THE OFFICE OF
BIOMEDICAL RESEARCH,
EDUCATION, AND TRAINING

2021

Vanderbilt University Summer Science Academy

Seventeenth Annual Research Symposium

Thursday, August 5

GATHER.TOWN

The Vanderbilt University Summer Science Academy is pleased to present the seventeenth annual Summer Research Symposium.

Vanderbilt University has a longstanding tradition of training undergraduates in the Biomedical Sciences through summer research programs. In 2003, the Office of Biomedical Research Education & Training established the Vanderbilt Summer Science Academy to bring together all undergraduates conducting biomedical research across the university. Currently, there are twenty research programs participating in the academy. Together we host approximately 100 students each summer from institutions across the country.

This symposium serves to showcase the accomplishments and skills that each student obtained while working on their own independent research projects during their 9 weeks at Vanderbilt. The students present their research results in poster format for faculty mentors, fellow students and staff.

Thank you for attending!

Event Schedule

10:00 AM -12:00 PM

MORNING POSTER SESSION

- BP-ENDURE (Pg 4)
- Chemical-Biology REU (Pg 4-5)
- Independent (Pg 6-8)
- LGBTQ Health (Pg 8)
- V-SURE (Pg 8-9)
- VDSRP (Pg 9)
- VU-EDGE (Pg 10)
- UCRIP (Pg 11)

12:00 PM - 1:00 PM

STUDENT RESEARCH TALKS

1:30 PM - 3:30 PM

AFTERNOON POSTER SESSION

- AHA SURE (Pg 12)
- MCB (Pg 12-13)
- MSTP (Pg 14)
- PAECER (Pg 15-16)
- VU MARC (Pg 16-17)
- Physics & Astronomy (Pg 18-19)

3:30 PM - 4:30 PM

STUDENT RESEARCH TALKS

4:30 PM - 5:00 PM

AWARD CEREMONY

Presentation Titles: Student Talks

12:00-1:00

Sim Plotkin (Vanderbilt MARC)
Vanderbilt University
"The Effects of Phox2b on Cell Specification in Enteric Nervous System Progenitors"
Michelle Southard-Smith, PhD
Department of Genetic Medicine

Jailyn Smith (MSTP)
North Carolina Central University
"PTHrP regulates breast tumor cell proliferation through cyclin-dependent kinase inhibitor localization"
Rachelle Johnson, Ph.D.
Department of Medicine. Division of Clinical Pharmacology

Nancy Kent Collie-Beard (BP-ENDURE)
Hunter College CUNY
"Risky decision-making in preschool age children with and without neonatal opioid exposure"
Kathryn Humphreys, Ph.D., Ed.M.
Department of Psychology and Human Development

Jonathan Israel Aguirre-Santiago (Chem-Bio)
University of Puerto Rico at Cayey
"Predicting Effects of Amino Acid Deletion on Protein Folding and Stability"
Jens Meiler, Ph.D.
Department of Chemistry

3:30-4:30

Emma Peacock (MCB)
Auburn University
"Structural Interactions of Helicase-like Transcription Factor during Replication Fork Remodeling"
Brandt Eichman, Ph.D.
Department of Biological Sciences

Natalie Wilson (V-SURE)
Sewanee: The University of the South
"Determining the molecular mechanisms of Nsp1 and NXF1-NXT1 through site-directed mutagenesis"
YiRen, Ph.D.
Department of Biochemistry

Anet Sanchez (PAECER)
Florida International University
"Validating the ability of novel KATP channel inhibitors to constrict the ductus arteriosus"
Elaine Shelton, Ph.D.
Department of Pediatrics

Abinav Sekhar (Independent)
Vanderbilt University
"Structure and mechanism of the first extracellular domain (ECD1) of the ABC transporter, ABCA7, implicated in Alzheimer's disease risk"
Jamaine Davis, Ph.D
Department of Structural Biology

Morning Presentations

BP-ENDURE

Nancy Kent Collie-Beard (oral presentation at 12:00-1:00)
Hunter College CUNY
"Risky decision-making in preschool age children with and without neonatal opioid exposure"
Kathryn Humphreys, Ph.D., Ed.M.
Department of Psychology and Human Development

Jennifer N Tepan (M2)
CUNY Hunter College
"The effect of Jedi-1, an engulfment receptor on oligodendrocyte lineage cell development and proliferation"
Bruce Carter, Ph.D.
Department of Biochemistry

CHEM-BIO

Jonathan Israel Aguirre-Santiago (M3)
University of Puerto Rico at Cayey
"Predicting Effects of Amino Acid Deletion on Protein Folding and Stability"
Jens Meiler, Ph.D.
Department of Chemistry

Elizabeth Paige Bond (M4)
East Tennessee State University
"Cloning and expressing homologous enzymes involved in the attachment of dichloroisoeverninic acid onto the antibiotic everninomicin scaffold"
Brian Bachmann, Ph.D.
Department of Chemistry

Jessica Gaetgens (M5)
Skidmore College
"Analyzing Aggregation Kinetics of Aβ42 and Acetylated Variants using Two-Dimensional Infrared Spectroscopy"
Lauren Buchanan, Ph.D.
Department of Chemistry

Emily Denise Gomez (M6)
John Brown University
"Investigating the unfolding of peptides and proteins by ion mobility-mass spectrometry"
John McLean, Ph.D
Department of Chemistry

Jared Juan Javier Mendiola (M7)
Colorado College
"Enantioenriched 7-Membered Lactones via BisAmidine Catalysis"
Jeffrey Johnston, Ph. D.
Department of Chemistry

Morning Presentations

CHEM-BIO (cont.)

Javier Ortiz Alvarado (M8)
Virginia Tech
“Synthesis and Biological Evaluations of Saponin S1”
Steven Townsend, Ph. D.
Department of Chemistry

Samantha Oviedo (M9)
The University of Texas at San Antonio
“The role of the 139-loop in arrestin-1 selectivity.”
Vsevolod Gurevich, Ph.D
Department of Pharmacology

Molly Erin Sullivan (M10)
Samford University
“Use of a Trifunctional Small-Molecule Probe to Study Time-Resolved Protein-Protein Interactions of Coronavirus Nsp2 Constructs”
Lars Plate, Ph.D.
Departments of Chemistry and Biological Sciences

Sarah Claire Swiderski (M11)
Emory University
“Evaluation of a Targeted Multiple Reaction Monitoring Lipidomics Approach to Assess Various Sphingolipid Species”
Renã Robinson, Ph.D.
Department of Chemistry

Amber Kiara Thomas (M12)
Volunteer State Community College
“Polar Substrates for Hydrocarbon Borylation”
Nathan Schley, Ph.D.
Department of Chemistry

Carson Lee Wessel (M13)
The University of Alabama
“Structure of 6-oxo-3-(2-deoxy-β-D-erythro-pentofuranosyl) pyrimido[1,2-α]purin-10(3H)-one in DNA”
Michael Stone, Ph.D
Department of Chemistry

Morning Presentations

Independent

Lucia Berkey (M14)
Rhodes College
"Effects of cell-free hemoglobin on mitochondrial function in human endothelial cells"
Lorraine Ware, M.D.
Department of Allergy, Pulmonary, and Critical Care Medicine

Claire E. Bunn (M15)
University of Georgia
"Developing a Translational In Vivo Mouse Model for Chronic Lung Injury in Preterm Infants"
Jennifer Sucre, M.D.
Department of Pediatrics

Ellen Colomb Cox (M16)
University School Nashville
"Acute Vitamin C Depletion and Sensorimotor Gating Disruption following Mild Traumatic Brain Injury"
Fiona Harrison, Ph.D.
Department of Medicine

Francesca R Dempsey (M17)
Belmont University
"Tfap2b Gene Expression in the Ductus Arteriosus During Development"
Elaine Shelton, Ph.D
Department of Neonatology

Claramence A. Dokyi (M18)
Vanderbilt University
"Proteomics to Understand Racial Disparities in Alzheimer's Disease"
Renã AS Robinson, Ph.D.
Department of Chemistry

Melissa Goldin (M19)
Vanderbilt University
"Determining the role of Cdc13 binding in promoting de novo telomere addition at double strand breaks in Saccharomyces cerevisiae."
Katherine Friedman, Ph.D
Department of Biological Sciences

Elma Jashim (M20)
Belmont University
"Ten eleven translocation 1 isoforms differentially regulate immune genes in neural cells."
Eric Gamazon, Ph.D
Department of Medicine

Sriya Jonnakuti (M21)
Vanderbilt University
"Defining the Role of TBET and EOMES in Tumor Specific T-Cell Dysfunction"
Mary Philip, M.D./Ph.D.
Department of Medicine

Morning Presentations

Independent (cont.)

Mason Alexander Lee (M22)
Duke University
"The role of fibroblast-secreted Wnt2 in mediating thyroid cancer malignancy"
Vivian Weiss, M.D., PhD
Department of Pathology, Microbiology, and Immunology

Samuel Liu (M23)
Vanderbilt University
"Quantifying TLR9 Expression in Direct and Indirect Lung Injury"
Lorraine Ware, M.D.
Department of Allergy, Pulmonary, and Critical Care Medicine

Samantha Mallahan (M24)
Vanderbilt University
"DEPDC5 effects on early neural development"
Kevin Ess, MD/PHD
Department of Pediatric Neurology

Allison Grace Pickens (M25)
Brigham Young University
"Characterization of N-Acyl-Phosphatidylethanolamine Hydrolyzing Phospholipase D in Cardiometabolic Disease"
Sean Davies, Ph.D
Department of Pharmacology

Michael Quan (M26)
University of Illinois at Chicago
"Computational Modeling of Cancer Cell Proliferation in Perturbed Microenvironments"
Vito Quaranta, MD.
Department of Biochemistry

Abinav Sekhar (M27)
Vanderbilt University
"Structure and mechanism of the first extracellular domain (ECD1) of the ABC transporter, ABCA7, implicated in Alzheimer's disease risk"
Jamaine Davis, Ph.D
Department of Structural Biology

Kathryn (Kate) Spears (M28)
Vanderbilt University
"Assessing Need for the Type 3 Serotonin Receptor in Maintenance of Bladder Innervation and Function"
Michelle Southard-Smith, Ph.D.
Departments of Medicine and Cell & Developmental Biology

Casey Van Kaer (M29)
Northeastern University
"TCF1 is a critical regulator of T cell proliferation and effector differentiation"
Mary Philip, MD., Ph.D.
Department of Medicine

Morning Presentations

Independent (cont.)

Gabriela Nguena Jones (M47)
Vanderbilt University
"Validating Apod as a marker for non-myelinating schwann cells"
Bruce Carter, PhD
Department of Biochemistry

Vy Le (M48)
Vanderbilt University
"Investigating the level of MBP and PMP22 in a rodent model of Charcot-Marie-Tooth disease."
Bruce Carter, PhD
Department of Biochemistry

LGBTQ Health

Julia Ashera Grey (M30)
Mount Holyoke College

Jacob Zimmerman (M31)
University of Kentucky
"Reducing dysphoria for trans patients with cervices through analysis of patient attitudes towards self-sampling cervical cancer screenings"
Renate Meier, WHNP-BC, MSN
Department of Obstetrics and Gynecology

V-SURE

Ian Michael Kusher (M32)
Sewanee: The University of the South
"Evaluating the Wound Healing Response to Radiotherapy in the Obese Microenvironment"
Marjan Rafat, Ph.D.
Department of Biomedical Engineering

Mason Douglas Lake (M33)
Sewanee: The University of the South
"The role of the IL4/IL4R in tumor metastasis."
Barbara Fingleton, Ph.D
Department of Pharmacology

Emily Perry (M34)
Sewanee: The University of the South
"Deterministic Barcoding In Cancerous and Healthy Human Colon Tissue"
Ken Lau, Ph.D
Department of Cell and Developmental Biology

Morning Presentations

V-SURE (cont)

Hayeon Ryou (M35)
Sewanee: The University of the South
“Exploring the mechanisms of mitochondrial DNA deletions persistence”
Maulik Patel, Ph. D.
Department of Biological Sciences

Tashinga Malvin Vhumisai (M36)
Sewanee: The University Of The South
“Wnt activity upon DYRK2 CRISPRi knockdown”
Ethan Lee, M.D.PhD
Department of Cell and Developmental Biology

Natalie Wilson (M37)
Sewanee: The University of the South
“Determining the molecular mechanisms of Nsp1 and NXF1-NXT1 through site-directed mutagenesis”
YiRen, Ph.D.
Department of Biochemistry

VDSRP

Taylor Anne Kappelman (M38)
Washington and Lee University
“Developing an Assay for the Identification of ZnT8 Inhibitors”
Richard O’Brien, Ph.D
Department of Diabetes

Angelica Maria Morales (M39)
Molloy College
“Effects of FOXM1 inhibition on Ptger3 expression in pancreatic β-cell proliferation”
Maureen Gannon, Ph.D
Department of Molecular Physiology and Biophysics Cell and Developmental Biology

Brooklynn Rose Murray (M40)
Michigan State University
“Understanding the role of glucagon receptors in islet development”
Wenbiao Chen, Ph.D.
Department of molecular physiology and biophysics

Morning Presentations

VU-EDGE

Xavier Alexander Bonilla Garcia (M41)
University of Puerto Rico Mayaguez
“Synthetic Studies Toward Derivatives of Butirosin A”
Steven Townsend, Ph.D.
Department of Chemistry

Mitchell Jackson (M42)
Xavier University of Louisiana
“An Examination of Changes in Visual Avoidance Following a Fear-Outcome Exposure Intervention”
Sarah Jessup, M.A.
Department of Psychology

Emma Catherine Keller (M43)
University of Virginia
“Race-related experiences of Black-White biracial adolescents: A sibling study on discrimination and parental socialization as functions of parental racial heritage”
Velma McBride Murry, Ph.D.
Department of Human and Organizational Development

Jordan Ellyet Miller (M45)
North Carolina Agricultural & Technical State University
“Growth of Asymptomatic and Cystitis Escherichia coli isolates in Various Carbon Sources”
Jonathon Schmitz, M.D, Ph.D
Department of Pathology, Microbiology & Immunology

Nainoa Daniel Norman Ing (M46)
Chaminade University
“Bioorganic Investigation of the Aminoglycoside Antibiotic Butirosin A”
Steven Townsend, Ph.D.
Department of Chemistry

Morning Presentations

UCRIP

Ben Blaylock, M49
Lipscomb University
"Exploring glucose metabolism in asthma development – a multi-disciplinary hypothesis generating approach"
Tina Hartlet, MD, MPH
Department of Medicine

Ragan Chaney, M50
Lipscomb University
“Contributions of Fatty Acids to Inflammasome Activation During Group B Streptococcus Infection at the Maternal-Fetal Interface”
David Aronoff, MD
Infectious Disease

Edward Garner, M51
Samford University
“Impact of adding eGFR PRS to prediction models of residual platinum levels in patients treated with cisplatin”
Nancy Cox, PhD
Department of Medicine, Division of Genetic Medicine

Saawan Patel, M52
Baylor University
“Downstream effects of YAP activation”
Jonathan Kropski, MD and Jason Gokey, PhD
Department of Medicine, Division of Allergy, Pulmonary, and Critical Care Medicine

Niyati Pathek, M53
Lipscomb University
"Communicating complex healthcare data related to covid and cancer"
Jeremy Warner M.D. M.S.
Department of Hematology & Oncology

Matthew Spangler, M54
University of Tayton
“Peritoneal Dialysis Catheter: The Patient Perspective”
Rachel Fissell, MD
Department of Nephrology

Tommi Ciera Taylor, M55
Lipscomb University
“Identifying autoantigen-binding B cells in people at risk for Type 1 Diabetes”
Rachel Bonami, PhD
Department of Medicine

Afternoon Presentations

AHA-SURE

C'Aira Lynae Dillard (A1)
Vanderbilt University
“Overexpression of Cacna1 gene associated with Dilated Cardiomyopathy”
Rolanda Lister, M.D
Department of Obstetrics & Gynecology

Alexandra Filipkowski (A2)
Fairfield University
“HIV infection and the risk of incident abdominal aortic aneurysms: results from the Veterans Aging Cohort Study”
Matthew Freiberg, MD, MSc
Department of Cardiovascular Medicine

Joshua Payton (A3)
Hampton University
“Availability of Diabetes Prevention Program Sites, 2016-2021”
Laura Keohane, Ph.D.
Department of Health Policy

Malik Robinson (A4)
University of Missouri
“Cardiovascular Effect of Rural Hospitals Closures in Missouri”
Carrie Fry, Ph.D.
Department of Health Policy

MCB

Vanessa Obehiaye Edokpa (A5)
Georgia State University
“Clinical Hypnosis and the mediating effects of self-efficacy on pain interference”
Lindsey McKernan, Ph.D.
Department of Psychiatry & Behavioral Sciences, Physical Medicine & Rehabilitation

Amanda S Kouaho (A6)
Vanderbilt University
“Developing a single cell analytical framework for glioblastoma cells against healthy brain models”
Jonathan Irish, Ph.D.
Department of Cell and Developmental Biology

Michael Holby Martland (A7)
University of Connecticut
“Analyzing changes in mTOR signaling during prenatal brain development in the mouse”
Rebecca Ihrie, Ph.D.
Department of Cell and Developmental Biology

Afternoon Presentations

MCB (cont)

Zenab Mchaourab (A8)
University of Georgia
"Molecular characterization of two novel sodium/iodide symporter (NIS) mutant proteins found in two different patients with congenital hypothyroidism"
Nancy Carrasco, M.D.
Department of Molecular Physiology and Biophysics

Emma Peacock (oral presentation at 3:30-4:30)
Auburn University
"Structural Interactions of Helicase-like Transcription Factor during Replication Fork Remodeling"
Brandt Eichman, Ph.D.
Department of Biological Sciences

Alejandra Rosario Crespo (A10)
University of Puerto Rico at Cayey
"Introducing inhibitors to primary glioblastoma tumor cultures to characterize and target aggressive cell subsets"
Jonathan Irish, Ph.D.
Department of Cell and Developmental Biology

Megan Kate Thibert (A11)
University of Tennessee, Knoxville
"Acute manganese overexposure accelerates Alzheimer's pathology and cognitive decline through impairment of glutamatergic homeostasis"
Fiona Harrison, Ph.D.
Department of Medicine

Emem Ukpong (A12)
Georgia State University
"Reducing Atherosclerosis in a Model of Menopause"
John Stafford, M.D, Ph.D
Department of Medicine. Division of Diabetes, Endocrinology and Metabolism

Stephany N. Webb (A13)
Grove City College
"Binding of accessory protein adrenodoxin to cytochrome P450 27C1, a retinoid desaturase"
Fred Guengerich, Ph.D.
Department of Biochemistry

Hayman Nejmeddin Yasin (A14)
Nashville State Community College
"Determining how arrestin can scaffold the p38 kinase"
Tina Iverson, Ph.D
Department of Pharmacology

Preston Curtis Hadley (A15)
University of Utah; David Eccles School of Business
"Sex differences in the effects of nicotine on novelty-induced locomotor activity"
Erin Calipari, Ph.D
Department of Pharmacology

Afternoon Presentations

MSTP

Mariah Christine Antopia (A16)
The University of Texas at San Antonio
"Community Detection in Single Cell Transcriptomes: Application to Human Hematopoiesis and Complex Diseases"
Eric Gamazon, Ph.D
Department of Medicine. Division of Genetic Medicine

Briah Barksdale (A17)
University of Maryland, Baltimore County
"Characterizing the Acid Resistance Mechanisms of Uropathogenic Escherichia coli"
Maria Hadjifrangiskou, Ph.D
Department of Pathology, Microbiology, and Immunology

Jacob Armand Brooks (A18)
Howard University
"Identifying the Gene Targets of Soft Tissue Sarcomas that Fuel Recurrence and Treatment Resistance"
Julie Rhoades, Ph.D.
Department of Medicine

Malik Khalil McRae (A19)
Morehouse College
"Irg1's influence on the bactericidal capacity of MPLA induced memory macrophages"
Edward Sherwood, M.D., Ph.D.
Department of Anesthesiology

Emily Miller (A20)
Furman University
"Effect of 2-phenylethanol in the Odor-Blocking of Stress on Seizure Activity in Rodent Model for Dravet Syndrome"
William Nobis, M.D., Ph.D.
Department of Neurology

Adrian Othon (A21)
Florida State University
"Selenoprotein Hide and Go Sec: Determining selenoprotein expression patterns in the gut"
Christopher Williams, M.D., Ph.D.
Department of Medicine

Jailyn Smith (A22)
North Carolina Central University
"PTHrP regulates breast tumor cell proliferation through cyclin-dependent kinase inhibitor localization"
Rachelle Johnson, Ph.D.
Department of Medicine. Division of Clinical Pharmacology

Afternoon Presentations

PAECER

Sydney Bell (A23)
Howard University
"Generation of Myofibroblast Specific Senescence Resistant Mouse Model"
Young-Jae Nam, M.D./Ph.D
Department of Medicine

Blair J Ellis (A24)
Vanderbilt University
"Sites of Action of GLP-1RAs to induce FGF21 circulation"
Julio Ayala, Ph.D.
Department of Molecular Physiology and Biophysics

Charis Elisabeth Haynes (A25)
Howard University
"Endothelial Cell Activation in Response to Oscillatory Stress"
David Harrison, M.D.
Department of Pharmacology

Jalil Mitchell (A26)
Vanderbilt University
"The Impact of GLP-1R PAMs on CREB and Nrf-2 Signaling"
Kevin Niswender, Ph.D./M.D.
Department of Medicine. Division of Diabetes, Endocrinology, and Metabolism

George Morcos (A27)
University of Pennsylvania
"Novel Echocardiographic techniques for analysis of experimental Myocardial Infarct in mice treated with Immune Checkpoint Inhibitor Therapy"
Javid Moslehi, M.D.
Department of Cardiology

Ereny Samuel Morcos (A28)
Bowdoin College
"Development of M5 NAMs for Treatment of OUD"
Dr. Carrie Jones, Ph.D
Department of Pharmacology

Philip Uchenna Okonkwo (A29)
University of South Florida
"Effects of Diabetes and Hypertension on Acute Kidney Injury in Mice"
Mark De Caestecker, MBBS, Ph.D
Department of Nephrology

Karrington DiMaya Powell (A30)
Tennessee State University
"COVID-19 and Cardiovascular Diseases"
Helen Talbot, M.D.
Department of Medicine. Division of Infectious Diseases

Afternoon Presentations

PAECER (cont)

Jillian Kara Riveros (A31)
Wheaton College
"Muscle Arteriole Relaxation Improves Exercise Capacity in Obese Mice"
David Wasserman, Ph.D.
Department of Molecular Physiology and Biophysics

Anet Sanchez (oral presentation at 3:30-4:30)
Florida International University
"Validating the ability of novel KATP channel inhibitors to constrict the ductus arteriosus"
Elaine Shelton, Ph.D.
Department of Pediatrics

Vanderbilt MARC

Anna Bright (A33)
Vanderbilt University
"Modeling morphological and energetic deficits resulting from dynamin-related 1 (DRP1) mutations using iPSC-derived midbrain dopaminergic neurons"
Vivian Gama, Ph.D.
Department of Cell and Developmental Biology

Lucy Sammis Britto (A34)
Vanderbilt University
"Irradiation Induces Upregulation of Autophagy in Fibroblasts"
Marjan Rafat, Ph.D
Department of Chemical and Biomolecular Engineering

Jayden Charlotte Capella (A35)
Vanderbilt University
"The effect of maternal breast milk on neonatal osteopontin levels"
Danyvid Olivares-Villagómez, Ph.D.
Department of Pathology, Microbiology, and Immunology

Hannah Craft (A36)
Vanderbilt University
"Synthesis of Analogues of Ent-Verticilide"
Jeffrey Johnston, Ph.D.
Department of Chemistry

Tristen Gittens (A37)
Vanderbilt University
"Identification of Hotspots for De Novo Telomere Addition in the Yeast Genome"
Katherine Friedman, Ph.D.
Department of Biological Sciences

Afternoon Presentations

Vanderbilt MARC (cont)

Chinyelu Irene Iwenofu (A38)
Vanderbilt University
"Hope for the Future Can Reduce Anxiety, Perfectionism, and Feelings of Imposter Syndrome"
Antonia Kaczkurkin, Ph.D
Department of Psychology

Cassidy A. Johnson (A39)
Vanderbilt University
"Elucidating genes involved in hoe-1-dependent UPRmt activation via a forward genetic approach"
Maulik Patel, Ph.D.
Department of Biological Sciences

Taylor P. McDonald (A40)
Vanderbilt University
"Extent of Lateral Ventricle Contact on Glioblastoma Tumour Malignancy"
Rebecca Ihrie, Ph.D.
Department of Cell and Developmental Biology

Elicia Chizaram Osigwe (A41)
Vanderbilt University
"Racial Differences in HD Progression and Disease Burden at Baseline"
Daniel Claassen, M.D, M.S.
Department of Neurology

Sim Plotkin (oral presentation at 12:00-1:00)
Vanderbilt University
"The Effects of Phox2b on Cell Specification in Enteric Nervous System Progenitors"
Michelle Southard-Smith, PhD
Department of Genetic Medicine

Anastasia Shostak (A43)
Vanderbilt University
"Studying the Normal Tissue Radiation Response Using Extracellular Matrix Hydrogels"
Marjan Rafat, Ph.D.,S.M.,S.B.
Department of Chemical and Biomolecular Engineering, Vanderbilt University

Bethanie Stauffer (A44)
Vanderbilt University
"Optimization of Proteomics Analysis of Cerebrospinal Fluid in Alzheimer's Disease"
Rena Robinson, Ph.D.
Department of Chemistry

Juliana Elizabeth Valenzuela (A45)
Vanderbilt University
"A Noncanonical Role of MCL-1 in Maintaining Cell Fate in Human Neural Progenitor Cells"
Vivian Gama, Ph.D
Department of Cell and Developmental Biology

Afternoon Presentations

Physics & Astronomy

Silas Bailey (A46)
Columbia University
“Thermochromic VO_2 Nanoparticles from Solid-State Dewetting VO_2 is subscript 2. If subscripts are not allowed in the poster title, then vanadium dioxide can be spelled out.”
Richard Haglund, Ph.D.
Department of Physics and Astronomy

Snehadri Das (A47)
Williams College
“In Search of the Sterile Neutrino: Corrections to Neutrino Oscillation Experimental Analyses”
David Ernst, Ph.D.
Department of Physics and Astronomy

Lila Nassar (A48)
Georgia Institute of Technology
“Cellular Responses to Patterned Laser Wounding”
Shane Hustson, Ph.D.
Department of Physics and Astronomy

Jonan-Rohi Plueger (A49)
Biola University
“Catalytic Properties, Permeability, and Selectivity of Silicon-Passivated Graphene Nanopores”
Sokrates Pantelides, Ph.D.
Department of Physics and Astronomy

Robert Pierrard (A50)
Georgia Institute of Technology
“Centrality bias study for charged-particle nuclear modification factor in pPb and PbPb Collisions using the ANGANTYR model at √SNN = 5.02 TeV”
Senta Victoria Greene, Ph.D.
Department of Physics and Astronomy

Joshua Queen (A51)
NC State University
“Harmonic Generation Using Coupled Nanoparticles in Thin Films”
Richard Haglund, Ph.D.
Department of Physics and Astronomy

Jason Rakowsky (A52)
Rochester Institute of Technology
“Using First Principles Theory for a More Accurate Model of Electronic Stopping Power”
Kalman Varga, Ph.D.
Department of Physics and Astronomy

Afternoon Presentations

Physics & Astronomy (cont)

Ana Sammel (A53)
Humboldt State University
“Testing Machine Learning Algorithms in Variable Star Classification”
Keivan Stassun, Ph.D.
Department of Physics and Astronomy

Matthew Velardi (A54)
Lycoming College
“Reanalyzing Neutrino Oscillation Experiments in Search of a Fourth Neutrino Flavor”
David Ernst, Ph.D.
Department of Physics and Astronomy

Student Index

Name-Poster-Page
Aguirre-Santiago, J-M3- 3&4
Antopia, M-A16- 14
Bailey, S-A46- 18
Barksdale, B-A17- 14
Bell, S-A23- 15
Berkey, L-M14- 6
Blaylock, B-M49- 11
Bond, E-M4- 4
Bonilla Garcia, X-M41- 10
Bright, A-A33- 16
Britto, L-A34- 16
Brooks, J-A18- 14
Bunn, C-M15- 6
Capella, J-A35- 16
Chaney, R-M50- 11
Collie-Beard, N-M1- 3&4
Cox, E-M16- 6
Craft, H-A36- 16
Das, S-A47- 18
Dempsey, F-M17- 6
Dillard, C-A1- 12
Dokyi, C-M18- 6
Edokpa, V-A5- 12
Ellis, B-A24- 15
Filipkowski, A-A2- 12
Gaetgens, J-M5- 4
Garner, E-M51- 11
Gittens, T-A37- 16
Goldin, M-M19- 6
Gomez, E-M6- 4
Grey, J-M30- 8
Hadley, P-A15- 13
Haynes, C-A25- 15
Iwenofu, C-A38- 17
Jackson, M-M42- 10
Jashim, E-M20- 6

Name-Poster-Page
Johnson, C-A39- 17
Jonnakuti, S-M21- 6
Kappelman, T-M38- 9
Keller, E-M43- 10
Kouaho, A-A6- 12
Kusher, I-M32- 8
Lake, M-M33- 8
Le, V-M48- 8
Lee, M-M22- 7
Liu, S-M23- 7
Mallahan, S-M24- 7
Martland, M-A7- 12
Mason-Hogans, A-M44- 10
McDonald, T-A40- 17
Mchaourab, Z-A8- 13
McRae, M-A19- 14
Mendiola, J-M7- 4
Miller, E-A20- 14
Miller, J-M45- 10
Mitchell, J-A26- 15
Morales, A-M39- 9
Morcos, E-A28- 15
Morcos, G-A27- 15
Murray, B-M40- 9
Nassar, L-A48- 18
Nguena Jones, G-M47- 8
Norman Ing, N-M46- 10
Okonkwo, P-A29- 15
Ortiz Alvarado, J-M8- 5
Osigwe, E-A41- 17
Othon, A-A21- 14
Oviedo, S-M9- 5
Patel, S-M52- 11
Pathak, N-M53- 11
Payton, J-A3- 12
Peacock, E-A9- 3&13
Perry, E-M34- 8

Name-Poster-Page
Pickens, A-M25- 7
Pierrard, R-A50- 18
Plotkin, S-A42- 3&17
Plueger, J-A49- 18
Powell, K-A30- 15
Quan, M-M26- 7
Queen, J-A51- 18
Rakowsky, J-A52- 18
Riveros, J-A31- 16
Robinson, M-A4- 12
Rosario Crespo, A-A10- 13
Ryou, H-M35- 9
Sammel, A-A53- 19
Sanchez, A-A32- 3&16
Sekhar, A-M27- 3&7
Shostak, A-A43- 17
Smith, J-A22- 3&14
Spangler, M-M54- 11
Spears, K-M28- 7
Stauffer, B-A44- 17
Sullivan, M-M10- 5
Swiderski, S-M11- 5
Taylor, T-M55- 11
Tepan, J-M2- 4
Thibert, M-A11- 13
Thomas, A-M12- 5
Ukpong, E-A12- 13
Valenzuela, J-A45- 17
Van Kaer, C-M29- 7
Velardi, M-A54- 19
Vhumisai, T-M36- 9
Webb, S-A13- 13
Wessel, C-M13- 5
Wilson, N-M37- 3&9
Yasin, H-A14- 13
Zimmerman, J-M31- 8

Biomedical Graduate Programs at Vanderbilt University

The **Interdisciplinary Graduate Program** (**IGP**) is a leading integrative biomedical graduate PhD program, designed to foster well-rounded science leaders. Since its inception in 1992, the IGP has provided comprehensive training for our students, bridging traditional biomedical fields. Our students learn how to be creative and analytical thinkers, geared to tackle the quickly evolving world of research and technology. As a union between 11 participating programs, the IGP provides a strong foundational jumping point for biomedical dissertation work.
medschool.vanderbilt.edu/igp/

The **Quantitative and Chemical Biology** (**QCB**) program is a PhD track, multidisciplinary program introducing elements of biology to students who wish to pursue a doctoral degree at the interface of the chemical, physical, and biological sciences. The curriculum prepares students for research careers in any area of biomedical research. Many students choose to work in interdisciplinary fields such as chemical biology, structural biology, imaging sciences, molecular and cellular biophysics, or systems biology. Previous didactic training in the biological sciences is not required for entry into the QCB.
medschool.vanderbilt.edu/qcb/

The **Chemistry** PhD program is a PhD track, highly competitive, ACS-accredited graduate program in a collegial atmosphere that nurtures individual goals, fosters innovation and collaboration, and opens doors to a wide variety of professional goals.
vanderbilt.edu/chemistry/grad-prospective.php

The **Medical Scientist Training Program** (**MSTP**) prepares students for faculty and research positions of leadership in the biomedical sciences. At the heart of our MSTP is the conviction that the approach to problem-solving characteristic of PhD training is the most effective pathway to educate first-rate medical scientists. Our program provides students with an integrated curriculum that features a strong core education in medicine and intensive training in scientific inquiry. Successful completion of the program leads to both the MD and PhD degrees.
medschool.vanderbilt.edu/mstp/

The Vanderbilt University School of Medicine Summer Science Academy Research Symposium is supported by the following funding support

- **Vanderbilt Office of Biomedical Research Education and Training**
- National Science Foundation:
  - REU in Chemical Biology
  - REU in Physics & Astronomy
- National Institute of Health:
  - NHLBI R25, Promoting Academic Excellence with Community Engagement and Reach Multicultural Scholars Program
- Vanderbilt:
  - The Vanderbilt Graduate School
  - Vanderbilt Diabetes Center
  - Vanderbilt Vaccine Center
  - Vanderbilt Medical Scientist Training Program
  - The Vanderbilt University Medical Center
  - VUMC Office for Diversity Affairs
  - Vanderbilt Initiative in Data-intensive Astrophysics
- American Heart Association Summer Undergraduate Research Experience
- BP-ENDURE Neuroscience; Hunter College, CUNY & New York University
- Sewanee: The University of the South

Kathy Gould, Ph.D.
Senior Associate Dean of Biomedical Research Education and Training

Beth Bowman, Ph.D.
Vanderbilt Summer Science Academy Director

Aaron Howard
Vanderbilt Summer Science Academy Program Coordinator

Vanderbilt Summer Science Academy
Office of Biomedical Research Education and Training
340 Light Hall
Nashville, TN 37232-0301

elizabeth.a.bowman@vanderbilt.edu

https://medschool.vanderbilt.edu/vssa/