# UNDERGRADUATE RESEARCH FAIR

**Thursday, September 19, 2019**

4:30–6:30 P.M.

**Student Life Center Ballroom**

## Breakout Sessions

Breakout sessions will be held in the Lower Level Meeting Rooms 1 & 2, Student Life Center.

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<td>4:30 p.m.</td>
<td>“Heart Poisoning: Medicine Unlike Any Other”</td>
<td>Jacek Hawiger, M.D., Ph.D. (Biomedical Sciences)</td>
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<td>4:30 p.m.</td>
<td>Using Research to Prepare for Medical School</td>
<td>Michelle Grundy, Ph. D. (Director, Health Professions Advisory Office)</td>
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<td>5:30 p.m.</td>
<td>Engaging Research with a Social Science Lens</td>
<td>Hannah Ingersoll (Ph.D. candidate, Sociology), Eric Asen (Junior, Political Science and Economics), and Erin Meyers (Ph.D. candidate, Law and Economics)</td>
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<td>6:00 p.m.</td>
<td>Get Involved: Student Organizations Promoting Research</td>
<td>Matthew Xin (Scientific Immersion and Mentorship)</td>
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<td>Nora Ait Boucherbil '21</td>
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<td>3</td>
<td>Zaynah Ajmal '21</td>
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<td>Md Emazuddin Alif '21</td>
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<td>5</td>
<td>Zander Alley '20</td>
<td>Human and Organizational Development</td>
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<td>6</td>
<td>Shruti Anant '21</td>
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<td>7</td>
<td>Hannah Anderson '22</td>
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<td>8</td>
<td>Minna Apostolova '22</td>
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<td>9</td>
<td>Camille Archer '20</td>
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<td>10</td>
<td>Anastasia Astafyev '21</td>
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<td>11</td>
<td>Yigit Atay '21</td>
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<td>Sophie Baillargeon '20</td>
<td>Biomedical Engineering</td>
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13 Aakash Basu ’21
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Characterizing The Role Of Heterosynaptic É‘ 2A -Adrenergic Receptors In The Bed Nucleus Of The Stria Terminalis In Cellular And Behavioral Stress Responses
Mentor: Professor Danny Winder, Molecular Physiology and Biophysics

14 Cameron Beard ’20
Psychology
Reducing The Effect Of Stress On Executive Control: Mindfulness As A Moderator
Mentor: Professor Judy Garber, Psychology and Human Development

15 Karan Bhardwaj ‘22
Chemical Engineering
Effect of Noisy Pulse EPR Data on Protein Structural Modeling
Mentor: Professor Jens Meiler, Chemistry

16 Meghna Bhimreddy ’21
Neuroscience
Lectin-galC1 Regulation Of Synaptic Function At The Drosophila Glutamergic Neuromuscular Junction
Mentor: Professor Kendal Broadie, Cell and Developmental Biology

17 Caroline Bodnya ’20
Neuroscience, Spanish
Modulation Of Mitochondrial Dynamics During Stem Cell Differentiation Into Neural Progenitor Cells
Mentor: Professor Vivian Gama, Cell and Developmental Biology

18 Abigail Boldt ’22
Biomedical Engineering
Individualized Exercise In The AYA Cancer Survivor Population
Mentor: Dr. Jamie Renbarger, Pediatrics

19 Allison Booher ’21
Latin American Studies; Neuroscience
Comparison of Public Emergency Medical Care in Two Latin American Countries Of Different Economic Levels
Mentor: Professor Nicolette Kostiw, Latin American Studies

20 Anna Borchers ’20
Molecular and Cellular Biology
Genotype-Specific Coinfections in T. Castaneum
Mentor: Professor Ann Tate, Biological Sciences

21 Ezra Brody ’21
Mechanical Engineering; Mathematics
Developing Diagnostic Tools for Smart Batteries
Mentor: Professor Cary Pint, Mechanical Engineering

22 Emily Butler ’22
Neuroscience
Early Drug Discovery Of Potential Anticonvulsant Agents: Synthesis Of 5-Methyl Enaminone Intermediate
Mentor: Professor Patrice Jackson-Ayotunde, Pharmaceutical Sciences

23 Christina Byrd ’20
Psychology
The Impact Of Parental Responsiveness in Depression and Huntington's Disease
Mentor: Professor Bruce Compas, Psychology and Human Development

24 Caroline Carlson ’21
Medicine, Health, and Society; Spanish
Microvesicle-Induced Activation Of Fibroblasts Contributes To Breast Cancer Heterogeneity And Metastasis
Mentor: Professor Cynthia Reinhart-King, Biomedical Engineering
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<td>Search for Single Heavy Neutrino Production via VBF Processes</td>
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<td>Anoop Chandrashekar</td>
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<td>Protective Effects of Endocannabinoid Modulation on Negative Affect in Mice Undergoing Ethanol Withdrawal</td>
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<td>Matthew Conn</td>
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<td>Acoustic Multifactor Authentication with Machine Learning</td>
<td>Professor Yu Wang, Computer Science</td>
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<td>Susmita Chennareddy</td>
<td>Neuroscience; Economics</td>
<td>Differential Expression Pattern Of HSPA6 In Rett Syndrome</td>
<td>Professor Colleen Niswender, Pharmacology</td>
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<td>Woong Jae Choi</td>
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<td>Testing Fragile X Syndrome Effects On Nociceptive Pain Sensitization In A Genetic Disease Model</td>
<td>Professor Kendal Broadie, Cell and Developmental Biology</td>
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<td>31</td>
<td>Robert Clark</td>
<td>Biological Sciences</td>
<td>Synthesis And Application Of A Trifunctional Small-Molecule Probe To Study Time-Resolved Protein-Protein Interactions</td>
<td>Professor Lars Plate, Chemistry</td>
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<td>32</td>
<td>Sara Conley</td>
<td>Neuroscience; Psychology</td>
<td>Study Of Interactions Between Beta' COPI Propellers And Linear Hexa-Ubiquitinated Protein</td>
<td>Professor Todd Graham, Biological Sciences</td>
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<td>33</td>
<td>Matthew Conn</td>
<td>Electrical Engineering; Mathematics</td>
<td>Analysis of DNA Hotspots for de novo Telomere Addition in Yeast</td>
<td>Professor Katherine Friedman, Biological Sciences</td>
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<td>34</td>
<td>Oisharya Dasgupta</td>
<td>Neuroscience</td>
<td>Energy Availability Is Related To Capillary Supply Constraints, Not Neuronal Demand in the Rat Brain</td>
<td>Professor Suzana Herculano-Houzel, Psychology</td>
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<td>Ariacella DelGrande</td>
<td>Psychology; Child Development</td>
<td>Probing Further into Low SES and Early Word Learning: Parent Interaction</td>
<td>Professor Amy Booth, Psychology and Human Development</td>
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Mentor: Professor Ann Tate, Biological Sciences

38  Rasul Dent ’20  
Spanish; Portuguese  
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Mentor: Professor Emily Hencken Ritter, Political Science

39  Grace DePietro ’21  
Electrical Engineering  
Development Of A Low-Cost Amino Acid Sensing Device For Predicting Prediabetes In At-Risk Populations  
Mentor: Professor Christina Marasco, Biomedical Engineering

40  Kendall Derry ’20  
Biomedical Engineering  
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Mentor: Professor Karl Zelik, Mechanical Engineering

41  Alice Ding ’22  
Biomedical Engineering; Mechanical Engineering  
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Mentor: Professor Michael Miga, Biomedical Engineering

42  Andres Dones ’22  
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Mentor: Professor Tongyu Cao, Dermatology and Cutaneous Surgery

43  Seth Drey ’21  
Biochemistry; Spanish  
The Dual Pleckstrin Homology Domain Protein Opy1 Is Involved In Phosphoinositide Metabolism  
Mentor: Professor Kathleen Gould, Cell and Developmental Biology

44  Jennifer Du ’22  
Computer Science  
mGlu1 and M4 Receptor Activation Modulates Corticostriatal Signaling and Enhances Motor Learning  
Mentor: Professor Daniel Foster, Pharmacology

45  Edith Duncan ’21  
Medicine, Health, and Society  
Behavioral Effects of Novel M5 Muscarinic NAMs in Animal Models of Opioid Use Disorder  
Mentor: Professor Carrie Jones, Pharmacology

46  Wills Dunham ’20  
Medicine, Health, and Society  
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Mentor: Professor Miklos Kertai, Anesthesiology

47  Rachel Fan ’22  
Undeclared  
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Mentor: Professor Lauren Gaydosh, Medicine, Health, and Society

48  Ryan Fansler ’20  
Biochemistry; Chemical Biology  
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Mentor: Professor Lars Plate, Chemistry
49. Alexandra Feeley Lamb ’22  
   Electrical Engineering; Mathematics  
   A Noninvasive Method for Measuring Vitamin A  
   Mentor: Professor Christina Marasco, Biomedical Engineering

50. David Fei-Zhang ’20  
    Biological Sciences  
    BCAR3 Partners With EGFR Tyrosine Kinase To Promote Colorectal Cancer Cell Migration  
    Mentor: Dr. Christopher Williams, Gastroenterology

51. Jacob Fine ’21  
    Mechanical Engineering  
    Development of Nickel Hydroxide Based Linear Energy Harvesters  
    Mentor: Professor Cary Pint, Mechanical Engineering

52. Michael Finn-Henry ’22  
    Mechanical Engineering  
    Geriatric Jetpack: a Fall Prevention Project  
    Mentor: Professor Michael Goldfarb, Mechanical Engineering

53. Adrian Florea ’22  
    Mechanical Engineering; Communication of Science and Technology  
    Modular Design For Passive Solar Thermal Desalination  
    Mentor: Professor Lin Shihong, Civil and Environmental Engineering

54. Charlotte Foley ’21  
    Biochemistry; Chemical Biology  
    A Grooming Analysis Of SAPAP3 Knockout Mice  
    Mentor: Professor Daniel Foster, Pharmacology

55. Huizhi Fu ’20  
    Political Science  
    Ideological Hassling: Russian Foreign Influence Efforts in Europe  
    Mentor: Professor Peter Schram, Political Science

56. Richard Fu ’20  
    Neuroscience  
    Effects of Positive Allosteric Modulation of the M1 Muscarinic Acetylcholine Receptor on Brain Neurochemistry and Cognitive Function  
    Mentor: Professor Carrie Jones, Pharmacology

57. Robert Fuller ’21  
    Medicine, Health, and Society  
    The Role of Perceived Depression Etiologies in the Stigmatization Process  
    Mentor: Professor Bianca Manago, Sociology

58. Caroline Gaggini ’20  
    Secondary Education; History  
    Core Motivations: Comparing How Teachers Talk About Their Decisions To Stay Or Leave  
    Mentor: Professor Elizabeth Self, Teaching and Learning

59. Peter Gair ’20  
    Trumpet Performance  
    Investigation of Glaucoma Pathogenesis Using Animal Models  
    Mentor: Dr. Rachel Kuchtey, Opthamology and Visual Sciences

60. Lakshmi Suryateja Gangavarapu ’21  
    Economics; Neuroscience  
    The Spatial Orientation of Production, Consumption, and Trade of Key Commodities from 1913 to 1918  
    Mentor: Professor Mario Crucini, Economics
61 Kyle Gavulic ‘20  
Medicine, Health, and Society; French
Impacts of the Orlando Pulse Nightclub Shooting on Mental Health of Sexual Minority Populations  
Mentor: Professor Gilbert Gonzales, Medicine, Health, and Society

62 Nicole Gloudehans ‘22  
Mechanical Engineering
Multi-Camera Mount For Traffic Flow Analysis  
Mentor: Professor Daniel Work, Civil and Environmental Engineering

63 Addison Glover ‘20  
Medicine, Health, and Society
An Exploratory Analysis of the Associations Between Early Language Environment, Availability of Resources and Instability, and Infants’ Language Ability  
Mentor: Professor Kathryn Humphreys, Psychology and Human Development

64 Kiana Guerrazzi ‘20  
Molecular and Cellular Biology; Medicine, Health, and Society
Investigating WDR5-Interacting Proteins in Cancer  
Mentor: Professor William Tansey, Cell and Developmental Biology

65 Ryan Guillen ‘21  
Biochemistry
Determining Zinc Affinity for Calprotectin Mutants  
Mentor: Professor Walter Chazin, Chemistry

66 Shubham Gulati ‘22  
Biomedical Engineering
Optimizing a Dimethylacrylamide Copolymer for Bone Matrix Drug Delivery  
Mentor: Professor Craig Duvall, Biomedical Engineering

67 Kameron Hagerla ‘21  
Neuroscience
Influence of Media Composition on in vitro Blood-Brain Barrier Function and Metabolism  
Mentor: Professor Ethan Lippmann, Biomedical Engineering

68 Blake Hanan ‘21  
Biomedical Engineering
In Vitro Dissolution of Mastergraft Ceramic Granules: Pilot Study  
Mentor: Professor Ian Dunkley, Mechanical and Materials Engineering

69 Emma Hart ‘20  
Child Development; Public Policy Studies
Parents’ Adoption of Book Reading Tips for Child Executive Function Development  
Mentor: Professor Amy Booth, Psychology and Human Development

70 Lilly He ‘22  
Neuroscience
CD148 Q276P/R326Q Polymorphisms And Tumor Cell Growth  
Mentor: Professor Takamune Takahashi, Nephrology and Hypertension

71 Katelyn Henderson ‘20  
Biomedical Engineering
Development of Nonviral CRISPR Protein Delivery Method  
Mentor: Professor Craig Duvall, Biomedical Engineering

72 Ashley Hendricks ‘20  
Neuroscience
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Mentor: Professor Erin Calipari, Pharmacology
73 Dana Herman ‘22  
Chemical Engineering; Spanish  
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Mentor: Professor Marjan Rafat, Chemical and Biomolecular Engineering

74 Zhongtian Hu ‘20  
Mathematics; History  
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Mentor: Professor Douglas Hardin, Mathematics

75 Chengxin (Yuki) Hu ‘20  
Special Education; Cognitive Studies  
Intervention Fidelity, Student Behavior and Student Outcomes  
Mentor: Professor Christopher Lemons, Special Education

76 Yuki Hu ‘20  
Special Education; Cognitive Studies  
Evaluating Reading Intervention Delivered by Para-Educators  
Mentor: Professor Christopher Lemons, Special Education

77 Alyson Hughes ‘21  
Political Science  
Investigating Eclipsing Binaries in the Open Cluster Blanco 1  
Mentor: Professor Keivan Stassun, Physics and Astronomy

78 Elizabeth Huh ‘21  
Neuroscience  
The Effect of Finger Loop Mutations on Arrestin-1 Interactions with Rhodopsin  
Mentor: Professor Vsevolod Gurevich, Pharmacology

79 Jonathan Hung ‘21  
Chemical Engineering  
A Novel Pairwise Residue Constraints Protocol In ROSETTA Using Direct Coupling Analysis  
Mentor: Professor Jens Meiler, Chemistry

80 Yoanna Ivanova ‘21  
Biomedical Engineering  
Evaluating the Role of Irradiated Fibroblasts in Recurrent Triple Negative Breast Cancer  
Mentor: Professor Marjan Rafat, Chemical and Biomolecular Engineering

81 Grace Jennings ‘21  
Computer Engineering  
Decentralized Optimization of Vehicle Route Planning  
Mentor: Professor Janos Sztipanovits, Electrical Engineering

82 Brigitte Jia ‘22  
Neuroscience  
The Role Of Cardiac Natriuretic Peptide Receptors In Exercise-Mediated Skeletal Muscle Energy Expenditure  
Mentor: Professor Sheila Collins, Cardiovascular Medicine

83 Skylar Johnson ‘20  
Medicine, Health, and Society  
Choroid Plexus And Arterial Compliance Feedback: Glymphatic Flow Implications  
Mentor: Professor Manus Donahue, Neurology

84 Mohammad Kabir ‘20  
Electrical Engineering  
High-Speed Data Modulation Using Hybrid Silicon-Vanadium Dioxide Waveguide  
Mentor: Professor Sharon Weiss, Electrical Engineering
85 Emre Kanli ‘20
Electrical Engineering
Gallium Oxide (Ga2O3) Power MOSFETs as an Emerging Wide-Bandgap Semiconductor Device
Mentor: Professor Ronald Schrimpf, Electrical Engineering

86 Srivishnu Kasturi ‘21
Medicine, Health, and Society
Regulation of Wnt/β-catenin Signaling by Tankyrase and Naked2 in Colon Cancer Cells
Mentor: Professor Robert Coffee, Cell and Developmental Biology

87 John Kerr ‘20
Biomedical; Electrical Engineering
Adding A Toe Joint To A Passive Prosthesis: Biomechanical Implications In A Population Of Transtibial Lower Limb Prosthetic Device Users Across A Variety Of Loco-Motor Tasks
Mentor: Professor Karl Zelik, Mechanical Engineering

88 Uzair Khan ‘22
Medicine, Health and Society
Emotional Reactivity of the Autonomic Nervous System in Childhood Stuttering
Mentor: Professor Robin Jones, Hearing and Speech Sciences

89 Sonia Kim ‘21
Neuroscience
Neural Localization of Behavioral Sensitization
Mentor: Professor Eugenia Gurevich, Pharmacology

90 John Kim ‘20
Neuroscience
Car-Z, a Structural Analog of Highly Prescribed Antipsychotics, is a Potent Disruptor of Cholesterol Biosynthesis
Mentor: Professor Ned Porter, Chemistry

91 Catherine Kim ‘20
Mathematics; English
Twitter IRA Dataset: Russian Trolls according to Twitter
Mentor: Professor Jennifer Larson, Political Science

92 Hannah Knight ‘20
Chemical Engineering
Neuroinflammation and the Blood-Brain Barrier
Mentor: Professor Ethan Lippmann, Biomedical Engineering

93 Brian Koh ‘21
Medicine, Health and Society
Post Discharge T&A Pain Management
Mentor: Director Amber Greeno, Trauma

94 Anvitha Kosaraju ‘22
Computer Science
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Mentor: Professor Jason Valentine, Mechanical Engineering

95 Nikhil Kothari ‘20
Neuroscience; Cognitive Studies
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Mentor: Professor Bruce Carter, Biochemistry

96 Logan Kouba ‘20
Biological Sciences
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Mentor: Professor Lars Plate, Chemistry and Biological Sciences
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110  Ja Shen Lo ‘20  
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111  Allen Luna ‘20  
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112  Ted Maertens ‘20  
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113  Maya Martin-Gonzalez ‘20  
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Mentor: Professor Reyna Gordon, Otolaryngology

114  Emily Micciche ‘21  
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Mentor: Professor Uri Hasson, Neuroscience

115  Rachel Miles ‘20  
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Mentor: Professor Galya Orr, Biological Sciences

116  Asia Miller ‘22  
Biological Sciences; Molecular and Cellular Biology  
**Characterizing the Microbiome of Nasonia**  
Mentor: Professor Seth Bordenstein, Biological Sciences

117  Megan Mitchell ‘20  
Biological Sciences  
**Effect of Mode of Speciation on Passerellidae Song Divergence**  
Mentor: Professor Nicole Creanza, Biological Sciences

118  Sophia Moak ‘20  
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Mentor: Professor Emeline Pouyet, Scientific Studies in the Arts

119  Stephanie Molitor ‘21  
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Mentor: Professor Karl Zelik, Mechanical Engineering

120  Elsa Mueller ‘20  
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Mentor: Professor Jada Benn Torres, Anthropology
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<td>Dinh Chuong (Ben) Nguyen ’20</td>
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<td>Professor John Wilson, Chemical Engineering</td>
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<td>Ashley Nmoh ’20</td>
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<td>Cancer Management in Kenya- Awareness and the Struggles Patients Face to Access Treatment, Care &amp; Support</td>
<td>Professor Steve Wandiga, Epidemiology</td>
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<td>123</td>
<td>Cerie Ock ’20</td>
<td>Biomedical Engineering</td>
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<td>Professor Julie Rhoades (Sterling), Pharmacology</td>
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<td>124</td>
<td>Mateusz Odziomek ’22</td>
<td>Biomedical Engineering</td>
<td>STING Agonists as an Immunotherapy for Metastatic Bone Disease</td>
<td>Professor Julie Rhoades (Sterling), Pharmacology</td>
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135 Megan Phillips ‘20  
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138 Jonathan Powles ‘20  
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139 Juliana Qin ‘21  
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142 James Ro ‘21  
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