomics) Simon Gregory, Adviser. May 2021.

**Hershdeep Singh**

“Exploring Quantum Field Theories Using Qubit Lattice Models” (Physics) Roxanne Springer and Shailesh Chandrasekharan, Advisers. September 2020.

**Stavros Sintos**

“Efficient Algorithms for Querying Large and Uncertain Data” (Computer Science) Pankaj Agarwal, Adviser. September 2020.

**Hillary Suzanne Smith**

“(En)gendering Change in Small-Scale Fisheries Science and Policy” (Marine Science and Conservation) Xavier Basurto Guillermo, Adviser. May 2021.

**Taylor Brunton Smith**

“Development and Application of Patient-Informed Metrics of Image Quality in CT” (Medical Physics) Ehsan Samei, Adviser. December 2020.

**Somayyeh Soltanian-Zadeh**

“Statistical and Deep Learning Frameworks for High Throughput Neuronal Signal and Image Processing” (Biomedical Engineering) Sina Farsiu, Adviser. September 2020.

**Chang Song**

“Robustness Analysis and Improvement in Neural Networks and Neuromorphic Computing” (Electrical and Computer Engineering) Hai Li, Adviser. May 2021.

**Linghao Song**

“Accelerator Architectures for Deep Learning and Graph Processing” (Electrical and Computer Engineering) Yiran Chen and Hai Li, Advisers. September 2020.

**Young Jun Song**

“Essays on Private Equity” (Business Administration) David Robinson, Adviser. May 2021.

**Matthew Stanley**

“The Complementary Roles of Memory, Morality, and Counterfactual Thinking in Constructing and Improving the Self” (Psychology and Neuroscience) Elizabeth Marsh, Adviser. May 2021.

**Nicole Stantial**

“Stabilization of Topoisomerase 2 Mutants Initiates the Formation of Duplications in DNA” (Molecular Genetics and Microbiology) Sue Jinks-Robertson, Adviser. May 2021.

**Zachary Andrew Steelman**

“Novel Instrumentation for Optical Screening of Epithelial Dysplasia” (Biomedical Engineering) Adam Wax, Adviser. September 2020.

**Jon William Stewart**

“Plasmonic Metasurfaces for Enhanced Pyroelectric Photodetection” (Electrical and Computer Engineering) Maiken Mikkelsen, Adviser. September 2020.

**Kevin Diemer Stubbs**

“On Exponentially Localized Wannier Functions in Non-Periodic Insulators” (Mathematics) Jianfeng Lu, Adviser. May 2021.

**Yang Suo**

“Structural and Functional Studies on Noxious Stimuli Sensing of the Transient Receptor Potential Ankyrin 1 Channel” (Biochemistry) Seok-Yong Lee, Adviser. May 2021.

**Zane Shea Swanson**

“The Effect of Lifestyle Change on Health and Early Childhood Growth in Daasanach Pastoralists Living in Northern Kenya” (Evolutionary Anthropology) Herman Pontzer, Adviser. May 2021.

**Seth Thomas Sykora-Bodie**

“The Role of Social, Economic, and Political Factors in the Design and Establishment of Antarctic Marine Protected Areas” (Marine Science and Conservation) Andrew Read, Adviser. December 2020.

**Max Symuleski**

“Maintenance Works: The Aesthetics and Politics of Collective Support.” (Art, Art History, and Visual Studies) Mark Hansen, Adviser. May 2021.

**Austin Bryan Talbot**

“Relating Traits to Electrophysiology Using Factor Models” (Statistical Science) David Dunson, Adviser. December 2020.

**Robert William Tate**

“Fictions of Authority: The Normativity of Representation after Shakespeare” (English) Sarah Beckwith, Adviser. December 2020.

**John Dayland Thompson**

“Epigenetic Profiling of Zebrafish Fin Regeneration” (Cell Biology) Kenneth Poss, Adviser. September 2020.

**Jason Douglas Todd**

“Conceptualizing and Measuring Strategic Behavior Within American Political Institutions” (Political Science) Georg Vanberg, Adviser. September 2020.

**Tianjiao Tong**

“Health Care and Corporate Finance” (Business Administration) John R. Graham, Adviser. September 2020.

**Martine Wai-Yeng Tremblay**

“Functions of the Histone Linker Protein H1.4 in Neuronal Development and Intellectual Disability” (Genetics and Genomics) Anne West, Adviser. May 2021.

**Matthew Benjamin Tucker**

“Creation of an Autonomous, Fluorescence-Based Tissue Diagnostic and Ablation Device for Use in Brain Tumor Resection” (Mechanical Engineering and Materials Science) Patrick Codd, Adviser. December 2020.

**Anna Catherine Tybinko**

“Urban Borderlands: African Writers in Precarious Spain, 1985-2008” (Romance Studies) Lamonte Aidoo and Stephanie Sieburth, Advisers. May 2021.

**Asli Zeynep Unal**

“Vascularized Scaffolds for Tissue Engineering Bioartificial Livers” (Biomedical Engineering) Jennifer West, Adviser. September 2020.

**Emily Anne Ury**

“Ecosystem Consequences of Sea Level Rise and Salinization in North Carolina’s Coastal Wetlands” (Ecology) Emily Bernhardt and Justin Wright, Advisers. May 2021.

**Vytautas Valaitis**

“Essays in Macroeconomics” (Economics) Matthias Kehrig, Adviser. May 2021.

**Alyssa Newman Van Denburg**

“A Controlled Breathing Intervention for Women Undergoing MRI-Guided Breast Biopsy: A Randomized Controlled Trial” (Psychology and Neuroscience) Francis Keefe, Adviser. September 2020.

**Jacqueline Vaughn**

“Enhancing Symptom Monitoring Using Mobile Technology for Children and Adolescents with Life-Threatening Illness” (Nursing) Ryan Shaw, Adviser. September 2020.

**Alessandro Tenzin Villa**

“Essays in Macroeconomics” (Economics) Andrea Lanteri, Adviser. May 2021.

**Andrew Stuart Vollmer**

“Reallocation in Perishable Goods Markets” (Economics) James Roberts, Adviser. May 2021.

**Natalia Karina von Windheim**

“Structure-Property Relationships of 3D Printed Thermoplastics for Implantable Orthopedic Devices” (Mechanical Engineering and Materials Science) Ken Gall, Adviser. May 2021.

**Tasso Ade von Windheim**

“Design and Characterization of Carbon Nanomaterial-Based Electrodes for Use in Harsh Environments” (Electrical and Computer Engineering) Jeffery Glass, Adviser. September 2020.

**Raul Vyas**

“Instrument Design and Study of Operational Characteristics of a Cycloidal Coded Aperture Miniature Mass Spectrometer for Environmental Sensing” (Electrical and Computer Engineering) Jeffrey T. Glass, Adviser. December 2020.

**Anna Merrill Wade**

“Land-Use Legacy Dynamics in Decades- and Centuries-old Soils” (Environment) Daniel Richter, Adviser. September 2020.

**Kristin JoAnn Masel Wainwright**

“Phenotyping Complex Symptoms in Adults with Multiple Sclerosis” (Nursing) Sharron Docherty, Adviser. May 2021.

**Dezhi Wang**

“Forward Modeling and Inversion of 3D Electromagnetic Scattering Problems in Complicated Backgrounds” (Electrical and Computer Engineering) Qing Huo Liu, Adviser. December 2020.

**Fan Wang**

“Autonomous Robot Packing of Complex-shaped Objects” (Electrical and Computer Engineering) Kris Hauser, Adviser. September 2020.

**Jason Wang**

“3D Human Skeletal Muscle Model for Studying Satellite Cell Quiescence and Pompe Disease” (Biomedical Engineering) Nenad Bursac, Adviser. May 2021.

**Lihan Wang**

“Quantitative Analysis in Stochastic Homogenization and Hypocoercive PDEs in Sampling” (Mathematics) Jianfeng Lu, Adviser. May 2021.

**Shihao Wang**

“Optimization-Based Motion Planning for Humanoid Fall Recovery” (Mechanical Engineering and Materials Science) Kris Hauser, Adviser. December 2020.

**Tianyu Wang**

“New Directions in Bandit Learning: Singularities and Random Walk Feedback” (Computer Science) Cynthia Rudin, Adviser. May 2021.

**Tongrong Wang**

“Assessing Interchangeability among Raters with Continuous Outcomes in Agreement Studies” (Biostatistics and Bioinformatics) Huiman Barnhart, Adviser. May 2021.

**Wentao Wang**

“Automated Generation of Radiotherapy Treatment Plans Using Machine Learning Methods” (Medical Physics) Jackie Wu, Adviser. May 2021.

**Xueshe Wang**

“Nonlinear Energy Harvesting With Tools From Machine Learning” (Mechanical Engineering and Materials Science) Brian Mann, Adviser. September 2020.

**You Wang**

“Structure-Guided Development of Antifungal Protein Farnesyltransferase Inhibitors and DNA Polymerase Engineering” (Biochemistry) Lorena Beese, Adviser. May 2021.

**Zhao Wang**

“Microbial Responses to Multiple Environmental Factors” (Marine Science and Conservation) Dana Hunt, Adviser. September 2020.

**Zhe Wang**

“Efficient Algorithms for High-dimensional Eigenvalue Problems” (Mathematics) Jianfeng Lu, Adviser. September 2020.

**Amy Katherine Webster**

“Genetic and Epigenetic Regulation of Starvation Resistance in *Caenorhabditis elegans*” (Genetics and Genomics) L. Baugh, Adviser. May 2021.

**Tusi Wen**

“Essays on the Political Economy of Authoritarian Rule” (Political Science) Timur Kuran and Edmund Malesky, Advisers. September 2020.

**Benjamin Wilson Wernette**

“From Layered Intrusions to Mid-Ocean Ridges: The Petrography and Chemistry of Basaltic Magmas” (Earth and Ocean Sciences) Emily Klein, Adviser. September 2020.

**Jessica Sayles West**

“Stress Proliferation and Disability over the Life Course” (Sociology) Scott Lynch, Adviser. May 2021.

**Peter Whitehead**

“The Role of Memory in Driving and Supporting the Implementation of Cognitive Control” (Psychology and Neuroscience) Tobias Egner and Marty Woldorff, Advisers. May 2021.

**Kris Wiedenheft**

“Jumping-Drop Vapor Chambers and Related Phase-Change Processes” (Mechanical Engineering and Materials Science) Chuan-Hua Chen, Adviser. December 2020.

**Shawn Michael Willett**

“Encoding of Concurrent Sounds in the Monkey Inferior Colliculus” (Neurobiology) Jennifer Groh, Adviser. December 2020.

**Nicholas Xavier Williams**

“Custom Inks and Printing Processes for Electronic Biosensing Devices” (Electrical and Computer Engineering) Aaron Franklin, Adviser. May 2021.

**Wade Mitchell Wilson**

“Actively Tunable Plasmonic Nanostructures” (Electrical and Computer Engineering) Maiken Mikkelsen, Adviser. September 2020.

**Amy Jordan Wisdom**

“Dissecting Mechanisms of Tumor Response and Resistance to Radiation and Immunotherapy” (Molecular Cancer Biology) David G. Kirsch, Adviser. May 2021.

**Robyn Katherine Wojack**

“Symptom Trajectories and Self-Management in Systemic Sclerosis” (Nursing) Donald Bailey, Adviser. May 2021.

**Wouter Wolf**

“Connecting through Shared Cognition: Social Consequences and Psychological Underpinnings of Sharing Experiences with Others.” (Psychology and Neuroscience) Michael Tomasello, Adviser. May 2021.

**Callie Marie Woods**

“Multipixel Si PN Junction Photodetector Sensor Arrays for the Depth Resolved Measurement of Tissue using Diffuse Reflectance Spectroscopy” (Electrical and Computer Engineering) Nan Jokerst, Adviser. September 2020.

**Susan Elizabeth Wopat**

“Patterning Mechanisms Underlying Notochord and Spine Segmentation in Zebrafish” (Cell Biology) Michel Bagnat, Adviser. May 2021.

**Chen-Yi Wu**

“Analyzing Hydrodynamic Properties of the North Atlantic Right Whales with Computer Solutions” (Marine Science and Conservation) Douglas Nowacek, Adviser. December 2020.

**Chunpeng Wu**

“Efficient Deep Learning for Image Applications” (Electrical and Computer Engineering) Hai Li, Adviser. September 2020.

**Feilun Wu**

“General Principles of Microbial Community Structure” (Biomedical Engineering) Lingchong You, Adviser. September 2020.

**Jianxuan Wu**

“Abnormal Adaptive Immunity in Bacterial Bladder Infections” (Immunology) Soman Abraham, Adviser. December 2020.

**Allen Xiao**

“Two Algorithmic Schemes for Geometric Bipartite Matching and Transportation” (Computer Science) Pankaj Agarwal, Adviser. September 2020.

**Xin Xiong**

“Hodge Theory and String Topology” (Mathematics) Richard Hain, Adviser. May 2021.

**Yawen Xu**

“On Locating Unstable Equilibria and Probing Potential Energy Fields in Nonlinear Systems Using Experimental Data” (Mechanical Engineering and Materials Science) Lawrence Virgin, Adviser. September 2020.

**Yu Xu**

“Occurrence, Dynamics, and Functions of Hoogsteen Base Pairs in DNA” (Chemistry) Hashim Al-Hashimi, Adviser. May 2021.

**Bonan Yan**

“Highly Efficient Neuromorphic Computing Systems With Emerging Nonvolatile Memories” (Electrical and Computer Engineering) Hai Li and Yiran Chen, Advisers. September 2020.

**Brenda Wei Yang**

“Fiction as Autobiography: Characterizing the Phenomenology and Functions of Memories of Narrative Fiction” (Psychology and Neuroscience) Elizabeth Marsh, Adviser. May 2021.

**Chaofei Yang**

“Security and Robustness in Neuromorphic Computing and Deep Learning” (Electrical and Computer Engineering) Hai Li and Yiran Chen, Advisers. September 2020.

**Feichen Yang**

“Microfibrous and Nanofibrous Materials for Cartilage Repair and Energy Storage” (Chemistry) Benjamin Wiley, Adviser. September 2020.

**Qing Yang**

“Algorithm-hardware Co-optimization for Neural Network Efficiency Improvement” (Electrical and Computer Engineering) Hai Li, Adviser. September 2020.

**Yesol Yang**

“The Association between Caregiver Characteristics and Cognitive Complaints of Women with Breast Cancer” (Nursing) Cristina Hendrix, Adviser. December 2020.

**Yuanjun Yao**

“A Logical Controller Architecture for Network Security” (Computer Science) Jeffrey Chase, Adviser. December 2020.

**Ying Yin**

“Structural Studies of the Cold and Menthol Sensing Ion Channel TRPM8” (Biochemistry) Seok-Yong Lee, Adviser. September 2020.

**Insang Yoo**

“Analytic Model, Design of Waveguide-Fed Metasurface Antennas and Applications to MIMO Communication Systems” (Electrical and Computer Engineering) David R. Smith, Adviser. December 2020.

**Wenzhe Yu**

“Algorithms and Software Infrastructure for High-Performance Electronic Structure Based Simulations” (Mechanical Engineering and Materials Science) Volker Blum, Adviser. December 2020.

**Paula Kathryn Schutt Yust**

“Variability in the Quality of College Students’ Friendships: Associations with Loneliness, Belonging, and Representations of Friendships” (Psychology and Neuroscience) Steven Asher, Adviser. May 2021.

**Jacqueline Marie Zaengle-Barone**

“Copper as an Antibacterial Agent and Disruptor of Protein Stability” (Chemistry) Katherine Franz, Adviser. December 2020.

**Shuxi Zeng**

“Modeling and Methodological Advances in Causal Inference” (Statistical Science) Fan Li, Adviser. May 2021.

**Albert Zhang**

“Mechanisms of Glial Development in *C. elegans*” (Molecular Genetics and Microbiology) Dong Yan, Adviser. May 2021.

**Lijia Zhang**

“MR Susceptibility Mapping: Improved Quantification and Applications in Developmental Brain Imaging” (Medical Physics) Lei Ren and Allen Song, Advisers. May 2021.

**Peiran Zhang**

“Digital Acoustofluidics Based Contactless and Programmable Liquid Handling” (Mechanical Engineering and Materials Science) Tony Jun Huang, Adviser. December 2020.

**Qiushi Zhang**

“Essays on Financial Econometrics: Analysis of Classical Problems with Novel Econometric Methods” (Economics) Tim Bollerslev and Jia Li, Advisers. May 2021.

**Ruiyi Zhang**

“Towards Uncertainty and Efficiency in Reinforcement Learning” (Computer Science) Lawrence Carin, Adviser. May 2021.

**Runren Zhang**

“Multiscale Forward and Inverse Problems with the DGFD Method and the Deep Learning Method” (Electrical and Computer Engineering) Qing Huo Liu, Adviser. December 2020.

**Xiangyu Zhang**

“Accelerating Probabilistic Computing with a Stochastic Processing Unit” (Electrical and Computer Engineering) Alvin Lebeck, Adviser. December 2020.

**Xin Zhang**

“Dynamics of Open Quantum Systems: Measurement, Entanglement, and Criticality” (Physics) Harold Baranger, Adviser. December 2020.

**Yiyue Zhang**

“The Hyperbolic Positive Mass Theorem and Volume Comparison Involving Scalar Curvature” (Mathematics) Hubert Bray, Adviser. May 2021.



**Jingkang Zhao**

“Transcription Factor-Centric Approaches to Identify Regulatory Driver Mutations in Cancer” (Computational Biology and Bioinformatics) Raluca Gordan, Adviser. September 2020.

**Songhui Zhao**

“Regulation of Behavioral Plasticity: Mechanism Underlying Olfaction-Dependent Changes in Male Specific Courtship Behaviors in *Drosophila melanogaster*” (Biology) Pelin Volkan, Adviser. May 2021.

**Yuchen Zhao**

“Characterization and Mechanism of Rigidity in Columns of Star-shaped Granular Particles” (Physics) Joshua Socolar, Adviser. September 2020.

**Tongshu Zheng**

“Applications of Deep Learning, Machine Learning, and Remote Sensing to Improving Air Quality and Solar Energy Production” (Civil and Environmental Engineering) Michael Bergin, Adviser. May 2021.

**Zhanwei Zhong**

“Design, Optimization and Test Methods for Robust Digital Microfluidic Biochips” (Electrical and Computer Engineering) Krishnendu Chakrabarty, Adviser. September 2020.

**Matthew Evan Newton Zipple**

“Social Determinants of Immature Phenotype and Survival in Wild Baboons and Other Mammals” (Biology) Susan Alberts, Adviser. May 2021.

**Enrico Zorzetto**

“Statistical Models for Extreme Events in Atmospheric Processes” (Earth and Ocean Sciences) Marco Marani, Adviser. September 2020.

# 2020 Dean's Awards: Mentoring, Teaching, Inclusive Excellence

The Duke University Graduate School is committed to creating a vibrant culture that values exemplary mentoring, inspires exceptional teaching, and fosters an inclusive and diverse university community. The Dean's Awards recognize faculty, graduate students, and departments and programs that have excelled in those areas.

## Mentoring

### Faculty

William Darity

Samuel DuBois Cook Distinguished  
Professor of Public Policy

Jennifer Roizen

Assistant Professor of Chemistry

David Wong

Susan Fox Beischer and George D.  
Beischer Professor of Philosophy

Jennifer West

Fitzpatrick Family University Professor  
of Engineering

### Students

Christina Bejjani

Ph.D. Candidate  
Psychology & Neuroscience  
Adviser: Tobias Egner

Cherie Conley

Ph.D. Candidate  
Nursing  
Adviser: Isaac Lipkus Reiner

Gwenaëlle Thomas

Ph.D. Candidate  
Neurobiology  
Adviser: Kafui Dzirasa and Marc Caron

## Teaching

Chelsea Garber

Ph.D. Candidate  
Economics  
Adviser: Christopher Timmins

Hannah Rogers

Ph.D. Candidate  
English  
Adviser: Nancy Armstrong

Brenda Yang

Ph.D. Candidate  
Psychology & Neuroscience  
Adviser: Elizabeth Marsh

## Inclusive Excellence

Duke Research in Engineering  
Program

# 2021 Dean's Awards: Mentoring, Teaching, Inclusive Excellence

The Duke University Graduate School is committed to creating a vibrant culture that values exemplary mentoring, inspires exceptional teaching, and fosters an inclusive and diverse university community. The Dean's Awards recognize faculty, graduate students, and departments and programs that have excelled in those areas.

## Mentoring

### Faculty

Aaron D. Franklin

Addy Professor of Electrical and  
Computer Engineering (ECE) and  
Chemistry

Marcos A. Rangel

Associate Professor in the Sanford  
School of Public Policy

Makeba Parramore Wilbourn

Associate Professor of the Practice of  
Psychology and Neuroscience

### Students

Jaime Castellon

Ph.D. Candidate  
Psychology and Neuroscience  
Faculty Adviser: Gregory Samanez-  
Larkin

Tess Leuthner

Ph.D. Candidate  
Integrated Toxicology and Environ-  
mental Health  
Faculty Adviser: Joel Meyer

Karla Sosa

Ph.D. Candidate  
Biology  
Faculty Adviser: Mark Rausher

## Teaching

Anna Tybinko

Ph.D. Candidate  
Romance Studies  
Faculty Advisers: Lamonte Aidoo and  
Stephanie Sieburth

Edgar Virgüez

Ph.D. Candidate  
Environmental Sciences and Policy  
Faculty Adviser: Dalia Patino  
Echeverri

# Forever Duke Student Leadership Award

The Duke Alumni Association's Forever Duke Student Leadership Award recognizes graduating students who embody the "Forever Duke" spirit in their service to the university. Below are the 2020 and 2021 graduates from The Graduate School who received the award.

## 2020

Avani Gupta, M.S., Interdisciplinary Data Science

Rashmi Joglekar, Ph.D., Integrated Toxicology and Environmental Health

Tinashe Nyanhete, Ph.D., Immunology

Renee Ragin, Ph.D., Literature

## 2021

Courtney Crumpler, M.F.A., Dance

Brandon Hunter, Ph.D., Civil and Environmental Engineering

Gray Kidd, Ph.D., History

Lucas Rocha-Melogno, M.S.'19, Ph.D., Civil and Environmental Engineering

Edgar Virgüez, Ph.D., Environmental Sciences and Policy

# Ph.D. Degree Granting Programs at Duke

Art, Art History and Visual Studies  
Biochemistry  
Biology  
Biomedical Engineering  
Biostatistics  
Business Administration  
Carolina-Duke Graduate Program  
in German  
Cell and Molecular Biology  
Cell Biology  
Chemistry  
Civil and Environmental Engineering  
Classical Studies  
Cognitive Neuroscience  
Computational Biology and  
Bioinformatics  
Computational Media, Arts &  
Cultures  
Computer Science  
Cultural Anthropology  
Developmental and Stem Cell Biology  
Earth and Ocean Sciences  
Ecology  
Economics  
Electrical and Computer Engineering  
English  
Environment  
Environmental Policy  
Evolutionary Anthropology  
Genetics and Genomics  
History  
Immunology  
Integrated Toxicology and  
Environmental Health  
Literature  
Marine Science and Conservation  
Materials Science and Engineering  
Mathematics  
Mechanical Engineering and  
Materials Science  
Medical Physics  
Medical Scientist Training  
Molecular Cancer Biology  
Molecular Genetics and Microbiology  
Music  
Neurobiology  
Nursing  
Pathology  
Pharmacology  
Philosophy  
Physics  
Political Science  
Population Health Sciences  
Psychology and Neuroscience  
Public Policy  
Religion  
Romance Studies  
Sociology  
Statistical Science  
Structural Biology and Biophysics

# Significance of the Academic Dress

Today's academic dress has its origins in the clerical dress that medieval scholars used for warmth in unheated buildings. The tradition of special academic dress seems to have entered this country through King's College (now Columbia) in colonial New York. The custom grew so rapidly that in 1894, an American Intercollegiate Commission standardized the style and color of robes and hoods. The commission decided all robes would be black, which is not the standard for schools today. Bachelor's robes have open, pointed sleeves; master's gowns have sleeves that close at the wrist; and the doctoral gown has bell-shaped sleeves, velvet trim down the front, and three velvet strips across the sleeves.

The hood that forms part of today's academic dress was originally a head covering for bad weather. Later it was dropped to the shoulders in the form of a small cape. Eventually, the hood became a separate piece of apparel bearing even more symbolism than the gown. The hood's facing is colored velvet trimming denoting the wearer's discipline (e.g., arts and letters, white; engineering, orange; law, purple). The width of the velvet trimming designates the level of the degree. The lining of the hood identifies the institution that granted the degree, dark blue with a white chevron for Duke.

The cap or square has come to be symbolic of academia. It has evolved from a tufted, square cap called a pileus quadratus worn by medieval laity to a rigid, square academic cap, commonly called a "mortarboard." The velvet tam is commonly worn by doctorate holders. A tassel is attached to the center of the cap.

## Hood Colors Indicating the Fields of Study

Apricot: Nursing

Brown: Fine Arts

Copper: Economics

Dark Blue: Philosophy

Drab: Business Administration

Golden Yellow: Science

Green: Medicine

Lavender: Dentistry

Light Blue: Education

Orange: Engineering

Pink: Music

Purple: Law

Russet: Forestry

Salmon: Public Health

Scarlet: Divinity, Theology

Teal: Physical Therapy

White: Arts, Letters, Humanities



# Congratulations from the Graduate School Staff

The Graduate School staff members congratulate our 2019 Ph.D. candidates on obtaining their degrees and thank them for giving us the opportunity to be a part of their successful journey at Duke.

## Office of the Dean

Paula D. McClain

Dean of the Graduate School and  
Vice Provost for Graduate Education

Marsha Adams-Rucker

Human Resources Manager

Pakis Bessias

IT Manager

Angela Eberts

Director of Development

Rachel Mojica

Assistant Director of Development

Carlus Walters

Administrative Coordinator and  
Assistant to the Dean

John Zhu

Senior Director of Communications

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## Academic Affairs

John Klingensmith

Senior Associate Dean for Academic Affairs

Hugh Crumley

Assistant Dean for Academic Affairs

Denise Leathers

Staff Specialist

Natavan Mammadli

Staff Assistant

Helene McAdams

Graduate School Registrar

Courtnea Rainey

Assistant Dean for Assessment and  
Evaluation

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## Admissions

Anneli Richter

Associate Dean, Graduate Admissions

Scott C. Andrews

Data Manager

Chris Kizer

Slate Operations Manager

Kristen Mirek

Program Coordinator

Randi Smith

Duke Kunshan Admissions Specialist

Nancy Wines

Admissions Specialist

## **Finance and Administration**

Shanna Fitzpatrick

Senior Associate Dean for Finance and  
Administration and CFO

Lorelei Evans

Data Processing Specialist

Daniel Heflin

Financial Aid Coordinator

Iryna Merenbloom

Assistant Dean, Budgets and Finance

Caroline Morris

Senior Fellowship Coordinator

Regina Nowicki de Guerra

Strategic Data and Analytics Manager

Natalia Provorov

Staff Accountant

Lynette Roesch

Staff Assistant

Cynthia Wilcock

Financial Analyst

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## **Graduate Student Affairs**

Jacqueline Looney

Senior Associate Dean for Graduate  
Programs and Associate Vice Provost

Melissa Bostrom

Assistant Dean for Graduate  
Student Professional Development

Latishia Futrell

Senior Program Coordinator

J. Alan Kendrick

Assistant Dean for Graduate  
Student Development

Sondra Ponzi

Senior Program Coordinator

## **English for International Students**

Brad Teague

Assistant Dean and Director,  
English for International Students (EIS)

Mahmoud Altalouli

EIS Instructor

Andrew Davis

EIS Instructor

Christian Gomez

EIS Program Coordinator

Elizabeth Long

Lecturing Fellow

Carolyn Quarterman

Lecturing Fellow

Stacy Sabraw

Lecturing Fellow

