



**MINNESOTA
ACADEMY
OF SCIENCE**

43rd Winchell Undergraduate Research Symposium

Celebrating 43 Years of Excellence in Undergraduate Research

April 29, 2023

at

COLLEGE OF
Saint Benedict



Saint John's
UNIVERSITY

College of Saint Benedict & Saint John's University,
Collegeville, MN

2023 Winchell Symposium Planning Committee

Dr. Lisa Gentile (Chair)
CSBSJU

Lindsey Gutsch
CSBSJU

Dr. Nick Schlotter
Hamline University

Dr. Kate Cary
CSBSJU

Lara Maupin
MAS Executive Director

Jeff Wubbles
CSBSJU

Kristine K. Fowler
MAS Winchell Coordinator

Noah Raiche
CSBSJU

About the Winchell Undergraduate Research Symposium

The Winchell Symposium provides a forum for undergraduate students to present original STEM research, learn from professionals in fields they aspire to enter, and receive recognition for their accomplishments. Founded in 1981 by the Minnesota Academy of Science, the symposium includes a keynote lecture, student presentations, and breakout sessions. More than 125 students, research advisors, MAS members, faculty, and interested members of the community attend the symposium each year.

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University of Minnesota-Twin Cities, College of Biological Sciences, Department of Psychology, and Department of Chemistry's Dwight C. Legler Memorial Fund

Schedule of Events – April 29, 2023

8:45-9:15 am Check-in at welcome tables and refreshments (*Peter Engel Science Center entrance*)

9:15-10:15 am Welcome and Keynote Address (*Pellegrine Auditorium*)

Dr. Lisa Gentile, Winchell Symposium Chair, CSBSJU

Dr. Jennifer Schaefer, Biology Department Chair, CSBSJU

Dr. Brian Johnson, Professor of Chemistry, CSBSJU

“Medical Device Innovations: Who, Where & What do they ‘S.T.E.M.’ from?”

Dr. Lisa Jungbauer Nikolas, Principal Scientist, Medtronic Pelvic Health, Medtronic

10:30-11:15 am Breakout Session 1

- **“Teaching with CUREs: Taking the Experience to the Next Level through Collaboration (part I),”** Dr. Danielle Bolland, University of Minnesota - Morris; and Dr. Tamara Mans, North Hennepin Community College (*Pengl room 229*)
- **Panel of STEM Industry Professionals** (*Pengl room 173*)
- **MN Junior Academy of Science Meeting** (*Pengl room 212*)

11:30 am-12:15 pm Breakout Session 2

- **“Teaching with CUREs: Taking the Experience to the Next Level through Collaboration (part II)”** (*Pengl room 229*)
- **Panel of STEM Graduate & Professional Students** (*Pengl room 173*)

12:15-1:15 pm Lunch Buffet (*Pengl room 269*)

Pick up your lunch, then find a comfortable spot and/or join an optional interest-group discussion:

- *Collaborations among faculty at different institutions for CUREs* (*Pengl room 229*)
- *Tips for mentoring undergraduate research* (*Pengl room 212*)
- *Students getting ready to apply to grad schools* (*Pengl room 373*)
- *Students getting ready to take MCATs and apply to med schools* (*Pengl room 173*)
- *Students who will be looking for industrial jobs after graduation* (*Pengl room 269*)

1:15-1:30 pm Set up for Oral Presentations & put up Posters

1:30-2:30 pm Oral Presentations (see pp. 7-9)

- Session A (*Pengl room 229*)
- Session B (*Pengl room 373*)
- Session C (*Pengl room 369*)

2:40-3:20 pm Poster Session D (*Alcuin Library, upper level*)

- Odd numbered posters (**see pp. 9-11**)

3:20-4:00 pm Poster Session E (*Alcuin Library, upper level*)

- Even numbered posters (**see pp. 12-14**)

4:00-4:30 pm Poster Take-Down (*Alcuin Library*) and Refreshments (*Pengl room 269*)

Presenters: Please help by storing your easel by the circulation desk. Thank you!

4:30-4:45 pm Closing Remarks and Awards (*Pellegrene Auditorium*)

Lara Maupin MEd, Executive Director, Minnesota Academy of Science
Dr. Lisa Gentile, Winchell Symposium Chair, CSBSJU

Keynote Speaker

Dr. Lisa M. Jungbauer Nikolas

Principal Scientist, Medtronic Pelvic Health, Medtronic Restorative Therapies Group, Research and Core Technology

What links protein folding, neurodegenerative disease, targeted drug delivery, and sacral neuromodulation together?

Answer: Lisa's 10 years as an academic researcher and 12 years as a scientist at Medtronic studying implantable therapies for chronic conditions.

Fueled by intellectual curiosity and collaboration, Lisa is a core member of project teams designing and conducting preclinical and clinical feasibility studies to test hypotheses for new treatments and ways to improve existing treatments. A chemist by academic training, Lisa is always open to talking at the molecular level, and practices continuous learning across new disease states, anatomies and therapy modalities. Lisa is a co-author on a variety of papers, posters and presentations and seven patents.

Outside of work, Lisa's days are full and blessed as she and her husband revolve around their 3 kids, enjoying occasional chances for a run or ski.



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Special Thanks to our Judges

Kaia Buhl MS, Himax IGI Precision, Ltd.

Kate Cary PhD, College of St. Benedict & St. John's University

Lisa Jungbauer Nikolas PhD, Medtronic

Fred LaPlant PhD, 3M Inc

Tamara Mans PhD, North Hennepin Community College

Nick Schlotter PhD, Hamline University

Heather Sklenicka PhD, Rochester Community and Technical College

Aeisha Thomas PhD, Crown College

Elena Tonc PhD, Macalester College

Jackie Towner PhD, Bethel University

Beza Tuga MS, University of Minnesota - Twin Cities

Amy Verhoeven PhD, University of St. Thomas

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Choose **Guest**, and click **Connect**. After the connection is established, **open an internet browser**. Type in **your email address**, read **the acceptable use policy**, and click **Connect**.

Breakout Session 1 (10:30 – 11:15 am)

“Teaching with CUREs: Taking the Experience to the Next Level through Collaboration (part I),” **Danielle Bolland PhD**, University of Minnesota - Morris; and **Tamara Mans PhD**, North Hennepin Community College (*Pengl room 229*)

Panel of STEM Industry Professionals (*Pengl room 173*)

Moderator: **Nick Schlotter PhD**, Chair of Chemistry, Hamline University

Panelists: **Arianna Kooyman Ahl BS**, Senior Scientist, HB Fuller

Koree Ahn PhD, Analytical Development Scientist, Janssen Research and Development

Christina Foley PhD, Senior Materials Scientist, 3M

Fred LaPlant PhD, Product Development Manager, 3M

Lisa Jungbauer Nikolas PhD, Principal Scientist, Medtronic Pelvic Health, Medtronic

Josh Razink MS, Director of Transmission Electron Microscopy, University of Oregon

Bradley Towey PhD, Quality Control Scientist, Aldevron

MN Junior Academy of Science (MJAS) Meeting (*Pengl room 212*)

MJAS is an honorary society and leadership group of high school and college students from MN who have demonstrated excellence in scientific research. Top scoring high school student researchers from this year’s State Science & Engineering Fair are invited to attend Winchell and discuss MJAS plans for the upcoming year. College researchers and faculty are welcome to attend and provide input and inspiration.

Moderator: **Lara Maupin MED**, Executive Director, Minnesota Academy of Science

Breakout Session 2 (11:30 am – 12:15 pm)

“Teaching with CUREs: Taking the Experience to the Next Level through Collaboration (part II),” **Danielle Bolland PhD**, University of Minnesota - Morris; and **Tamara Mans PhD**, North Hennepin Community College (*Pengl room 229*)

Panel of STEM Graduate & Professional Students (*Pengl room 173*)

Moderator: **Nick Schlotter PhD**, Chair of Chemistry, Hamline University

Panelists: **Elle Bartlett**, Chemistry grad student, University of Kansas

John Cerritelli, Chemistry grad student, Boston University

(continued)

Megan (Kohout) Goddard, Pharmacology and molecular medicine grad student, Washington State University

Claire Nelmark, Chemistry grad student, University of Notre Dame

Anna Nguyen, Pharmaceutical Science grad student, University of Illinois Chicago

Ash Robinson, Systems, Synthetic and Physical Biology grad student, Rice University

Oral Presentation Sessions (1:30-2:30 pm)

*[Student presenters are shown in **bold**.]*

Oral Presentation Session A (Pengl room 229)

A.1 Ecology / Environmental Science: **EAT, PREY, LIVE: THE ROLE OF FORAGE AND PREDATION IN SHAPING BEAVER ACTIVITY**

Avery Munster, Tom Gable, Nilanjan Chatterjee, Jacob Orser, Xavier Haro-Carrion, Austin Homkes, Sean Johnson-Bice, Steve Windels, Joseph Bump, and Stotra Chakrabarti (Advisor)

Department of Biology

Macalester College, St. Paul, MN

A.2 Engineering: **AN INTERACTIVE WEB-BASED DASHBOARD REPRESENTING MEDICARE-ACCEPTING RURAL HEALTH CLINICS AND GENERAL HOSPITALS IN MINNESOTA**

Andrew A. Kotz and Huliya Mallikarjuna (Advisor)

Department of Electrical and Computer Engineering

Saint Louis University, St. Louis, MO

A.3 Chemistry: **DYE LOADING OF AND RELEASE FROM SWELLING POLYMERS FOR AGRICULTURAL APPLICATIONS**

Andrea T. Ligocki, Beza S. Tuga, and Christy L. Haynes (Advisor)

Department of Chemistry

University of Minnesota - Twin Cities, Minneapolis-St. Paul, MN

A.4 Physics: **INCREASING CONDUCTIVITY OF GALLIUM NITRIDE NANOCRYSTAL FILMS**

Josh Sedarski¹, Dillon Moher², AJ Cendejas², Eric Hussmann², Elijah Thimsen^{2,3} (Advisor), and Lifeng Dong¹ (Advisor)

¹*Department of Physics, Hamline University, St. Paul, MN*

²*Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis, St. Louis, MO*

³*Institute for Materials Science and Engineering, Washington University in St. Louis, St. Louis, MO*

Oral Presentation Session B (Pengl room 373)

B.1 Organismal / Physiological Sciences: CHARACTERIZING METHYLISOTHIAZOLINONE-MEDIATED CHANGES IN THE INFLAMMATORY POTENTIAL OF MURINE LABIAL SKIN FIBROBLASTS

Kevin A. Tovar and Elena Tonc (Advisor)

Department of Biology

Macalester College, St. Paul MN

B.2 Ecology / Environmental Science: LITTLE ARACHNIDS, BIG IMPACT: OPILIONES IN THE BOCAS DEL TORO ARCHIPELAGO

Marie Ervin^{1,5}, **Zoe Lowe**^{2,5}, Sam Pelletier^{3,5}, Emma White^{4,5}, Rosannette Quesada-Hidalgo⁵ (Advisor), and Sarah Boyer² (Advisor)

¹*Department of Earth, Environment, & Society, University of St. Thomas, St. Paul, MN*

²*Department of Biology, Macalester College, St. Paul, MN*

³*Department of Botany, Connecticut College, New London, CT*

⁴*Department of Biology, Davidson College, Davidson, NC*

⁵*School for Field Studies, Bocas del Toro, Panamá*

B.3 Organismal / Physiological Sciences: REIMAGINING A BETTER VESSEL FOR ex-ovo CHORIOALLANTOIC MEMBRANE CHICK EMBRYO ASSAYS

Abby R. Lewerenz, Makenna L. Berger, Jarrid E. Pizzel, Julian Yang, and Mong-Lin Yang (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

B.4 Ecology / Environmental Science: THE LION'S SHARE: IMPLICATIONS OF LION DIET ON THE CONSERVATION OF A CRITICALLY ENDANGERED HERBIVORE IN TSAVO

Eliza King¹, Stotra Chakrabarti¹ (Advisor), Fredrick Lala^{2,3}, Stephen Nyagah², Grace Waiguchu², Patrick Chiyo⁴, Joseph Kyalo⁵, Richard Moller⁵, Patrick Omondi², Aaron Morris³, and Joseph Bump³

¹*Department of Biology, Macalester College, St. Paul, MN*

²*Wildlife Research and Training Institute, Kenya*

³*University of Minnesota, Twin Cities, MN*

⁴*Trace Wildlife Forensics Network, Uganda*

⁵*Tsavo Trust, Kenya*

Oral Presentation Session C (Pengl room 369)

C.1 Cellular / Molecular Biology: HELA CELLS' INTERACTION WITH NANOPARTICLES

Courtney A. O'Kane¹, James Marti² (Advisor), Matthew Johnson² (Advisor), and Kristyn VanderWaal Mills¹ (Advisor)

¹*Department of STEM and Biology, Saint Paul College, St. Paul, MN*

²*Minnesota Nano Center, University of Minnesota - Twin Cities, Minneapolis, MN*

C.2 Neuroscience: **INVESTIGATING CENTRAL SENSITIZATION IN A MURINE MODEL OF VULVODYNIA**

Xiu Mei E. Golden, Mady Chen, Petar Elenkov, Valeria Junca, Oliver Legasse, Gloriah Omwanda, Devavani Chatterjea (Advisor), and Elena Tonc (Advisor)

Department of Biology

Macalester College, St. Paul, MN

C.3 Cellular / Molecular Biology: **INVESTIGATING THE ROLE OF MAST CELLS IN MURINE MODEL OF VULVODYNIA**

Gloriah Omwanda, Mady Chen, Kevin Tovar, Xiu Mei Golden, Devavani Chatterjea (Advisor) and Elena Tonc (Advisor)

Department of Biology

Macalester College, St. Paul, MN

Poster Sessions (2:40-4:00 pm) (Alcuin Library, upper level)

*[Student presenters are shown in **bold**.]*

Poster Session D (2:40-3:20 pm)

D.01 Engineering: **100 HOURS: THE BRIDGE FROM CONNECTIVITY TO ACCESSIBILITY**

Justin Third, Brian Huilman (Advisor), and Renu Kumar (Advisor)

Department of Information Technology

Minneapolis College, Minneapolis MN

D.03 Cellular / Molecular Biology: **BIOINFORMATIC AND GROWTH CURVE ANALYSIS OF THE POORLY CHARACTERIZED YEAST GENE YLR407W**

Joel W. Swanberg and Aeisha Thomas (Advisor)

Department of Biological & Health Sciences

Crown College, St. Bonifacius, MN

D.05 Cellular / Molecular Biology: **DEVELOPMENT OF IMPLANTATION METHODS FOR HELA AND HEK293 CELLS ON THE CHORIOALLANTOIC MEMBRANE**

Esther Vogt and Mong-Lin Yang (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

D.07 Biochemistry: **DYSREGULATION OF ARGINASE ISOENZYMES IN FL-HCC: INVESTIGATING THE IMPACT OF NONSPECIFIC ARGINASE-ISOFORM ANTIBODIES ON THE MARKET**

Sofia K. Dodge, Allysa C. Steinhaus, James D. Dinger, Riki Mae C. Duevel, and Mong-Lin Yang (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

D.09 Organismal / Physiological Sciences: **EFFECTS OF INCUBATOR HUMIDITY ON ex ovo EMBRYONIC VIABILITY**

Makenna L. Berger, Jarriid E. Pizel, Julian Yang, Abby R. Lewerenz, and Mong-Lin Yang (Advisor)

Department of Biology

Concordia University - St. Paul, St. Paul, MN

D.11 Ecology / Environmental Science: **EFFECTS OF LEAF LITTER AND ROAD SALT ON AQUATIC MACROINVERTEBRATE COLONIZATION AND SURVIVAL**

Zoë T. Battle¹, Jessica L. Mohlman² (Advisor), John A. Crawford² (Advisor), Mike Anderson¹ (Advisor), and Mary A. Heskell¹ (Advisor)

¹*Department of Biology, Macalester College, St. Paul, MN*

²*National Great Rivers Research and Education Center, Lewis and Clark Community College, East Alton, IL*

D.17 Chemistry: **FIBROUS MYCELIUM MATS AS ABSORBENT MATERIALS**
Lauren P. Estep, Grace M. Harper, Lindsay Bronstad, and William S. Boyle (Advisor)

Department of Chemistry

Anoka-Ramsey Community College, Cambridge and Coon Rapids, MN

D.19 Cellular / Molecular Biology: **IDENTIFICATION OF THE PRESENCE OF STAPHYLOCOCCUS ENTEROTOXIN A IN POSITIVE *S. aureus* SAMPLES**

Nimo A. Ahmed, Amanda Brosnahan (Advisor), and Taylor Mach (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

D.21 Chemistry: **IMPACT OF STORAGE METHOD ON VITAMIN C CONTENT IN PINEAPPLE**

Dakota J. Crider, **Katherine D. Schultz**, and Heather M. Sklenicka (Advisor)

Department of Chemistry

Rochester Community and Technical College, Rochester, MN

D.23 Cellular / Molecular Biology: **MAPPING MICROBIOME TURNOVER WITH BACTEROIDES**

Brandon Fernandez¹, Zea Cain², Paul van Erp², and Seth Walk² (Advisor)

¹*Department of Biology, St. Olaf College, Northfield, MN*

²*Department of Microbiology and Immunology, Montana State University*

D.25 Biochemistry: **SITE-DIRECTED MUTAGENESIS OF LYSINE 125 IN MALATE DEHYDROGENASE**

Cathryn Wallmow, Taylor Prieve, and Danielle E. Bolland (Advisor)

Department of Biology

University of Minnesota-Morris, Morris, MN

D.27 Biochemistry: **SITE-DIRECTED MUTAGENESIS OF SITE D131K IN WATERMELON MALATE DEHYDROGENASE**

Sanjana Kidambi, **David J. Doughty, Emma J. Seurer,** and Danielle E. Bolland (Advisor)

Department of Biology

University of Minnesota-Morris, Morris, MN

D.29 Cellular / Molecular Biology: ***Staphylococcus aureus* STRAINS WITH SELX PRESENCE OFTEN HAVE DIFFERENT TOXIN PROFILES THAN THOSE WITH ABC CARRIAGE**

Malia R. Braiedy, Amanda J. Brosnahan (Advisor), and Taylor J. Mach (Advisor)

College of Health & Science

Concordia University-St. Paul, St. Paul, MN

D.31 Biochemistry: **SYNTHESIZING BETA-LACTONES VIA ENZYMES PRODUCED BY *Nonomuraea candida* AND *Nocardiaceae***

Jason Miller and James Christenson (Advisor)

Department of Chemistry

Bethel University, St. Paul, MN

D.33 Cellular / Molecular Biology: **TSST-1 SUPERANTIGEN PRESENCE IN *Staphylococcus aureus***

Clara Hipp, Amanda Brosnahan (Advisor), and Taylor Mach (Advisor)

Department of Biology

Concordia University - St. Paul, St. Paul, MN

D.35 Ecology / Environmental Science: **USING PASSIVE ACOUSTICS TO STUDY ENDANGERED BALEEN WHALES OFF THE COAST OF SENEGAL**

Cullen Hauck¹, Danielle Cholewiak² (Advisor), and Salvatore Cerchio³ (Advisor)

¹Department of Biology, St. Olaf College, Northfield, MN

²Protected Species, NOAA/NMFS, Northeast Fisheries Science Center, Woods Hole, MA

³African Aquatic Conservation Fund, Chilmark, MA

Poster Session E (3:20-4:00 pm)

E.02 Biochemistry: **ALTERATIONS IN C:N RATIO TO UNDERSTAND TO UNDERSTAND PLANT METABOLIC PATHWAYS IN RESPONSE TO PRESSURE FROM GOAT GRAZING IN THE INVASIVE SPECIES: *Rhamnus cathartica***

Vivian Marchan¹, Sara A. Wyse¹ (Advisor), and Brandon J. Winters² (Advisor)

¹*Department of Biological Sciences*

²*Department of Chemistry Bethel University, St. Paul, MN*

E.04 Cellular / Molecular Biology: **DYSREGULATION OF PROLINE PATHWAY ENZYMES IN FL-HCC VS HCC**

Richard C. Wauer, James D. Dinger, Sofia K. Dodge, Allysa C. Steinhaus, and Mong-Lin Yang (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

E.06 Biochemistry: **EFFECTS OF GLUCOSE ON BINDING INTERACTIONS OF HUMAN SERUM ALBUMIN WITH POLYSTYRENE NANOPARTICLES**

Peyton J. Miller and Md Abul Fazal (Advisor)

Department of Chemistry

College of Saint Benedict & Saint John's University, St. Joseph and Collegeville, MN

E.08 Biochemistry: **EXPRESSION OF GLUTAMINASE ISOENZYMES AND THEIR TRANSCRIPTIONAL VARIANTS IN LIVER CANCER: HCC VS FL-HCC GLUTAMINASE DYSREGULATION**

Sofia K. Dodge, Allysa C. Steinhaus, **James D. Dinger**, **Riki Mae C. Duevel**, and Mong-Lin Yang (Advisor)

Department of Science

Concordia University - St. Paul, St. Paul, MN

E.10 Cellular / Molecular Biology: **FINDING ANTIBIOTIC PRODUCERS FROM SELECTED SOIL SAMPLES**

Sarah Anne F. Byacanda and Aeisha Thomas (Advisor)

Department of Biological & Health Sciences

Crown College, St. Bonifacius, MN

E.12 Biochemistry: **INSERTING A SPECTROSCOPIC PROBE INTO HUMAN MITOCHONDRIAL MALATE DEHYDROGENASE**

Mary E. Ludwig, **Sonja J. Hoversten**, **Caroline R. Tuck**, and Lisa N. Gentile (Advisor) *Department of Chemistry*

College of Saint Benedict & Saint John's University, St. Joseph and Collegeville, MN

E.14 Biochemistry: **INVESTIGATING DEK'S INVOLVEMENT IN NEURODEGENERATION IN N2A CELLS**

Zoe A. Kramin and Danielle E. Bolland (Advisor)

Department of Biology

University of Minnesota-Morris, Morris, MN

E.16 Biochemistry: **INVESTIGATING THE EFFECT OF MUTATION F134Y AND F134N ON CATALYTIC ACTIVITY OF MALATE DEHYDROGENASE**

Adunya G. Mekonnen¹, Jen Valley², Tony V. Sambeek², Madison Rosen², and Betsy Martínez-Vaz² (Advisor)

¹*Department of Chemistry*, ²*Department of Biology and Biochemistry Program
Hamline University, St. Paul, MN*

E.18 Ecology / Environmental Science: **PLANT COMMUNITY CHANGE IN ROADSIDE REMNANT PRAIRIE FRAGMENTS OVER A 22-YEAR TIME SPAN**

Isabel L. Haga, Diane K. Angell (Advisor), and Charles Umbanhowar Jr. (Advisor)

Department of Biology

St. Olaf College, Northfield, MN

E.20 Organismal / Physiological Sciences: **POSITIVE IMMUNE RESPONSE TO EXERCISE AND THE INFLUENZA VACCINE IN YOUNG ADULTS**

Ella E. Eibensteiner, **Megan M. Lidtke**, and Ashley L. Fink (Advisor)

Department of Biology

College of Saint Benedict & Saint John's University, St. Joseph and Collegeville, MN

E.22 Cellular / Molecular Biology: **STUDYING THE EFFECTS OF ALTERED CYTOSOLIC CALCIUM LEVELS ON THE INTERACTION OF SERCA2A AND PHOSPHOLAMBAN (PLB) OBSERVED THROUGH THE FLUORESCENT YIELD OF A CIRCULARLY PERMUTATED GREEN FLUORESCENT PROTEIN (CPGFP)**

Prapthi Jayesh Sirkay¹ and Markus Meyer² (Advisor)

¹*College of Biological Sciences*

²*Department of Cardiology*

University of Minnesota - Twin Cities, Minneapolis-St. Paul, MN

E.24 Biochemistry: **SUBSTRATE SPECIFICITY OF GUANYLUREA HYDROLASE: INSIGHTS FROM BIOINFORMATICS AND MUTAGENESIS STUDIES**

Katrina Rasstryzhenkau, **April O'Meara**, and Betsy M. Martínez-Vaz (Advisor)

Department of Biology

Hamline University, St. Paul, MN

E.26 Cellular / Molecular Biology: **TEMPERATURE DEPENDENCE OF THE XANTHOPHYLL CYCLE ENZYMES**

Andre M. Thibodeau and Amy S. Verhoeven (Advisor)

Department of Biology

University of St. Thomas, St. Paul, MN

E.28 Neuroscience: **THE DESENSITIZATION OF FUNERAL DIRECTORS**

Mason B. DeGross and Jennifer E. Schaefer (Advisor)

Department of Biology

College of Saint Benedict & Saint John's University, St. Joseph and Collegeville, MN

E.30 Biochemistry: **THE ROLE OF PALMITOYLATION IN DNA DAMAGE REPAIR IN OVARIAN CANCER**

Sanjana Kidambi, Sam G. Jordan, Zoe A. Kramin, and Danielle E. Bolland (Advisor)

Department of Biology

University of Minnesota-Morris, Morris, MN

E.32 Biochemistry: **THE ROLE OF SARS-COV-2 ORF8 PROTEIN ARKS MOTIF ON NOVOBIOCIN BINDING**

Si Chun Chiu, My T. Nguyen, and Lisa N. Gentile (Advisor)

Department of Chemistry

College of Saint Benedict & Saint John's University, St. Joseph and Collegeville, MN

E.34 Biochemistry: **ZEAXANTHIN IN THE ROLE OF PHOTO-PROTECTION**

Lucy V. Jordan and Amy S. Verhoeven (Advisor)

Department of Biology

University of St. Thomas, St. Paul, MN

Student Oral/Poster Presentations by Last Name

Ahmed, Nimo Poster Session D.19
Battle, Zoë Poster Session D.11
Berger, Makenna Poster Session D.09
Braiedy, Malia Poster Session D.29
Byacanda, Sarah Anne Poster Session E.10
Chiu, Si Chun Poster Session E.32
DeGross, Mason Poster Session E.28
Dinger, James Poster Session E.08
Dodge, Sofia Poster Session D.07
Doughty, David Poster Session D.27
Duevel, Riki Mae Poster Session E.08
Eibensteiner, Ella Poster Session E.20

Estepp, Lauren Poster Session D.17
Fernandez, Brandon Poster Session D.23
Golden, Xiu Mei Oral Session C (Pengl room 369) C.2
Haga, Isabel Poster Session E.18
Harper, Grace Poster Session D.17
Hauck, Cullen Poster Session D.35
Hipp, Clara Poster Session D.33
Hoversten, Sonja Poster Session E.12
Jayesh Sirkay, Prapthi Poster Session E.22
Jordan, Lucy Poster Session E.34
Jordan, Sam Poster Session E.30

Kidambi, Sanjana Poster Session E.30
King, Eliza Oral Session B (Pengl room 373) B.4
Kotz, Andrew Oral Session A (Pengl room 229) A.2
Kramin, Zoe Poster Session E.14
Lewerenz, Abby Oral Session B (Pengl room 373) B.3
Lidtke, Megan Poster Session E.20
Ligoeki, Andrea Oral Session A (Pengl room 229) A.3
Lowe, Zoe Oral Session B (Pengl room 373) B.2
Ludwig, Mary Poster Session E.12
Marchan, Vivian Poster Session E.02
Mekonnen, Adunya Poster Session E.16
Miller, Jason Poster Session D.31
Miller, Peyton Poster Session E.06
Munster, Avery Oral Session A (Pengl room 229) A.1
O'Kane, Courtney Oral Session C (Pengl room 369) C.1
O'Meara, April Poster Session E.24
Omwanda, Gloriah Oral Session C (Pengl room 369) C.3

Pizel, Jarrid Poster Session D.09
Prieve, Taylor Poster Session D.25
Rasstryzhenkau, Katrina Poster Session E.24
Schultz, Katherine Poster Session D.21
Sedarski, Josh Oral Session A (Pengl room 229) A.4
Seurer, Emma Poster Session D.27
Steinhaus, Allysa Poster Session, D.07
Swanberg, Joel Poster Session D.03
Thibodeau, Andre Poster Session E.26
Third, Justin Poster Session D.01
Tovar, Kevin Oral Session B (Pengl room 373) B.1
Tuck, Caroline Poster Session E.12
Vogt, Esther Poster Session D.05
Wallmow, Cathryn Poster Session D.25
Wauer, Richard Poster Session E.04
Yang, Julian Poster Session D.09

Student Oral/Poster Presentations by Category

Biochemistry: Presentations C.1, D.07, D.25, D.27, D.31, E.02, E.04, E.06, E.08, E.12, E.14, E.16, E.24, E.30, E.32, E.34
Cellular/Molecular Biology: Presentations C.1, C.3, D.03, D.05, D.07, D.19, D.23, D.25, D.27, D.29, D.33, E.04, E.10, E.12, E.14, E.22, E.24, E.26, E.30
Chemistry: Presentations A.3, C.1, D.21, D.17, E.06
Ecology/Environmental Science: Presentations A.1, B.2, B.4, D.11, D.35, E.18
Engineering: Presentations A.2, D.01
Neuroscience: Presentations C.2, E.28
Organismal/Physiological Sciences: Presentations B.1, B.3, D.09, E.20
Physics: Presentation A.4

Full abstracts may be found in the *Journal of Winchell Undergraduate Symposium Abstracts* at www.mnmas.org/wurs-publications

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About the Minnesota Academy of Science

The Minnesota Academy of Science (MAS) is a statewide 501(c)(3) nonprofit organization. We serve K-12 and undergraduate students, educators, and schools as well as STEM graduates and professionals seeking to network and volunteer. Our programs and operations are funded through the state of Minnesota, corporate sponsorships, foundation grants, registration fees, and individual donations.

OUR MISSION

We are not just focused on science! MAS remains committed to advancing science, technology, engineering, and math (STEM) in Minnesota by connecting Minnesotans of all backgrounds with resources and opportunities to engage in STEM learning, research, and communication—and to recognize excellence in these areas.

OUR BELIEFS & CORE VALUES

We believe STEM literacy benefits our entire community and that all students deserve access to meaningful and fulfilling STEM activities throughout their education. We strive to conduct ourselves in keeping with our core values of innovation, equity, integrity, and community.

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We create opportunities for access and engagement through our five core programs—*State Science Bowls*, *State Science Fair*, *Junior Academy*, *Winchell Symposium*, and *FORSE Mentoring & Enrichment*—and through our online resources and communications. Visit mnmas.org to learn more!

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This year—2023—marks our *150th anniversary!* Visit mnmas.org/history to explore our new interactive timeline and digital archives and learn more about our history of promoting science in Minnesota.



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With our new membership structure, MAS is building a stronger community of STEM enthusiasts. MAS is giving 2023 memberships to *all* donors as well as *all* students, educators, and volunteers participating in our programs and events. *Yes, this means YOU!* MAS invites you to stay connected to MAS throughout the year and attend our **Annual Meeting MAY 17, 2023 — 7:00 PM (VIRTUAL)**.

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