

VAS Fall Undergraduate Research Meeting Awardees

November 2, 2019

Christopher Newport University, Newport News, VA

Undergraduate Research Grant Recipients

Poster # 1

Identification of hepatopancreatic parasites afflicting crayfish in local Virginia streams

Cara Arrasmith

Mentor: Kyle Harris, Dept. of Biology & Chemistry, Liberty University

This project will aim to identify and quantify trematodes in central Virginia streams. Attention will be given to snails and crayfish as target hosts of trematodes. If trematodes are identified, urban and rural stream collection sites will be compared for trematode diversity and abundance.

Poster # 2

The effects of probiotic yeast on the *in-vitro* rumen

Alexandra Barbee

Mentor: Regenia Campbell and George Argyros, Dept. of Biology, Emory & Henry College

Bloat in ruminants is a medical emergency. We aim to use an in vitro rumen model to test the use of *Saccharamyces cerevasiae* to reduce the gas production and pH changes observed when small ruminants eat rich forage. Benefits have only been shown in cattle to date.

Poster # 3

Synthesis of DNA inspired nucleobase containing polyacrylates for chemotherapy capture

Madison Bardot

Mentor: Michael Schulz, Dept. of Chemistry, Virginia Tech

We focus on the synthesis of nucleobase containing polymers that mimic DNA for the capture of chemotherapy. During chemotherapy treatment the drug is administered into the tumor site, however it leaks out and kills healthy cells causing side effects. We hope to capture that excess chemotherapy and diminish these side effects.

Poster # 13

Environmental stress response genes crosstalk with the floral developmental program in *Arabidopsis thaliana*

Kelly Flynn

Mentor: April Wynn, Dept. of Biological Sciences, University of Mary Washington

This project will examine the crosstalk between environmental stress response genes and the floral developmental pathway in *Arabidopsis thaliana*, which will hopefully elucidate which genes integrate the two pathways and how alterations of these genes affect plant reproductive development.

Poster # 23

The influence of physical exercise stress and social enrichment on cognition and hippocampal physiology in laboratory mice.

Haley Lavach and Laura Leonard

Mentor: Parrish Waters, Dept. of Biological Sciences, University of Mary Washington

We will examine the influence of two independent stressors on laboratory mice: exercise and social enrichment. These stressors are similar in that they induce an acute stressed state, but reduce an animals reactivity to stress and increase overall cognitive performance when applied chronically.

Poster # 24

Electrochromic tungsten oxide thin films for dynamic glass utilizing intercalating chemistry

Scott McGuigan

Mentor: Feng Lin and Anyang Hu, Dept. of Chemistry, Virginia Tech

This project will be to produce and study electrochromic tungsten oxide thin films for use in dynamic color changing window applications. A typical five layer electrochromic framework will be modeled after, with the tungsten oxide layer filling the role of a cathodic metal oxide.

Poster # 30

Surveillance of microplastic pollution in Central Virginia freshwater ecosystems

Alexandra Reddy

Mentor: Kyle Harris and Michael Bender, Dept. of Biology & Chemistry, Liberty University

This project explores the occurrence and ecological implications of microplastic pollution within freshwater invertebrates of Central Virginia. In particular, this project investigates the identification and prevalence of microplastic pollution in an abundant and ecologically important species: crayfish. As research regarding microplastic contamination in freshwater invertebrates is scarce, this project will contribute to the knowledge of freshwater microplastic contamination and its ecological significance.

Poster # 33

A comparison of strength, muscle power, and range of motion in the affected and unaffected arms in breast cancer survivors

Christian Sanchez-De La Cruz and Savannah-Faith Clark

Mentor: Ashley Artese, Department of Health & Human Performance, Roanoke College

Breast cancer treatment results in impaired upper body function. Research is needed to examine the extent of losses in the affected arm, where breast cancer was present, compared to the unaffected arm. The purpose of this study is to compare strength, power, and range of motion in the affected and unaffected arms in breast cancer survivors and in non-cancer controls.

Poster # 40

Isolation of a new plastic degrading bacteria

Noah Wallace

Mentor: Todd Gruber, Dept. of Molecular Biology & Chemistry, Christopher Newport University

Plastic waste is a leading global environmental concern. Some strains of bacteria have been able to evolve to use plastic in the environment as a carbon source and as such can be used to degrade plastic in more controlled settings. Further environmental screening to find new strains of plastic degrading bacteria needs to be developed and implemented.

Honorable Mention

Poster # 36

Exploring ZIF-8 Nanoparticles as Additives to Growth Media for Myoblasts

Ryan Tomlin

Mentor: Paul Mueller and Kristin Fischer, Chemistry Dept. and Biology Dept.,
Hampden-Sydney College

Zeolitic imidazolate framework-8 (ZIF-8) nanoparticles, with attached glutamine and carboxaldehyde, will be implemented into in vitro cell studies to test their effects on skeletal muscle cell maturation. These nanoparticles are synthesized by methods found in the literature and characterized by IR, NMR, and MP-AES.
