

## **Biomedical Engineering**

### **Salisbury Labs Kinnicutt Hall**

#### **Room 115**

**9:05am**

##### **Neuroprosthetic Device for Haptic Device Control**

Alice Grantham, Santiago Lobos Melazzo, Diego McManus Gabrielle Seyouri  
Advisor: Taimoor Afzal

**9:25am**

##### **Oxygen Concentrator for Neonatal Bubble CPAP Respiratory Assist in Low-to-Middle Income Countries**

Eric Impink, Jack Libow, Christopher Ramirez, Jack Rooney  
Advisor: Dirk Albrecht  
Co-advisor: Pradeep Radhakrishnan

**9:45am**

##### **Development of an In Vitro Kill Assay for CAR-T Cells**

Paula Gibbons, Leslie Kahugu, Lillian Kirkpatrick, Jayden Wilson  
Advisor: Sakthikumar Ambady

**10:05am**

##### **Microfluidic Device with Oscillatory Flow for Engineered Heart Valve Tissue**

Marlee Donohoe, Ty Haessig, Kady Le, Daniel Pinto  
Advisor: Kristen Billiar

**10:25am**

##### **Antimicrobial Peptide-Loaded Bacterial Cellulose Membranes for Infection Prevention**

Alejandra Gálvez, Talha Qamar, Dan Vu, Miki Yasuda Ikeda  
Advisor: Jeannine Coburn

**10:55am**

##### **Development of a Customized Walking Aid for a Patient with Right Leg Discrepancy, Muscle Atrophy, and Sciatic Nerve Dysfunction**

Alana Harris, Eve Martineau, Catherine Sauter,

Leah Uglevich

Advisor: Solomon Mensah

**11:15am**

##### **Design of a Process to Mechanically Decellularize Autologous Adipose Tissue for Breast Tissue Regeneration**

Bailey Allmon, Ainsley LaFlamme, Gianna Sangermano, Cam Schmottlach  
Advisor: Raymond Page  
Co-advisors: Brent Faber, Giorgio Giatsidis (UMMS)

**11:35am**

##### **Development of a Pediatric-Specific Steady Flow Testing Apparatus for Prosthetic Valve Evaluation**

Corwin Loomis-Price, Jacob Acevedo  
Advisor: Zhenglun "Alan" Wei

### **Salisbury Labs Room 104**

**9:05am**

##### **Step by Step: A Device to Characterize Plantar Fascia Stiffness**

Bethany Brown, Kathryn Gorden, Sophia Reynolds  
Advisor: Karen Troy

**9:25am**

##### **Designing a Phantom for Point of Care Ultrasound Training in Low Resource Settings**

Ashton Holm, Zion Sanchez-Chong, Alana Zervas  
Advisor: Brent Faber

**9:45am**

##### **Graphene-Polymer Nanocomposite for Bone Plates Mechanical Properties and Biocompatibility**

Tanisha Gupta, Matthew Morvillo, Michael Vasconcellos  
Advisor: John Obayemi

**10:05am**

##### **Neuroprosthetic Device for Video Game Control**

Emma Corley-Bustin, Grace Coughlin, Delia Mahoney  
Advisor: Taimoor Afzal

**10:25am**

**Rapid Sterile Heating of Saline for Robotic-Assisted Kidney Surgery**

Neville Clancy, Gabriella Colabello, Olivia Jones, Madison Little

Advisor: Ahmet Sabuncu

Co-advisors: JP Onffroy (MONARCH, Johnson & Johnson), Alan Yu (MONARCH, Johnson & Johnson)

**10:55am**

**Designing a Device for Monitoring Ankle Kinematics When Playing Pickleball**

Julia Durling, Winthrop Golembewski, Aditi Kulkarni, Griffin St. Pierre, Reid Vacharakupt

Advisor: Songbai Ji

**11:15am**

**Severed Limb Preservation and Cooling System for Traumatic Amputations**

Morgan Bilodeau, Grace Hill, Hannah Samson, Megan Stone

Advisor: Raymond Page

Co-advisor: Giorgio Giatsidis (UMMS)

**11:35am**

**Combined Effect of Matrix Acidity and Stiffness on Metastasis-Associated Phenotypes in PANC1 Cancer Cells**

Andrew Lamprey, Paris Ojuma

Advisor: Catherine Whittington

**Salisbury Labs Room 105**

**9:05am**

**Design and Control of a Prosthetic Arm**

Ian Blanchet, Anastacia Simpson, Connor Smith, Raffael Torres

Advisor: Taimoor Afzal

Co-advisors: Haichong “Kai” Zhang, Yihao Zheng

**9:25am**

**Role of Hyaluronic Acid and Cancer Cell Interactions in vitro**

Son Nguyen, Abigail Stone

Advisor: Solomon Mensah

**9:45am**

**Design to Improve Automotive Wheelchair Mobility**

Wren Carter, Amanda Cooper, Anya Crapo, Kaitlyn Grove

Advisor: Zoe Reidinger

**10:05am**

**Incorporation of 2D Nanomaterials (MXenes) Into Biomaterials for Drug Delivery**

Zephyr Paxton, Antonia Pelteku

Advisor: Jeannine Coburn

**10:25am**

**Tunable Hydrogel Substrates for In Vitro Tissue Engineering**

Leah Johnson, Benjamin Petrich, Megan Quinn, Abigail Rivers

Advisor: Sakthikumar Ambady

**10:55am**

**Exoskeleton Assistance Device for Dachshunds with IVDD**

Jonathan King, Kylie McDonagh, Kai Yawata

Advisors: Kristen Billiar, Vincent Aloï, Shijie Zhou

**11:15am**

**Integration of Eye Tracking into Sports Helmets**

Joseph LeClerc, Marvin Orozco, Tommy Reardon

Advisor: Shahin Tajik

Co-advisors: Songbai Ji, Griffin Tabor, Jay Hedley (HeadVantage), Dr. Mark Novas (HeadVantage)

**11:35am**

**Assessing the Biomechanics of Heart Valves Through Digital Image Correlation**

Alimasi Kipela

Advisor: Zhenglun “Alan” Wei

**Salisbury Labs Room 305**

**9:05am**

**Design and Implementation of a Solar-Powered Vaccine Refrigerator to Improve Cold Chain Storage in Low- and Middle-Income Countries (LMICs)**

Nate Ambrad, Chayse Dube, Fiona Gillis, Henry Solomon

Advisor: Solomon Mensah

Co-advisors: Gregory Noetscher, Xiaoyan (Sherry) Sun

**9:25am**

**Transforming Physical Therapy: A Way to Improve Skeletal Muscle Healing and Prevent Atrophy**

Ashley Amaro, Jacob Bailey, Sophia Clausen, Angeleana Corey

Advisor: Raymond Page

Co-advisor: Giorgio Giatsidis (UMMS)

**9:45am**

**Smart Blend of Drug-Loaded Polymer System for Localized Drug Delivery in Triple Negative Breast Cancer Treatment**

Ronnie Amoah, Jeffery Brady, Kaiden Martinez

Advisor: John Obayemi

**10:05am**

**Designing a Device for Measuring Joint Tenderness for People with Rheumatoid Arthritis**

Delina Chavez, Adianne Ramos-Delgado, Madeline Talbot, Grace Venagro, Melica Zekavat

Advisor: Karen Troy

**10:25am**

**Red Blood Cell Quality Assessment Device**

Madison Laflamme, Sarah McMahan, Abigail Powers, Hana Premyslovsky

Advisor: Ahmet Sabuncu

Co-advisor: Sakthikumar Ambady

**10:55am**

**Design of a Device for Creating Anisotropically Aligned Scaffolds**

Daniel Cappuccino, Nathan Cournean, Luca Villano

Advisor: George Pins, Yonghui Ding

**11:15am**

**Automation of an Accurate Wearable Blood Pressure Monitor**

Taegon Aldrich, Nina Devries, Brendan Dodier, Kali Fang, Harleen Kaur, Alexander Kraemling

Advisor: Dirk Albrecht

Co-advisors: Richard Lopez, Haichong "Kai" Zhang, Pradeep Radhakrishnan