Office of Biomedical Research Education and Training Presents:

Vanderbilt University Summer Science Academy Fifteenth Annual Research Symposium

Thursday August 3\textsuperscript{rd}, 2017

Schedule:
Poster Session One: 10:00 AM – 12:00 PM
Research Seminar: 12:00 PM – 1:00 PM
Poster Session Two: 1:30 PM – 3:30 PM
Student Research Talks: 3:30 PM – 4:30 PM
Award Ceremony: 4:30 PM – 5:00 PM

The Engineering and Science Building, Vanderbilt University
The Vanderbilt University Summer Science Academy is pleased to present the fifteenth 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!

**Schedule:**

**Poster Session One**
- Set up: 9:30 AM – 10:00 AM
- Presentation: 10:00 AM – 12:00 PM
- Take down: 12:00 PM – 1:15 PM

**Research Seminar & Lunch, 12:00 PM – 1:00 PM**
- Dr. Klarissa Jackson, Assistant Professor of Pharmaceutical Sciences, Lipscomb University

**Poster Session Two**
- Set up: 1:15 PM – 1:30 PM
- Presentation: 1:30 PM – 3:30 PM
- Take down: 3:30 PM – 5:00 PM

**Student Research Talks and Award Ceremony, 3:30 PM – 5:00 PM**
Poster Session One 10:00 AM – 12:00 PM:

• BP-ENDURE – Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (Pg 7)
• Chemical Biology Research Experience for Undergraduates (Pg 7-8)
• Vanderbilt Summer Diabetes Research Program (Pg 9)
• Leadership Alliance (Pg 9-10)
• MCB – Molecular and Cellular Biology Summer Program (Pg 11)
• MSTP SRP – Medical Scientist Training Program Summer Research Program (Pg 10)
• Physics Research Experience for Undergraduates (Pg 11-12)
• Physics Summer Research Interns (Pg 13)
• SERPENT – Summer Enrichment Research Program in Education and Neuroscience Training (Pg 13)
• U-CRIP – Vanderbilt Undergraduate Clinical Research Internship Program (Pg 14-15)
• V-SURE – Vanderbilt-Sewanee Undergraduate Research Experience (Pg 17)
• VMSRP – Vanderbilt Minority Summer Research Program (Pg 18-19)

Poster Session Two 1:30 PM – 3:30 PM

• Vascular Biology – Short Term Training Program for Minority Students (Pg 16-17)
• VI4 – Vanderbilt Institute of Infection, Immunology, and Inflammation (Pg 19)
• VICC-CURE – Vanderbilt-Ingram Cancer Center, Cancer Undergraduate Research Experience (Pg 20)
• VINSE – Vanderbilt Institute of Nanscale Science and Engineering (Pg 21-22)
• VPNGV – Vanderbilt Program in Next Generation Vaccines (Pg 22)
• VVC – Vanderbilt Vaccine Center (Pg 23)
• Independent Students (Pg 23-24)

Student Research Talks & Award Ceremony 3:30 PM – 5:00 PM:

• Pg 6

Student Poster and Presentation Index:

• Pg 25
Symposium Location:
The Engineering and Science Building

Engineering and Science

25th Ave Garage

Olin

University Club

VA Hospital

Eskind

LH

Hospital

MCN
Presentation

Titles
Student Oral Presentations

Student Speakers (3:30-4:30)

Christin Anthony, MCB
Clemson University
“Mcl-1 promotes pluripotency in human embryonic stem cells (hESCs) through modulation of mitochondrial dynamics”
Vivian Gama, Ph. D. Department of Cell and Developmental Biology

Jordan Galbraith, Vascular Biology STTP
Vanderbilt University
“Investigating the Metabotropic Glutamate Receptor 1 Subtype for Motivational Dysfunction in Schizophrenia”
Jeffrey Conn, Ph.D. Department of Pharmacology

Eli Solomon, UCRIP
Wesleyan University
David Charles, M.D. Department of Neurology

Erin Elizabeth Tamulonis, Independent
University of Mount Union
“KATP channels sense alterations in shear stress and regulate ductus arteriosus tone”
Elaine Shelton, Ph.D. Department of Pediatrics

Erin Elizabeth Uhelski, Chemical Biology REU
Michigan State University
“A Pipeline for Structural Characterization of Protein Targets from Staphylococcus aureus and Acinetobacter baumannii”
Eric Skaar, Ph.D. Department of Pathology, Microbiology and Immunology

Honorable Mention:
Katherine McDonald, Diabetes
Michael Scaglione, MCB
Sara Shaghaghi, Vascular Biology STTP

Award Presentations

Poster Presentation Awards (6)
Oral Presentation Awards (2)
Itzik Nahmoud (1-1)
Hunter College of the City University of New York
“Identification of Surrogate Markers for Malignant Cell Types in Anaplastic Astrocytomas”
Michael Cooper, M.D. Department of Neurology

Alec T Seidenberg (1-2)
Hunter College of the City University of New York
“Intrinsic BNST Function in Post-Traumatic Stress Disorder”
JU Blackford, Ph.D. Department of Psychiatry and Behavioral Sciences

Jordy Sepulveda (1-3)
Hunter College of the City University of New York
“BDNF down-regulation in Huntington’s Disease mouse model upon Manganese exposure.”
Aaron Bowman, Ph.D. Department of Neurology

Minu-Tshyeto Bidzimou (1-4)
Grinnell College
“Progress Towards the Total Synthesis of Chrysophaentin A”
Gary Sulikowski, Ph.D. Department of Chemistry

Lee Cantrell (1-5)
Whitworth University
“Determining the Absolute Configuration of Inuloxin A: A Chiroptical Study”
Prasad Polavarapu, Ph.D. Department of Chemistry

Amanda Lyn Cao (1-6)
California State Polytechnic University, Pomona
“Using 2D Infrared Spectroscopy to Visualize Amyloid-Crystalline Structure Reversibility in Cholecystokinin and Gastrin Fragments”
Lauren Buchanan, Ph.D. Department of Chemistry

Gabriel D'Agostino (1-7)
University of South Carolina
“An investigation of secondary metabolite production stimulus in Myxobacterium”
Brian Bachmann, Ph.D. Department of Chemistry
Poster Session One (10:00-12:00)

Lauren Harris (1-8)
University of Maryland, Baltimore County
“Internalization Dynamics of the Disease-Associated Dopamine Transporter A559V Variant”
Sandra Rosenthal, Ph.D. Department of Chemistry

Hyungyu Lee (1-9)
Bowdoin College
“Catalytic Asymmetric Carboxylic Acid Activation in the Enantioselective Iodolactonization of Symmetric Alkenes”
Jeffrey Johnston, Ph.D. Department of Chemical Biology

Emily Jeanne Lilla (1-10)
Michigan Technological University
“Development of a non-competitive antagonist for the Protease-Activated Receptor-4”
Craig Lindsley, Ph.D. Department of Pharmacology

Claire Mammoser (1-11)
Valparaiso University
“Concentration of Circulating Anodic Antigen for Low-Resource Diagnosis of Schistosomiasis”
David Wright, Ph.D. Department of Chemistry

Edgar Mariano Marroquin (1-12)
University of Texas, Austin
“Modeling the recognition and excision of the Aflatoxin-B1-FAPY-dG DNA adduct by mvNEI1”
Michael Stone, Ph.D. Department of Chemistry

Audrey Kathryn Thomas (1-13)
Kalamazoo College
“Streamlined structural pipeline for Clostridium difficile proteins differentially expressed in the absence of TcdA/TcdB toxins”
D. Borden Lacy, Ph.D. Department of Pathology, Microbiology and Immunology

Erin Elizabeth Uhelski (1-14)
Michigan State University
“A Pipeline for Structural Characterization of Protein Targets from Staphylococcus aureus and Acinetobacter baumannii”
Eric Skaar, Ph.D. Department of Pathology, Microbiology and Immunology
**Diabetes**

**Poster Session One (10:00-12:00)**

**Hanson Cowan (1-15)**
University of South Carolina
“The Effect of Diet on Levels of N-acylphosphatidylethanolamines (NAPeS) and N-acylethanolamides (NAeS)”
Sean Davies, Ph.D. Department of Clinical Pharmacology

**Chloe Elizabeth Ibsen (1-16)**
Vanderbilt University
“Investigating the role of TALK-1 in modulating ER stress and β-cell dysfunction”
David Jacobson, Ph.D. Department of Molecular Physiology and Biophysics

**Katherine McDonald (1-17)**
The University of Chicago
“Shep1/Oc1 Double Heterozygosity Affects Regulatory Transcription Factor Expression Important for β-cell Development”
Maureen Gannon, Ph.D. Department of Medicine

**Leadership Alliance & SPURT**

**Poster Session One (10:00-12:00)**

**Robinson A De Jesus-Romero (1-18)**
University of Puerto Rico, Rio Piedras campus
“Testing white matter integrity as a predictor of conversion from conduct disorder to antisocial personality disorder using DTI”
David Zald, Ph.D. Department of Psychological Sciences

**Carlos R Detres Roman (1-19)**
University of Puerto Rico, Aguadilla
“Defining amino acids required for oligomerization of Helicobacter pylori VacA toxin”
Timothy Cover, M.D. Department of Medicine

**Andy Jacques Dorfeuille (1-20)**
Morehouse College
“Investigating the effects of mutated radical holding residues on DNA charge transport”
Walter Chazin, Ph.D. Department of Biochemistry
Leadership Alliance & SPURT

Poster Session One (10:00-12:00)

Bretton P Nabit (1-21)  
Rider University  
“Evaluating the role of α2A-adrenergic receptors in neuronal activity changes following stress-induced reinstatement of cocaine-seeking behaviors”  
Danny Winder, Ph.D. Department of Molecular Physiology and Biophysics

Thomas Rechtman (1-22)  
University of Central Florida  
“Inverse Problems inGeomagnetism”  
Douglas Hardin, Ph.D. Department of Mathematics

Danielle Renea Rodriguez (1-23)  
Heritage University  
“Investigation into PPP1ca and Hdac2 activities in immediate early gene transcription”  
David Sweatt, Ph.D. Department of Pharmacology

Ja'kayla Mershae Sterling (1-24)  
Dillard University  
“What factors play an important role in determining whether someone is externally or internally focused”  
Daniel Levin, Ph.D. Department of Psychology

MSTP SRP

Poster Session One (10:00-12:00)

Jessica Adrianna Robinson (1-25)  
Norfolk State University  
“The Impact of Single Nucleotide Polymorphisms on Ecto-nucleotidase Activities”  
Richard Gumina, M.D., Ph.D. Department of Medicine

Ariella Saslafsky (1-26)  
University of Central Florida  
“Sympathetic Innervation of Pancreatic Islets in Individuals with Type 1 Diabetes (T1D)”  
Alvin Powers, M.D. Department of Medicine
Poster Session One (10:00-12:00)

**Christin Anthony (1-27)**
Clemson University
“Mcl-1 promotes pluripotency in human embryonic stem cells (hESCs) through modulation of mitochondrial dynamics”
Vivian Gama, Ph. D. Department of Cell and Developmental Biology

**Michael Scaglione (1-28)**
The University of Alabama
“Bruton's Tyrosine Kinase (BTK) Regulation of Autoantibody Production in Spontaneous Arthritis”
Peggy Kendall, M.D. Department of Medicine

**Philip Evan Stauffer (1-29)**
Virginia Tech
“Enzymatic Characterization of the Zika Virus RNA-Dependent RNA Polymerase, NS5”
Frederick Guengerich, Ph.D. Department of Biochemistry

**Hailey M Ung (1-30)**
Sewanee: The University of the South
“The Dynamic Relationship Between DNA Methylation and Chromatin Accessibility During Cell Differentiation”
Emily Hodges, Ph.D. Department of Biochemistry

Physics REU

Poster Session One (10:00-12:00)

**Haley Buckner (1-60)**
West Chester University of Pennsylvania
“The Coupling of Maxwell and Schrodinger Equations”
Kalman Varga, Ph.D. Department of Physics & Astronomy

**Tracy Edwards (1-61)**
Hampton University
“Deciphering the biochemical and biomechanical roles of the amnioserosa in morphogenesis during germband retraction.”
Shane Hutson, Ph.D. Department of Physics & Astronomy
Poster Session One (10:00-12:00)

Dale Julson (1-62)
Texas State University
“A Search for Dark Matter Through Vector Boson Fusion Topology”
Alfredo Gurrola, Ph.D. Department of Physics & Astronomy

Sam Llaneta (1-63)
Case Western Reserve University
“Dissecting the Angular Momentum of Dark Matter Halos”
Andreas Berlind, Ph.D. Department of Physics & Astronomy

Justin Malave (1-64)
Baldwin-Wallace University
“Hunting Further Neutrino Flavor Eigenstates”
David Ernst, Ph.D. Department of Physics & Astronomy

Cecelia McRoberts Legg (1-65)
Pacific Lutheran University
“Re-evaluation of Reactor Antineutrino Anomaly Results in Search of the Fourth Neutrino”
David Ernst, Ph.D. Department of Physics & Astronomy

Richard Nederlander (1-66)
Columbia University
“Radiation Characterization of Silicon Avalanche Photodiode”
Keivan Stassun, Ph.D. Department of Physics & Astronomy

Zameese Emil Peters (1-67)
Norfolk State University
“Is it possible to embed an Astronomy common sense into an Artificial Intelligence system in order to create meaningful scatterplots”
Keivan Stassun, Ph.D. Department of Physics & Astronomy

Joshua Robinson (1-68)
University of Michigan - Ann Arbor
“Zinc Oxide Nano-wire Lasing”
Richard Haglund, Ph.D. Department of Physics & Astronomy

John Thomas (1-69)
Fisk University
“Small Satellite Internal Communication Architecture for Positioning Systems”
Keivan Stassun, Ph.D. Department of Physics & Astronomy
Poster Session One (10:00-12:00)

Yuhan Guo (1-70)
Vanderbilt University
“Frozen Orbital Time-Dependent Density Functional Theory (TDDFT) for Current Calculations”
Kalman Varga, Ph.D. Department of Physics & Astronomy

Christian Ornelas (1-71)
University of Illinois - Champaign
“Transition Metal Impurities in PtSe2”
Sokrates T. Pantelides, Ph.D. Department of Physics & Astronomy

Michael Saavadra (1-72)
Case Western University
“Two-Photon Emission in Hybrid Metallic Nanoparticles”
Richard F. Haglund, Ph.D. Department of Physics & Astronomy

Tyler Summers (1-73)
Pennsylvania State at Behrend
“Properties of Oxygen and Hydrogen in Porous Amorphous SiC”
Sokrates T. Pantelides, Ph.D. Department of Physics & Astronomy

Xiaojia (XJ) Xu (1-74)
Vanderbilt University
“Simulation of Laser-Induced Rectification in a Nanoscale Vacuum-tube Diode”
Kalman Varga, Ph.D. Department of Physics & Astronomy

Poster Session One (10:00-12:00)

Trevor William Simon (1-31)
Vanderbilt University
“Neuronal Cultures with Parvalbumin (PV)-dependent Expression of the tdTomato Fluorescent Protein as a Model System to Study Injury to PV Fast-Spiking GABAergic Interneurons”
Antonia Bruce (1-32)
North Carolina A&T
“Zebrafish Screening”
Charles Hong, M.D., Ph.D. Department of Cell and Developmental Biology

Ruth Dunn (1-33)
Louisiana State University
“Comparison of Human Metapneumovirus Viral Loads in Children Seen in Emergency Department to Those Hospitalized”
Natasha Halasa, M.D., M.P.H. Department of Pediatric Infectious Disease

Zoe R Finer (1-34)
University of Michigan
“Transgenerational Cardiac Defects from Maternal Dioxin Exposure”
Rolanda Lister, M.D. Department of Obstetrics and Gynecology

Sarah Nicole Grossarth (1-35)
Tennessee Technological University
“Apples and oranges: Differential transcriptomic and protein response between cord and peripheral blood in neonates”
Hendrik Weitkamp, M.D. Department of Pediatrics

Allison Mae Harper (1-36)
Berea College
“Collection of Additional Variables which Contribute with Hospitalized Influenza Severity Score Construction among Patients 2016-2017”
Helen Keipp, M.D., M.P.H. Department of Epidemiology

Reginald Demarcus Jackson (1-37)
Fisk University
“How have Hospital Closures in Tennessee Affected Communities?”
Sayeh Nikpay, Ph.D. Department of Health Policy

LeAnn Lam (1-38)
University of Utah
“A Randomized Controlled Trial to Reduce Excess Opioids After Cesarean Delivery”
Sarah Osmundson, M.D., M.S. Department of Obstetrics & Gynecology
Poster Session One (10:00-12:00)

**Dominique Alyssa Mosley (1-39)**
Spelman College
“The Association of Meat Intake, Meat Cooking Methods, and Meat-Derived Mutagen Exposure with the Risk of Colorectal Polyps Including Sessile Serrated Adenomas”
Martha Shrubsole, Ph.D. Department of Epidemiology

**Jackson Pearce (1-40)**
Furman University
“Retinoic acid metabolism blocking agents (RAMBAs) enhance repair after acute kidney injury (AKI)”
Mark de Caestecker, M.B., B.S., Ph.D. Department of Medicine

**Cody Ryan Sain (1-41)**
University of Tennessee - Knoxville
“Improving Compliance with Lung Protective Ventilation: Modification of Default Ventilator Settings is More Effective than Clinical Decision Support”
Jonathan Wanderer, M.D., M.Phil. Department of Anesthesiology

**Eli Solomon (1-42)**
Wesleyan University
David Charles, M.D. Department of Neurology

**Matthew Young (1-43)**
Morehouse College
“Assessing Mortality and Retention in Loss to Follow Up HIV Patients through Mortality Data Validation Protocol”
Timothy Sterling, M.D. Department of Infectious Diseases

**Marah Zeidan (1-44)**
Berea College
“Improving Long-Term Outcomes in Retinoblastoma Survivors”
Debra Friedman, M.D., M.S. Department of Pediatrics

**Ryan Gerard Zinone (1-45)**
University of Notre Dame
“Cancer Disparities among Lesbian, Gay, and Bisexual Adults: An Analysis of the 2013-2015 National Health Interview Surveys”
Gilbert Gonzales, Ph.D. Department of Health Policy
Poster Session Two (1:30-3:30)

**Meagan Branch (2-1)**
Elon University
“The role of discoidin domain receptor tyrosine kinase 1 in the process of fibrosis”
Ambra Pozzi, Ph.D. Department of Medicine

**Grady Clopton (2-2)**
Tennessee State University
“Development of chemotype-phenotype database in zebrafish”
Chaz Hong, M.D., Ph.D. Department of Medicine

**Jordan Galbraith (2-3)**
Vanderbilt University
“Investigating the Metabotropic Glutamate Receptor 1 Subtype for Motivational Dysfunction in Schizophrenia”
Jeffrey Conn, Ph.D. Department of Pharmacology

**Micah Harris (2-4)**
Wright State University
“Bedside Monitoring: Technical instability impacting patient safety”
Lisa Weavind, M.D. and Robert Freundlich, M.D. Department of Anesthesiology

**Jaelynn Alexis Lawrence (2-5)**
University of Alabama, Birmingham
“Investigating the Mechanisms of Gli2 Regulation of Parathyroid Hormone Related Protein Expression and Bone Destruction in Tumor-Induced Bone Disease”
Julie Sterling, Ph.D. Department of Clinical Pharmacology

**Sarah Nicole Magee (2-6)**
The Pennsylvania State University
“Hepatic Ferroportin Expression Altered by HD and Mn Exposure”
Aaron Bowman, Ph.D. Department of Pediatrics

**Adrienne Montero (2-7)**
University of North Carolina, Charlotte
“Caffeine-associated Reduction in Patent Ductus Arteriosus (PDA) is Mediated by Adenosine Receptor Antagonism”
Jeff Reese, M.D. Department of Neonatology

**Nicky Quinones (2-8)**
East Carolina University
“Physical Activity and its Association with Cognition in Older Adults: The Vanderbilt Memory & Aging Project”
Angela Jefferson, Ph.D. Department of Neurology
Vascular Biology

Poster Session Two (1:30-3:30)

Sara Shaghaghi (2-9)
University of Dayton
“Towards a 100-Fold more sensitive TB diagnostic based on the coffee ring phenomena”
Frederick Haselton, Ph.D. Department of Biomedical Engineering

CheyAnne Quinn Youngblood (2-10)
Northeastern State University
“Sugars of the Glycosylation Salvage Pathway Control Wnt in the Early Embryo”
Ethan Lee, M.D., Ph.D. Department of Cell and Developmental Biology

V-SURE

Poster Session One (10:00-12:00)

Trey Claus (1-46)
Sewanee: The University of the South
“Induction of Cancer Cell Death via the Inhibition of Amino Acid Uptake”
Charles Manning, Ph.D. Department of Radiology and Radiological Sciences

Elizabeth Ashby Gill (1-47)
Sewanee: The University of the South
“Identifying decidual cell-derived heat resistant factor(s) that limit macrophage tumor necrosis factor-α production in response to lipopolysaccharide challenge”
David Aronoff, M.D. Department of Medicine

Sean Halloran (1-48)
Sewanee: University of the South
“The Importance of Conformational Mobility to the Post-Attachment Functions of Reovirus σ1 Attachment Protein”
Kristen Ogden, Ph.D. Department of Pediatrics

Jacqueline Marie Spangenberg (1-49)
Sewanee: The University of the South
“Investigating the Role of MYBPC3 in Murine Cardiomyocyte Growth”
Jason Becker, M.D. Department of Cardiovascular Medicine
Poster Session One (10:00-12:00)

Mary Chalkley (1-50)
Barnard College of Columbia University in the City of New York
“Determining the role of Cullin9 in neuronal differentiation of human pluripotent stem cells (hPSCs)”
Vivian Gama, Ph.D. Department of Cell and Developmental Biology

Carlos Cosme Jr. (1-51)
Amherst College
“The Role of RAD51 in de novo Telomere Addition”
Katherine Friedman, Ph.D. Department of Cell and Developmental Biology

Elizabeth Fashakin (1-52)
Vanderbilt University
“Anterior-Posterior Analysis of Neuronal Distribution Across the Left and Right Hemispheres of New World Monkeys”
Jon Kaas, Ph.D. Department of Psychology

John-Anthony Fraga (1-53)
Yale University
“Isolation and characterization of human monoclonal antibodies for novel anti-viral treatments of Ross River and rabies viruses”
James Crowe, M.D. Department of Pediatrics

Rachel Alicia Francis (1-54)
Sewanee: The University of the South
“Mechanisms of Retinal Regeneration in Zebrafish”
James Patton, Ph.D. Department of Biological Sciences

Alexis L Gutierrez (1-55)
Vanderbilt University
“KRAS-dependent sorting of long RNAs into exosomes”
James Patton, Ph.D. Department of Biological Sciences

Andrew Ryan Kittleson (1-56)
Northwestern University
“Circadian A-to-I RNA editing in the central nervous system”
Ronald Emeson, Ph.D. Department of Pharmacology

Amanda Nicole Mitchell (1-57)
Columbia University in the City of New York
“Identifying Molecular Targets of UNC-4 That Maintain Synaptic Specificity in the C. elegans Motor Neuron Circuit”
David M. Miller, III, Ph.D. Department of Cell and Developmental Biology
**Poster Session One (10:00-12:00)**

**Maureen Nwizu (1-58)**
Vanderbilt University
“On the evolutionary origins of CD1d and semi-invariant natural killer T cells”
Sebastian Joyce, Ph.D. Department of Pathology, Microbiology and Immunology

**Luwi Shamambo (1-59)**
Vanderbilt University
“Using protein purification to isolate constructs of the Glo3 protein”
Lauren Jackson, Ph.D. Department of Biological Sciences

**Poster Session Two (1:30-3:30)**

**Tomas Bermudez (2-11)**
Sewanee: The University of the South
“Utilizations of Uropathogenic E. coli Transposon Library to Identify Oxygen-Dependent Biofilm Regulators”
Maria Hadjifrangiskou, Ph.D. Department of Pathology, Microbiology & Immunology

**Austin Southard-Smith (2-12)**
University of North Carolina, Chapel Hill
“Characterizing cooperative bacterial species associated with Corynebacterium bovis infection induced hyperkeratosis in mice.”
Kelli Boyd, DVM, Ph.D. Department of Pathology, Microbiology, and Immunology

**Claire Julia Weinstein (2-13)**
Vanderbilt University
“The characterization Acinetobacter baumannii sensitivity to novel bacteriophages”
Eric Skaar, Ph.D., MPH. Department of Pathology, Microbiology, and Immunology

**Ashley Yao (2-14)**
Vanderbilt University
“Epitope Stability in Unstained Slides for Immunohistochemistry”
Kelli Boyd, DVM, Ph.D. Department of Pathology, Microbiology, and Immunology
Poster Session Two (1:30-3:30)

Luul Abdinasir Aden (2-15)
Lipscomb University
“Characterization of Novel Protein Rid1”
Kathy Gould, Ph.D. Department of Cell and Developmental Biology

Kasey Alexandria Coleman (2-16)
Michigan State University
“Exploring the Effect of Loading on Immunostimulatory Potency in 2’3’-cGAMP Nanoparticulate Formulations”
John Wilson, Ph.D. Department of Chemical and Biomolecular Engineering

Kniya DeDe (2-17)
Dartmouth College
“Development of a Potent Antioxidant Delivery Polymer to Target Drug Delivery Sites”
Craig Duvall, Ph.D. Department of Bioengineering

Andrea Alejandra Mancheno Lopez (2-18)
University of Tennessee, Knoxville
“Fluid shear stress induces vacuole formation through the autophagic pathway”
Ken Lau, Ph.D. Department of Cell and Developmental Biology

Anthony Rios (2-19)
Vanderbilt University
“Cell Line Proliferation Patterns of Glioblastoma p53 Controls—Human Non-Small Lung Carcinoma Cell Line (H1299) and Human Osteosarcoma Cell Line (U2OS)—Determined using Doubling Time”
Rebecca Ihrie, Ph.D. Department of Cancer Biology

Deion Thomas Sims (2-20)
Lipscomb University
“Analysis of nanobodies reactive with Helicobacter pylori VacA toxin”
Timothy Cover, M.D. Department of Medicine
Poster Session Two (1:30-3:30)

Bridget Anger (2-39)
University of Maryland, Baltimore County
“Efficient Excited Charge Separation in Composite Photosystem I/PEDOT Photocathodes Prepared by Vapor Phase Polymerization”
Kane Jennings, Ph.D. Department of Chemical & Biomolecular Engineering

Mariah Arral (2-40)
University of New Hampshire, Durham
“Characterization of S. Aureus Growth and Tolerance Development in 2D and 3D in vitro Models”
Scott Guelcher, Ph.D. Department of Chemical & Biomolecular Engineering

Timothy Bernard (2-41)
University of Maryland, Baltimore County
"Retrofitting a Commercial 3D Printer for Bio Printing Capabilities"
Leon Bellan, Ph.D. Department of Mechanical Engineering

Michael Davies (2-42)
Fisk University
"Defect Detection in 3D Printed Parts Using the Optical Properties of Gold Nanoparticles"
Douglas Adams, Ph.D. Department of Civil & Environmental Engineering

Jenna Dombroski (2-43)
SUNY College at Buffalo
"Quantum Dot Enabled Activity Tracking of Synaptic Vesicle Protein Synaptotagmin-1”
Qi Zhang, Ph.D. Department of Pharmacology

Jennifer Donohue (2-44)
SUNY Binghamton University
"Nanoscale Prussian Blue and Na3V2(PO4)3 cathodes for high voltage sodium batteries”
Cary Pint, Ph.D. Department of Mechanical Engineering

Crystal Nattoo (2-45)
University of Miami
“Porous Silicon on Paper For Low-Cost Diagnostics”
Sharon Weiss, Ph.D. Department of Electrical Engineering & Computer Science

Alexandra Quinones Melendez (2-46)
University of Puerto Rico, Mayaguez
"Oriented Interface of PSI and PSII for Solar Driven Hydrogen Evolution"
David Cliffel, Ph.D. Department of Chemistry & Kane Jennings, Ph.D. Department of Chemical & Biomolecular Engineering
Poster Session Two (1:30-3:30)

Sarah Ruiz (2-47)
Vanderbilt University
“Graphene Processing for Tunable Metasurfaces”
Jason Valentine, Ph.D. Department of Mechanical Engineering

Mitchell Stokan (2-48)
University of Kentucky
“Screening of Novel Hydrophobically Modified Triblock Copolymers for Improved Stabilization of siRNA Polypelexes”
Craig Duvall, Ph.D. Department of Biomedical Engineering

Donna Xia (2-49)
University of Alabama, Tuscaloosa
“Self-Assembly of Stratum Corneum Lipid Bilayers Via Coarse-Grained Simulations”
Clare McCabe, Ph.D. Department of Chemical & Biomolecular Engineering

Sarah Ruiz (2-47)
Vanderbilt University
“Graphene Processing for Tunable Metasurfaces”
Jason Valentine, Ph.D. Department of Mechanical Engineering

Mitchell Stokan (2-48)
University of Kentucky
“Screening of Novel Hydrophobically Modified Triblock Copolymers for Improved Stabilization of siRNA Polypelexes”
Craig Duvall, Ph.D. Department of Biomedical Engineering

Donna Xia (2-49)
University of Alabama, Tuscaloosa
“Self-Assembly of Stratum Corneum Lipid Bilayers Via Coarse-Grained Simulations”
Clare McCabe, Ph.D. Department of Chemical & Biomolecular Engineering

Patie Fann, Justin Lynch, Alexander Nanor, Danielle Richardson, and Samantha Kaczaral (2-50)
Vanderbilt University
“The Exploration and Augmentation of Cleanroom Processes”
Alice Leach, Ph.D. Department of Materials Science
Kurt Heinrich, Cleanroom Manager, Vanderbilt Institute of Nanoscale Science and Engineering

Poster Session Two (1:30-3:30)

Yongseok Cho (2-21)
Vanderbilt University
“Enhancing the Zn-Sequestering Ability of Calprotectin by Engineered Mutation”
Walter Chazin, Ph.D. Department of Biochemistry

Peter Cirrincione (2-22)
Vanderbilt University
“Discovering the Active Site on Aquaporin 0 for Calmodulin”
Kevin Schey, Ph.D. Department of Biochemistry

Haochen (Emily) Xu (2-23)
Vanderbilt University
“Modeling the Y5 Receptor and its Interactions with Neuropeptide Y”
Jens Meiler, Ph.D. Department of Chemistry
Poster Session Two (1:30-3:30)

**Sarah Cook (2-24)**
Carnegie Mellon University
“Identification and isolation of measles virus-specific neutralizing human monoclonal antibodies”
James E. Crowe, Jr., M.D. Departments of Pediatrics

**Clinton Holt (2-25)**
Vanderbilt University
“Prediction of HIV Specificity from B-Cell Receptor Next-Generation Sequencing Data”
Ivelin Georgiev, Ph.D. Department of Pathology, Microbiology, and Immunology

**Jeremy Mark Mani (2-26)**
Vanderbilt University
“Utilizing UTILITIES: An in-depth efficiency analysis of clinical laboratory information management systems”
James E. Crowe, Jr., M.D. Departments of Pediatrics

Independent

Poster Session Two (1:30-3:30)

**Phoebe Ahn (2-27)**
Vanderbilt University
“Development of Fluorescence-Based Assays for Screening of NR5A2 Drug Candidates”
Raymond Blind, Ph.D. Department of Medicine

**Mary Catherine Barber (2-28)**
Belmont University
“From Bench to Bedside: Modeling Cancer Therapy-Induced Cardiotoxicity in Human Cardiomyocytes”
Javid Moslehi, M.D. Department of Medicine

**Hannah Payton Cutshall (2-29)**
Vanderbilt University
“Cell Lineage Tracing Neurotransmitter Inhibited Retina Regeneration”
James Patton, Ph. D. Department of Biological Sciences

**Sara Elizabeth Howard (2-30)**
Vanderbilt University
“Site-specific interactions between PCAT1 and its substrate”
Hassane Mchaourab, Ph.D. Department of Molecular Physiology and Biophysics
Independent

Poster Session Two (1:30-3:30)

**Ilyana Ilieva (2-31)**
Belmont University
“Elucidating the Role of Dysregulated Manganese Homeostasis in DNA Damage Response Signaling in Huntington’s Disease”
Dr. Aaron Bowman, Ph.D. Department of Pediatric Neurology

**Spencer Lea (2-33)**
Vanderbilt University
“Exploration of Gain-Of-Function p53 Protein Mutations in Triple Negative Breast Cancer”
Jennifer Pietenpol, Ph.D. Department of Biochemistry

**Joshua Lin (2-52)**
Vanderbilt University
“Interaction of Gle1 with Nucleolin in the Processing of AU-rich mRNAs”
Susan Wente, Ph.D. Department of Cell and Developmental Biology

**Sameeksha Malhotra (2-53)**
Vanderbilt University
“Effect of SH-SY5Y cell differentiation on the rate of nucleocytoplasmic protein transport”
Susan Wente, Ph.D. Department of Cell and Developmental Biology

**Daniel Eric Press (2-34)**
Vanderbilt University
“IPMK regulates NR5A2 transcriptional activity in living HEK cells”
Raymond Blind, Ph.D. Departments of Medicine

**Hitesh Vaishnav (2-37)**
Tennessee State University
“Metastatic Prostate Tumors in Bone”
Julie Sterling, Ph.D. Department of Pharmacology

**Byron Young II (2-38)**
Tennessee State University
“Functions of MYC and WDR5 in Cancer”
William Tansey, Ph.D. Department of Cell and Developmental Biology

**Yilun Zhao (2-51)**
Vanderbilt University
“Synthesis of Wurtzite CuFeS₂ Nanoparticles through Cation Exchange from Cu₂₋ₓS Nanocrystals”
Janet Macdonald, Ph.D. Department of Chemistry
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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.

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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.

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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.

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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.

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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**
- **Vanderbilt Chapter of the American Association of Pharmaceutical Scientists**
- **BP-ENDURE Neuroscience; Hunter College, CUNY & New York University**
- **National Science Foundation: REU in Chemical Biology, NSF/REU Nanoscale Science and Engineering**
- **National Institute of Health: The Minority Summer Research Program/NHLBI, and the Short Term Training Program for Minority Students/NHLBI, Cancer Center Support Grant, CURE Supplement/NCI**
- **Vanderbilt: The Vanderbilt Graduate School Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Diabetes Center, Vanderbilt Vaccine Center, Vanderbilt-Ingram Cancer Center, Vanderbilt Medical Scientist Training Program**
- **The Society for Neuroscience**
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