



# HONORS

## SENIOR THESIS

### Research Conference

December 5, 2025



# SCHEDULE

## 9AM

Nell Malette, 102  
Maggie Ryan, 114  
Wade Chiddick, 115

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## 10AM

Anna Kosierowski, 102  
Kristi Pham, 114  
MK Coolican, 115

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## 11AM

Sophie Malik, 102  
Steven Marinelli, 114  
Ava Hazzouri, 115

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## 12PM

Rob Vagnini, 102  
Kelly Kim, 114  
Elisabeth Lilly, 115

## 1PM

Hayley Wilson, 102  
Leah Cardinale, 114  
Katie Lewis, 115

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## 2PM

Michael Micceri, 102  
Maria Procaccini, 114  
Emmaline Lombardo, 115

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## 3PM

Mikaela Anthony, 102  
Kojo Yankah, 114  
Gabe Donovan, 115

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## 4PM

Elizabeth Brown, 102  
Emma Behrman, 114

**ALL PRESENTATIONS WILL TAKE PLACE IN GAREY HALL**



# MIKAELA ANTHONY

## Investigating and Preparing Petitions for Stream Redesignation to Exceptional Value Status in Chester County, PA

Majors: Environmental Science; Political  
Science

Tutor: Dr. Steven Goldsmith

Alumni Mentor: Gillen Curren ('22)



Mikaela is an Environmental Science and Political Science major with a minor in Ethics from Swampscott, MA. On campus, she has been an active member of the Ethics Bowl Team and has served as a GEV peer mentor for the past two years. Since 2023, she has pursued research studying freshwater systems in southeastern Pennsylvania. Building on this work, her thesis seeks to identify streams or stream segments in Chester County, PA, that are strong candidates for redesignation to Exceptional Value status and to develop, in partnership with the Guardians of the Brandywine, a petition for redesignation for one or more of those streams to be submitted to the PA Department of Environmental Protection. After graduation, she hopes to attend law school and pursue a career in environmental policy.

# EMMA BEHRMAN

**Investing the Role of 7-Ketocholesterol in Alleviating Inflammatory Bowel Disease (IBD) using an Acute Mouse Model of Chemically Induced IBD**

Major: Biology

Tutor: Dr. Anil Bamezai

Alumni Mentor: Matthew DiCarali ('22)



Emma is a Biology major with minors in Global Health and Medical Humanities from St. Louis, Missouri. She has been a member of Dr. Bamezai's immunology lab since Spring 2023, where she studies the mechanisms of Inflammatory Bowel Disease (IBD) using mouse models. IBD arises from an overactive immune response in the gut driven by CD4 T cells. Her current project investigates whether 7-ketocholesterol (7-KC), a molecule thought to disrupt inflammatory signaling, can alleviate disease symptoms in an acute IBD model. After graduation, she will attend medical school and is considering a specialization in primary care sports medicine.

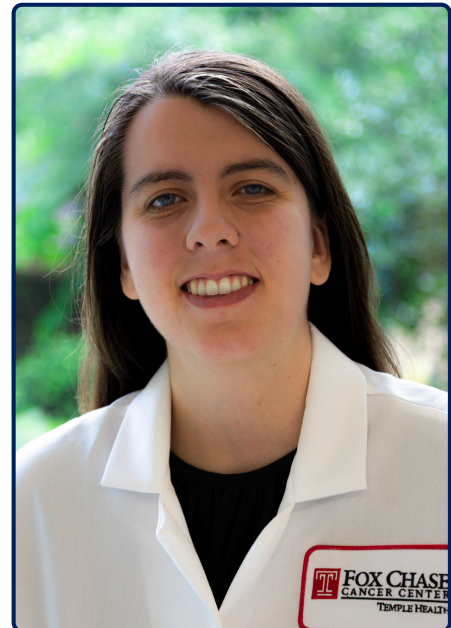
# ELIZABETH BROWN

## The Role of Telomerase Activation in the Development of Drug-Resistant Gastrointestinal Stromal Tumor

Major: Biology

Tutor: Dr. Dennis Wykoff

Alumni Mentor: Christopher Saladino ('22)



Elizabeth is a senior Biology major from Vienna, VA. After losing two loved ones to the rare muscle cancer rhabdomyosarcoma, she became committed to using her passion for biomedical science to improve outcomes for other patients with sarcoma, going on to complete two summer internships studying these diseases at NIH. Since joining Dr. Lu Chen's lab at Fox Chase Cancer Center in her junior year at Villanova, Elizabeth has further deepened her commitment to sarcoma research, using biochemical assays, cell culture models, and patient samples to investigate how these tumors develop different immortalization strategies, and how they may respond differently to treatment as a result. Her thesis work specifically explores how telomerase activation may drive the development of acquired Tyrosine Kinase Inhibitor resistance in patients with Gastrointestinal Stromal Tumor. Elizabeth hopes to begin an MD/PhD program after graduation and go on to pursue a career as a physician-scientist.



# LEAH CARDINALE

## Real Bodies or Real Branding? Analyzing Empowerment Claims in the #AerieREAL campaign

Major: Communications

Tutor: Dr. Ashley Pattwell

Alumni Mentor: Oriana Sengos ('15)



Leah is a senior from New York pursuing a B.A. in Communication with a concentration in Public Relations & Advertising and a minor in English. A Connelly-Delouvrier Scholar, she studied in London at the Institute of Education Sciences, where coursework in U.K. media and politics deepened her interest in feminist media theory. Leah's honors thesis examines body-positive branding and femvertising. On campus, she serves as Co-Founder/President of Girls Who Read and Vice President of DEI for The Women's Network.

# WADE CHIDDICK

## Incurvatus in se, the Crucifixion and AI Ethics

Major: Computer Science

Tutor: Dr. Tibor Solymosi

Alumni Mentor: Joshua Benson-Foley ('18)



Wade is a senior from King of Prussia, PA, majoring in Computer Science. He is a Presidential Scholar and the Vice President of the Black Student Union. Wade plays on the Villanova basketball team, where he began as a manager, became a practice player, and has been on the roster for the past two years. Wade enjoys exploring machine learning, artificial intelligence, and the ways technology can be used to promote fairness and equity. He is passionate about combining his technical skills with leadership and creating meaningful real-world impact. In his thesis, Wade examines the Christian notion of incurvatus in se, humanity's tendency to turn inward on itself, as a framework for critiquing the ethical development of artificial intelligence. By contrasting this with the self-giving love exemplified in the crucifixion of Jesus Christ, his research explores how theology can inform and challenge the human dimensions of AI and algorithmic technologies.

# MK COOLICAN

## Suffering and Absurdity: A Christological Examination

Majors: Political Science; Theology

Tutor: Rev. Dr. Christy Lang Hearlson

Reader: Dr. John Harles

Alumni Mentor: Jennifer Silvi ('04)



MK is a senior from Ann Arbor, MI, majoring in Political Science and Theology with minors in Peace & Justice and Criminology. MK grew up in an agnostic household with strong Catholic influences. After coming to Villanova, she discovered her own faith and decided to double major in Political Science and Theology. Studying both disciplines side-by-side has shown her the power of interdisciplinary academia and the ways in which religion and politics can positively contribute to creating a more just world. Her thesis will explore the concepts of suffering and absurdity through a Christological lens, and aims to answer the question: Can human beings embrace God and suffering simultaneously? After graduation, MK plans to attend Divinity School to further explore the ways in which religion and politics coincide in the world.



# GABE DONOVAN

## Undignified, Unemployed, but Still Disabled: The Case Against the Economic Model

Majors: Public Service and Administration;  
Humanities

Tutor: Dr. Andrew Lynn

Reader: Dr. Christa Bialka

Alumni Mentor: Stephen Terry ('23)



Gabriel is a Presidential Scholar majoring in Public Service and Administration and Humanities with minors in Disability and Deaf Studies and Philosophy. Gabe is Vice President of LEVEL (Disability Inclusion Club) and President of Presidential Scholars. He is a Living and Leisure Mentor with the VUnited Scholars Program. He is a member of Pi Alpha Alpha Global Honor Society for Public Affairs and Administration and Delta Alpha Pi International Disabled Students Honor Society. Gabe was born in the Adirondacks of upstate New York in 2004. He moved to Albany, New York when he was three. Following a rare disease diagnosis of neurofibromatosis, Gabe began attending Double H Ranch in Lake Luzerne, New York when he was six. After a decade as a camper, he has spent the last four summers at Double H Ranch as a residential counselor. Upon graduation Gabe has been accepted to complete a Master of Public Administration at Villanova University. Gabe's thesis is on the economic model of disability. He is looking at how it affects our society's ideas of work and leisure.

# AVA HAZZOURI

## Bridging the Divide: An Ethical Case for Integrating Dentistry and Medicine

Major: Comprehensive Science

Tutor: Dr. James Waters

Alumni Mentor: Lauren Mazur ('01)



Ava is a senior from Scranton, PA, majoring in Comprehensive Science at Villanova University. Inspired by her family's multi-generational dental practice, she is passionate about addressing the longstanding divide between dentistry and medicine. For her thesis, *Bridging the Divide: An Ethical Case for Integrating Dentistry and Medicine*, she applies the frameworks of utilitarianism, the ethics of care, and antiracism to argue that the separation of these fields is both inefficient and ethically unjust. Ava aims to demonstrate how integrated, patient-centered models can reduce disparities, enhance overall health outcomes, and promote collaboration across healthcare disciplines. After graduation, she plans to pursue a career in dentistry, where she aspires to strengthen the connection between the two fields and expand access to equitable, integrated models of care.

# KELLY KIM

## Investigating the Function of *retn+* Abdominal Neurons in *Drosophila melanogaster* Larvae

Major: Biology

Tutor: Dr. Troy Shirangi

Alumni Mentor: Brian Emmert ('15)



Kelly is a junior from Long Island, NY, studying Biology on the Pre-Medical and Medical Humanities track. She enjoys watching movies, listening to music, playing the piano and guitar, as well as baking and cooking. She is a member of the Shirangi Lab, where she is investigating the hypothesis that the *retn+* abdominal neurons in *Drosophila melanogaster* larvae contribute to nociception. This research represents a significant step toward understanding neural reprogramming during development across different circuit contexts in *Drosophila melanogaster*. After graduating, Kelly plans to attend medical school to further develop her research skills and experience.



# ANNA KOSIEROWSKI

## Environmental and Socioeconomic Inequities in Historically Redlined Neighborhoods



Majors: Environmental Studies; Political Science

Tutor: Dr. Peleg Kremer

Reader: Dr. Camille Burge

Alumni Mentor: Jackson Sweeney ('21)

Anna is a double major in Environmental Studies and Political Science from Scranton, PA. Anna's thesis investigates the socioeconomic and environmental impacts of historical redlining through an interdisciplinary framework that integrates political science and environmental studies. Using GIS-based spatial analysis, she investigates whether formerly redlined neighborhoods continue to face disproportionate ecological burdens such as higher exposure to pollutants, increased flooding and heat risks, and reduced access to green space. She situates these environmental inequities within the broader political history of discriminatory housing practices in the United States. By combining these perspectives, Anna aims to bridge the gap between political and environmental research, illustrating how policy decisions made nearly a century ago continue to shape environmental vulnerability today. Her thesis ultimately seeks to contribute to ongoing conversations about sustainability, environmental justice, and the role of urban policy in addressing structural inequities.

# KATIE LEWIS

## Portrayal of American Higher Education in Literature

Majors: English; Communication

Tutor: Dr. Megan Quigley

Alumni Mentor: Anne Ryan Hanafin ('90)



Katie is a senior from Miami, FL majoring in English and Communication with concentrations in Journalism and Writing & Rhetoric. Inspiring her thesis work, Katie is fascinated by the complexity of the American higher education system and the contemporary issues surrounding it. She looks to explore how higher education is portrayed in literature through the 20th century. Her thesis puts three works in conversation: Betty Smith's *A Tree Grows in Brooklyn* (1943), Jhumpa Lahiri's *Interpreter of Maladies* (1999), and Zadie Smith's *On Beauty* (2005). Outside of her classes at Villanova, Katie has channeled her passion for writing into finding the stories behind college sports. She is the Co-Sports Editor of *The Villanovan* and covers sports as an intern for *The Philadelphia Inquirer*. After graduation, Katie plans to continue her studies in graduate school.

# ELISABETH LILLY

## The Mathematics of Bias in Artificial Intelligence: Foundations & Ethical Concerns

Major: Mathematics

Tutor: Dr. Peter Muler

Alumni Mentor: John Nawn ('11)



Elisabeth is a senior from Westchester, NY majoring in Mathematics with minors in both Business and Computer Science. Her honors thesis, "The Mathematics of Bias in Artificial Intelligence: Foundations & Ethical Concerns," explores how the mathematical definitions and structures underlying machine learning algorithms can contribute to and perpetuate algorithmic bias. Through this research, Elisabeth aims to bridge the gap between technical rigor and ethical responsibility in the design of intelligent systems. Upon graduating from Villanova, Elisabeth plans to pursue a career within the financial services industry.



# EMMALINE LOMBARDO

## Constituted for the Kingdom of Heaven: A Political Eschatology for Our Times

Majors: Political Science; Humanities

Tutor: Dr. Veronica Ogle

Alumni Mentor: Jennifer Nabers ('95)



Emmaline is from Harrisburg, PA, with a Political Science and Humanities double major with a minor in Philosophy. An avid devotee of discussion, she is a member of Villanova's ethics debate team and holds semi-permanent residence in the Humanities common room, where all the best conversations happen. Formed by a year studying philosophy at Blackfriars Hall of the University of Oxford, she aspires to continue her adventures in scholarship after graduation, with intent to give back these gifts one day as an educator. Her hobbies include long walks and memorizing poetry.

# NELL MALETTE

## The Virtue of Empathy in the Life of a Public Servant

Majors: Public Service and Administration; Humanities

Tutor: Dr. Michael Tomko

Reader: Dr. Paul Camacho

Alumni Mentor: Ally Porzio ('21)



Eleanor is a double major in Public Service and Administration and Humanities. Her thesis explores the virtue of empathy in the life of a public servant. She was first introduced to the Humanities through Ancients and Moderns, where she discovered a passion for exploring deep questions in conversation with others. As a mission-driven person, she seeks to channel these critical and reflective skills into a life of public service. Her research integrates her two majors and connects deeply to her personal experience. Having a strong sense of empathy, she has faced burnout from helping others and hopes to understand how to balance this virtue in her own life. Her thesis engages both disciplines by asking what it means to serve others well while also sustaining one's moral and emotional well-being. Outside the classroom, Eleanor enjoys playing tennis, spending time with friends, and reading.

# SOPHIE MALIK

## Synthesis and characterization of N,N-bidentate ligands and associated iron(II) complexes as diene polymerization catalysts

Major: Chemistry

Tutor: Dr. Deanna Zubris

Alumni Mentor: Tommy DeStefanis ('23)



Sophie is a Chemistry major with a minor in Mathematics. She has been a part of the Zubris Lab since the Spring of 2023, where she has been working to synthetically design imino- and amino-pyridine ligands and metal catalysts to be used in olefin and diene polymerization. She is particularly interested in the sustainability aspect of synthetic polymerization, as designing these metal catalysts to be used in the synthetic preparation of polymers allows them to be made more sustainably instead of being harvested from naturally occurring plants and other sources. Aside from Chemistry research, Sophie enjoys being a part of Blue Key and the Villanova Chemical Society on campus.

# MICHAEL MICCERI

## **A Persistent Paradox: Reconciling Awareness of Negative Effects with Habitual Use of Social Media Among College Students**

Major: Communications

Tutor: Dr. Allyson Levin

Reader: Dr. Thomas Ksiazek

Alumni Mentor: Kevin Chupka ('03)



Michael is a senior from Somers, NY, studying Communications with a specialization in Journalism. His thesis project examines how college students engage with social media both habitually and as a response to stress. It explores the paradox between students' awareness of social media's negative psychological effects and their continued use of these platforms. Through this research, he aims to gain a deeper understanding of the motivations that drive digital consumption and how these behaviors impact focus, well-being, and authentic human connection in a technology-driven culture. Outside of the classroom, he enjoys spending time with friends, broadcasting Villanova sporting events, and reading. After graduation, he plans to attend law school and apply his communication skills to advocate for meaningful change.



# STEVEN MARINELLI

## Red Island in a Sea of Blue: A Study of Staten Island's Republican Persistence in Democratic New York City

Major: Political Science

Tutor: Dr. Marcus Kreuzer

Alumni Mentor: Grace Lundell ('23)



Steven is a senior from Staten Island, NY, majoring in Political Science with minors in Economics and History. He hopes to combine his knowledge of politics and personal background to expand the literature on partisanship in overlooked areas. In his thesis, he is exploring the persistence of Republican strongholds in Democratic cities, using Staten Island as a case study. By utilizing recent election and census data in the block groups of this conservative bastion, Steven aims to understand the differences between demographic and place-based factors in shaping strong partisan beliefs. Outside of academics, he is an Orientation Counselor, a Blue Key Tour Guide, and the Senior Director of Admitted Students Day. Following graduation in the spring, Steven plans to build on his interests in politics by pursuing a career in the legal field.

# KRISTI PHAM

## Investigating the unfolding ability of the proteasome in living cells

Majors: Biochemistry; Cognitive and Behavioral Neuroscience

Tutor: Dr. Daniel Kraut

Alumni Mentor: Christopher Saladino ('22)



Kristi is a Biochemistry and Cognitive & Behavioral Neuroscience double major on the Medical Humanities track from Middletown, Delaware. She has been studying the proteasome, a protein that degrades other proteins, as a member of the Kraut Lab since the summer of 2024. Her thesis focuses on studying protein degradation in live yeast cells to expand on previous in vitro studies. Following graduation, she plans to attend medical school. Given her interest in healthcare, she is excited to continue learning about the proteasome, which is implicated in neurodegenerative diseases such as Alzheimer's Disease.

# MARIA PROCACCINI

## The influence of musical training on speech perception: An EEG approach

Major: Cognitive and Behavioral Neuroscience

Tutor: Dr. Grant Berry

Alumni Mentor: Juliet Mazer-Schmidt ('05)



Maria is a Neuroscience major with a Psychology minor from Media, PA. Among her many campus activities, Maria is a violinist and soprano with the Villanova Pastoral Musicians and a dancer with NOVAnoise, Villanova's only tap dance ensemble. Her history with the arts traces back to the age of 3, and her experiences as a musician and dancer have shaped her research interests. Maria's thesis focuses on comparing musicians' and non-musicians' auditory flexibility using an auditory oddball task and electroencephalography (EEG). Specifically, she is looking at mismatch negativity (MMN) size to determine whether musical training causes increased sensitivity to spectral information in speech. After graduation, Maria plans to pursue a Psy.D. or a Ph.D. in Clinical Psychology with a concentration in Neuropsychology, continuing to focus on the impacts of music on cognitive functioning.

# MAGGIE RYAN

## Total Synthesis of Aromatase Inhibitors, Isogemichalcones B & C

Major: Biochemistry

Tutor: Dr. Eduard Casillas

Alumni Mentor: Katya Sajovec ('21)



Maggie is a senior from Colchester, VT, majoring in Biochemistry with a minor in Spanish. Maggie's thesis explores research in organic synthetic chemistry, attempting to optimize the synthesis of natural products, Isogemichalcones B & C. These natural products are possible inhibitors of aromatase, an enzyme that plays a key role in the production of estrogen in the body, participating in the development of breast and ovarian cancer. Following graduation in the spring, Maggie plans to obtain a PhD in Chemistry with the intention of strengthening her knowledge in chemistry and pursuing a career in pharmaceutical chemistry.



# ROB VAGNINI

## Quantifying Politics: Improved Predictions of the Presidential Winner

Major: Statistics

Tutor: Dr. Michael Posner

Alumni Mentor: Matthew Pietropaolo ('19)



Rob is a senior from Southbury, CT, majoring in Statistics with minors in Spanish Studies and Mathematics. He is hoping to utilize his knowledge in statistics to add an element of objectivity to various social patterns around the world. In his thesis, he is building on a method to predicting the United States presidential election winner previously established by historian Allen Lichtman in his book, *The Thirteen Keys to the Presidency*. By utilizing quantitative data and statistical analyses, Rob is seeking to understand the most important tenets in predicting the election winner and how their importance has changed over time. Following an early graduation in the fall, Rob will continue his time at Villanova University by pursuing a master's degree in Applied Statistics and Data Science with the intention of strengthening his education, especially in the coding sector of statistics.

# HAYLEY WILSON

## **Modeling Greenhouse Gas Emissions from College Campus Commuting and Transportation: A Case Study of Villanova University**

Majors: Environmental Science; Geography

Tutor: Dr. Lisa Rodrigues

Alumni Mentor: Arlene Bohner-Hrinkevich ('90)



Hayley is a double major in Environmental Science and Geography with a minor in Sustainability Studies from Cos Cob, Connecticut. She is very interested in Corporate Sustainability, and specifically how organizations and businesses can work to implement more sustainable practices. For her senior thesis, she is evaluating Villanova's transportation-related greenhouse gas emissions and proposing strategies to incentivize more sustainable transportation methods. Outside of the classroom, Hayley is a member of the Student Sustainability Committee, Business Sustainability Society, and Villanova's 'Minor Problem' A Cappella group. Hayley plans to pursue a master's degree in Business Sustainability following graduation in May.

# KOJO YANKAH

## **Investigating the Neuroprotective Effects of Dimethyl Fumarate in MPTP Mouse Model of Parkinson's Disease**

Major: Cognitive and Behavioral Neuroscience

Tutor: Dr. Benjamin Sachs

Alumni Mentor: Brian Emmert ('15)



Kojo is a senior from Ghana, majoring in Cognitive and Behavioral Neuroscience with a minor in Medical Humanities. His thesis work investigates the neuroprotective effects of Dimethyl Fumarate (DMF) on dopaminergic neurodegeneration, autophagy, and motor function in an MPTP mouse model of Parkinson's disease. This project studies how activating the NRF2 antioxidant pathway can mitigate dopaminergic neuron loss and improve motor deficits. This research reflects his broader interest in neuropharmacologically targeting specific neurobiological pathways to explore therapeutic approaches for neurodegenerative disorders. His minor in Medical Humanities provides a critical perspective for exploring the impact of academic research on the human experience of illness. After graduation, Kojo plans to pursue an MD to become a physician.

# THANK YOU

## TUTORS & READERS

Dr. Steven Goldsmith  
Dr. Anil Bamezai  
Dr. Dennis Wykoff  
Dr. Ashley Pattwell  
Dr. Tibor Solymosi  
Dr. Thomas Ksiazek  
Dr. Andrew Lynn  
Dr. James Waters  
Dr. Troy Shirangi  
Dr. Peleg Kremer  
Dr. Megan Quigley  
Dr. Peter Muller  
Dr. Veronica Ogle  
Dr. Michael Tomko

Dr. Deanna Zubris  
Dr. Allyson Levin  
Dr. Marcus Kreuzer  
Dr. Dan Kraut  
Dr. Grant Berry  
Dr. Eduard Casillas  
Dr. Michael Posner  
Dr. Lisa Rodrigues  
Dr. Benjamin Sachs  
Dr. John Harles  
Dr. Christa Bialka  
Dr. Paul Camacho  
Rev. Dr. Christiane  
Lang-Hearlson

## ALUMNI MENTORS

Arlene Bohner-Hrinkevich ('90)  
Anne Ryan Hanafin ('90)  
Jennifer Nabers ('95)  
Lauren Mazur ('01)  
Kevin Chupka ('03)  
Jennifer Silvi ('04)  
Juliet Mazer-Schmidt ('05)  
John Nawn ('11)  
Brian Emmert ('15)  
Oriana Sengos ('15)

Joshua Benson-Foley ('18)  
Matthew Pietropaolo ('19)  
Katya Sajovec ('21)  
Ally Porzio ('21)  
Jackson Sweeney ('21)  
Gillen Curren ('22)  
Matthew DiCarali ('22)  
Christopher Saladino ('22)  
Tommy DeStefanis ('23)  
Grace Lundell ('23)  
Stephen Terry ('23)