2019 Purdue Summer Undergraduate Research Symposium

July 25, 2019
PMU South Ballroom | 10AM-12PM
West Lafayette, Indiana
Summer Undergraduate Research Symposium
July 25, 2019 :: 10am-12pm
Poster Numbers by Program or Project’s College

College of Agriculture

1 Heterologous Expression of a Fungal Mevalonate Pathway in E. coli
Elizabeth Frazier
Mentors: Dr. Kevin Solomon & Ethan Hillman

2 Development of a Fluorescently Labelled Unwinding Assay for Dbp2
Woudasie Admasu
Mentors: Elizabeth Tran, Sara Cloutier, & Matthew Russon

3 Kinetic Evaluation of Five Metallo-Beta-Lactamases That Cause Antibiotic Drug Resistance
Jalyn Dickens
Mentors: Emma Lendy & Dr. Andrew Mesecar

4 Knockdown of SET2 Methyltransferase in Drosophila melanogaster
Arrianna Hagins
Mentors: Dr. Vikki Weake & Juan Pablo Jauregui

5 Identifying and characterizing gene promoters to drive heterologous expression in anaerobic fungi
Ja'Sean Holmes
Mentors: Dr. Kevin V. Solomon & Ethan T. Hillman

6 Determining the substrate specificity of Cdc14 in Tetrahymena thermophila
Michael Mensah-Mamfo, Angela Koeberlein, & Kedric Milholland
Mentors: Dr. Mark Hall, Kedric Milholland

7 Developing a new proteomic strategy for blood-based biomarker discovery in Alzheimer’s disease
Chris Pintro
Mentors: Andy Tao & Leo Kao

8 Purification and characterization of the WT and disease associated variants of DNMT3A PWWP domain
Michelle Ramirez
Mentors: Dr. Humaira Gowher & Allison Norvil

9 Determination of the midpoint potential of a regulatory luminal disulfide bond in Arabidopsis thaliana State Transition 7 kinase
Seth Weaver
Mentors: Sujith Puthiyaveetil & Iskander Ibrahim

Biochemistry REU

2 Development of a Fluorescently Labelled Unwinding Assay for Dbp2
Woudasie Admasu
Mentors: Elizabeth Tran, Sara Cloutier, & Matthew Russon

3 Kinetic Evaluation of Five Metallo-Beta-Lactamases That Cause Antibiotic Drug Resistance
Jalyn Dickens
Mentors: Emma Lendy & Dr. Andrew Mesecar

Digital Agriculture REEU

10 Applications of Digital Agriculture: Using Python to Predict Field Outcomes
Morgan Abraham & Katie Krick,
Mentor: Dr. Dennis Buckmaster

11 Are you in a food desert?
Tajah Billingsley
Mentors: Dr. Dharmendra Saraswat & Ben Hancock

12 Economic and Informational Barriers to Eating Healthy
Jaclyn Lee
Mentors: Dr. Dharmendra Saraswat & Ben Hancock

13 Combine and Cart Harvest Efficiency
Demetre Mitchell
Mentors: Dr. James Krogmeier & Yang Wang

14 Supply Chain of Rice in the U.S.
Eric Shim
Mentors: Dr. Dharmendra Saraswat & Ben Hancock

15 Understanding topography as a factor in yield variation
Jatavian Smith
Mentors: Dr. Dennis Buckmaster & Sam Noel

16 Invasive Insect Species, The Gypsy Moth
Bailey Walvoord
Mentors: Dr. Dharmendra Saraswat & Ben Hancock

College of Science

17 Sticky Materials from Walnut Juglone and Corn Zein Protein
Nicholas Branson
Mentor: Gudrun Schmidt
Analyzing Silicon Detectors for the High-Luminosity Upgrade of the Large Hadron Collider
Eshwar K Puvvada
Mentors: Andreas Jung & Souvik Das

Investigating FIC Proteins as Virulence Factors for the Gastric Pathogen, Helicobacter pylori
Alexandra Stiffler
Mentor: Seema Mattoo

Manufacturing and validation of carbon composite structures for CMS experiment at LHC
Jack Wheeler
Mentors: Sushrut Karmarkar, Dr. Andreas Jung, & Dr. Souvik Das

Chemistry Summer Research Fellowship

Characterization of Adhesives from Protein and Phenolics from Plants
Lawrence Xi-Bin Fung & Nicholas Branson
Mentor: Gudrun Schmidt

Templated Assembly of Ultra-narrow AuNWs on Noncovalently Functionalized HOPG and MoS2
Tianhong Ouyang
Mentors: Shelley A. Claridge & Erin Noel Lang

Identification of C=C Positional Lipid Isomers Using Two Different Photochemical Reactions
Sneha Swaroop
Mentors: Julia Laskin & Daisy Unsihuay

College of Health & Human Sciences

Characterizing the Broader Autism Phenotype in Early Childhood: Are children’s vocalizations distinguishable during play?
Emily Garza & Kelsie Thacker
Mentors: Dr. AJ Schwichtenberg & Ashleigh Kellerman

The Value of Mentors for Young Adults
Jayla Langford
Mentor: Dr. Sharon Christ

HHS Honors Scholars

Autonomous Motivation and Physical Activity for Older Adults
Margaret Becker
Mentors: Drs. Libby Richards & Melissa Franks

Maternal depression and parent-mediated interventions for children at-risk of developing ASD
Alexandria Bien
Mentors: Ashleigh Kellerman & Dr. AJ Schwichtenberg

Toxicity of lead and atrazine mixture using the larval zebrafish model system
Anusha Kotapalli, Janiel Ahkin Chin Tai, & Keturah Kiper
Mentor: Dr. Jennifer Freeman

Reproductive Health Decision-Making: Extending the Shared Decision-Making Model into the Community Space
Natalie Murdock
Mentors: Dr. Andrea DeMaria & Stephanie Meier

Comparison of Metastatic and Non-Metastatic Breast Cancer Cell Survival in Extracellular Matrix Detached Conditions
Kanika, Madeline Sheeley,
Mentor: Dorothy Teegarden

College of Liberal Arts

Live Organ Kidney Donation: Assessing Students’ Hesitations and Motivations to Inform Future Message Strategies
Natalie Moore
Mentor: Evan K. Perrault

Veterinary Research Scholars Summer Program

Novel in vitro injury model recapitulates TBI-linked increases of the clinical biomarker alpha-synuclein
Jeannine Diab, Edmond Rogers, Brock Beauclair, & Andrew Thyen
Mentors: Riyi Shi & Edmond Rogers

SEARCHING FOR A RESEARCH OPP? Attend the Research Roundtable on Sept. 17 in the Co-Rec!
Quantitative evaluation of the progression of lung cancer brain metastases using bioluminescence imaging
Alexandra Reddy
Mentors: L. Tiffany Lyle, Gozde Uzunalli, & Alexandra Dieterly

**Network for Computational Nanotechnology Undergraduate Research Experience**

Effect of Chemical Representations for Transfer Learning
Bryan Antonio Arciniega
Mentors: Dr. Brett M. Savoie & Nicolae Iovanac

Elastoplastic Response of Compacted Pharmaceutical Powder Blends: Model Development, Calibration, and Validation
Paul Beckwith
Mentors: Dr. Marcial Gonzalez & Pedro Cidreiro

Plasmonic Core-Multishell Nanowires for Optical Applications
Raheem Carless
Mentors: Dr. Chen Yang & Amartya Dutta

Hierarchical Structure Optimization using Neural Networks
Miguel Arcilla Cuaycong & Valeria Grillo
Mentors: Dr. Pablo Zavattieri & Kristiāan Hector

Machine Learning for Property Prediction and Materials Discovery
Mackinzie S Farnell
Mentors: Dr. Brett M. Savoie & Nicolae Iovanac

Food and Energy Farms Simulation Tool
Hans Torsina
Mentors: Dr. Peter Bermel & Allison Perna

Identifying Dimensionality of Periodic Crystals
Franco Vera
Mentors: Dr. Richard G. Hennig, Joshua Paul, & Dr. Nancy J. Ruzycki

Discovery Park Undergraduate Research Internship Program

Andrew Baldwin
Mentors: Daniel Leon-Salas & Jino Ramson

Directing Sunlight to Meet Local Food, Energy, and Water Needs
Daniela Cadena
Mentors: Peter Bermel & Elizabeth Grubbs

Algorithmically-Generated Communities: A Case Study
Michael A. Davidge, Jeongjin Park, & Gregory Sirko
Mentor: Austin L. Toombs

Ecological Flow Requirements for Aquatic Macroinvertebrates in the Arequipa Region, Peru
Paul Dawley
Mentors: Fariborz Daneshvar & Laura Bowling

Modeling Atmospheric Circulation Effects on Water Stable Isotopes in Arequipa Peru
Jonathan DeGraw
Mentors: Elizabeth Olson, Lisa Welp, & Greg Michalski

Data Driven Identification of Impact of Information on Health-Related Choices
Taher Dohadwala, Yufei Xu, & Katie Brinkers
Mentors: Munirul Haque & Mohammad Rahman

Mechanical Properties of Guest-Host Affinity Polymers for 3D Bioprinting
Eric Evory, Mazin Hakim, & Dr. Luis Solorio
Mentor: Mazin Hakim

Water Origins and Flow Path Analysis of Groundwater in the Colca Canyon, Southern Peru
Jack Fekete
Mentors: Drs. Lisa Welp, Marty Frisbee, & Elizabeth Olson

Investigating the Source of Groundwater Springs in Arequipa, Peru
Carol Salazar Mamani, Midhuar Arenas Carrion, & Wendy Roque Quispe
Mentors: Lisa Welp, Elizabeth Olson, Marty Frisbee, & Sebastian Zuniga
50 Landscape Vegetation-Cover Classification across the Arequipa Region, Peru 2005
Nicholas Hamp-Adams
Mentors: Zachary Brecheisen & Darrell Schulze

51 Effects of Urbanization on Soil and Water Health in Arequipa, Peru
Kayley Hodson
Mentors: Abigail Tomasek & Sara McMillan

52 Describing STEM Students' Patterns of Ethical Concern
Hunter Hollinger, Ilayda Karagol, Liyang Qu, & Min Gyeong Kang
Mentors: Dr. Colin M. Gray & Shruthi Chivukula

53 Developing User Interfaces for the Biowall
Rebecca Hutzel
Mentor: Mark Zimpfer

54 Progress Towards the Synthesis of Phosphatidyl Glycerol
Sooyeon Hyun
Mentors: Zachary J. Struzik & David H. Thompson

55 pXRF Analysis of Heavy Metals in Peruvian Vineyard Soils
Ally Jacoby
Mentors: Tim Filley & Erika Foster

56 Evaluation of an Improved Automated Controls System for Purdue’s Biowall
Walter Kruger
Mentor: William Hutzel

57 Carbon Accumulation in Vineyard Soils of the Peruvian Desert
Andrew Lawrence
Mentors: Tim Filley & Erika Foster

58 Plant Evaluation for a Botanical Air Filter
Danielle LeClerc
Mentor: William Hutzel

59 Solar Cell Performance on Multi-layer Thin Film by Using Stanford Stratified Structure Solver (S4) and GUI Development.
Changkyun Lee
Mentors: Peter Bermel & Ze Wang

60 Simplifying Geospatial Visualization and Analysis
Edwin Lu
Mentors: Carol Song & Lan Zhao

61 Predicting Solar Energy Generation Using Weather Forecasts to Limit Impact on the Power Grid
Tina Mo & Daniel Lee Young
Mentors: Lisa Bosman, Jason Ostanek, & Bill Hutzel

62 High Altitude Wind Energy Production over Complex Terrains
Abigail Moser, Kaitlin Kelsey, & Daniel Kwon
Mentors: Drs. Luciano Castillo & David M. Warsinger

63 Instrumentation of Streams to Evaluate Seasonality of Heavy Metal Concentrations in the Arequipa Region
Caelum Mroczek
Mentors: Chad Jafvert & Alexander Ccanccapa

64 Extensible Geospatial Data Framework towards FAIR (Findable, Accessible, Interoperable, Reusable) Science
Amrish Nayak
Mentor: Rajesh Kalyanam

65 Thermodynamics of Water in Our Solar System
Akshay Rao, Owen Li, & Abhimanyu Das
Mentor: David M. Warsinger

66 Construction Management Students' Choice of Major
Aayushi Sinha
Mentors: Anne Lucietto & Anthony E. Sparkling

67 Developing Containerized Applications for Cybersecurity Education
Noah Oller Smith & Takahide Iwai
Mentors: Rajesh Kalyanam & Baijian Yang

68 Characterization of Microbial Communities From Vineyards in Majes, Peru
Tess Snyder
Mentors: Lori Hoagland & Alejandro Rodriguez-Sanchez

69 Impact of Augmented Reality, Virtual Reality, and Artificial Intelligence Improving Skill Acquisition in Flight Training
Khari Stewart & Curtis Taylor
Mentor: Julius Keller
70 Establishement of a Crop Mapping Methodology Using Remote Sensing for the Arequipa Region
Alec Watkins
Mentors: Andre de Lima Moraes & Keith Cherkauer

71 Ionic Composition of Precipitation in the Southern Peruvian Andes
Brianna Westerberg
Mentors: Drs. Greg Michalski & Elizabeth Olson

72 Evaluation of Virtual Internships Integrated Into College Engineering Coursework
Daniel Young
Mentor: Lisa Bosman

College of Pharmacy

73 Spatiotemporal modulation of extracellular signal-regulated protein kinases 1 and 2 (ERK1/2) by opioid receptor signaling
Angel Lin and Arbaaz A. Mukadam
Mentors: Richard van Rijn & Mee Jung Ko

74 Pharmacological characterization of a potentially new class of delta-opioid receptor agonist
Hongyu Su
Mentors: Richard van Rijn & Robert Cassell

Interns for Indiana

75 Parent-mediated intervention for children developing at-risk for an ASD: Are the number of elevated-risk concerns indicative of greater ASD-risk?
Sabrina Hollis
Mentors: Dr. AJ Schwichtenberg & Ashleigh Kellerman

Purdue Summer Stay Program

76 Youth's Perceptions, Ideas, and Advice Regarding What Puts Peers At-Risk for Substance Use, How to Help Peers Avoid Substances, and Developing Prevention Activities
Jordan Harris & Ruby Reyes
Mentor: Dr. Yumary Ruiz

77 Indoor Environmental Quality from Arequipa, Peru
Mason A. Merkel
Mentor: Bill Hutzell

78 Youth’s Openness and Willingness to Participate in Anti-Drug Programming Offered Within a Summer Camp Context.
Nneka A. Ogbonnaya & Sophia M. Schadewald
Mentor: Dr. Yumary Ruiz

79 Biowall Airflow Seal Improvement and Aerodynamic Path Characterization
Austin Shores
Mentor: William Hutzel

Summer Undergraduate Research Fellowship Program

80 Impact of Residual Crystallinity on Dissolution Performance of Amorphous Solid Dispersions
Isaac Corum
Mentors: Dana Moseson & Lynne Taylor

81 Highly Flexible and Transparent Conductor for Solar Cells
Thao Nguyen
Mentors: Blake Finkenauer & Professor Letian Dou

Honors College

82 The Effect of Expanding City Boundaries on Rates of Lyme Disease in the United States
Daphne Fauber
Mentor: Dr. Hsin-Yi Weng

Purdue University Undergraduate Research Pitch Competition

September 24
7-9pm
WALC Hiler Theater
Want to compete? Submit your pitch by August 29!
Upcoming Events and Information:

**OUR Scholars Scholarship Application**
Next deadline is July 31.
Still accepting applications for some colleges. Check the OUR website.

**Undergraduate Research Pitch Competition**
Sept. 24 | 7-9pm | WALC Hiler Theater
Submit your pitch recording by 8/29.
1st-3rd places and an audience favorite win awards.

**Fall Undergraduate Research Expo**
Nov. 18 | 8:30am-4:30pm | Stewart Center & PMU Ballrooms
Oral presentations and a poster symposium

**Purdue Undergraduate Research Conference**
April 14 & 15 | 8:30am-4:30pm | Stewart Center & PMU Ballrooms
Judged oral presentations and poster symposium

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