

Newburgh Free Academy

North Campus Presents

The Nin^e

Introduction and Welcome

Co-Principal Newburgh Free
Academy North Campus: Mr.

Matteo Doddo

Instructor of the Science

Research Course: Ms. Kristin

Oberle

Kiara Sevilla

***Characteristics of Music that Affect
Audience Emotions in Movie Scenes***

Amanda Waite


***Effects of COVID-19 on a Person's Breath
Output***

Tyrese Boykin

***The Effects of Radiofrequency
Electromagnetic Fields (RF-EMF) Radiation***

Science Research in the High School is a three-year experience that affords students the unique opportunity to become part of the professional research community as high school sophomores, juniors, and seniors. Over three years, students conduct unique research, complete a research paper, and participate in scientific competitions. Students enroll in the Hont e

Research



Communicate with professionals – contact the authors of the journal articles being studied. Establish a dialogue with several researchers, eventually asking one to serve as a research advisor.

Under the guidance of the mentor/advisor and science research instructor, an original research experiment is designed and conducted. Results are statistically analyzed, implications are discussed, and conclusions are drawn. A final research paper is written.

Final research papers are entered into regional, statewide, and international science competitions and may be presented for professional publication.

In addition to advanced research skills, students develop numerous life skills such as problem-solving, critical thinking, communication, time management, and public speaking. All science research students advancing in the program beyond their sophomore year are eligible to apply for college credit through SUNY Albany's University in the High School Program with successful completion of research requirements.


What is the role of music in determining audience emotions during movie scenes? Studies have shown that music modulates p

Advisor(s): Dr. Victoria Romano, DPN, CNRP, CN-P, Kim Poje, RN

The global pandemic Covid-19 has put our world into a state of panic and fright. Covid-19 is a disease that attacks your respiratory system. As a

Advisor(s): Helen King, Equine Behavioral Specialist,
Saddle Brook Farm Animal Rescue

Race horses face excessive abuse everyday. Throughout their years on the race track, they are worked beyond exhaustion and face many forms of abuse including starvation, performance enhancing drugs, physical abuse and medical neglect. Many of these highly abused animals are auctioned off to the highest bidder or sold to processing plants for meat and glue among other things. Those lucky enough to be auctioned to a new home, now face forms of PTSD that many deem as untrainable. Through my research and hands on work with retired racehorses at the Saddle Brook Farm Animal Rescue, I hope to prove that it is not only possible to retrain these previously abused animals, but that the horses can learn to trust and maintain a relationship with their new owners.



Advisor(s): Mr. Ross Topliff, Biochemical Engineer, Tops Engineering


Radiofrequency electromagnetic fields (RF-EMF) radiation empowers our today's technology: computers, smartphones, smart appliances, radio, etc, and for applications such as for industry, research, entertainment, and telecommunications uses, and are essentially everywhere, everytime. However, it's been reported that exposure from RF-EMF has some effects on living organisms, and the environment. Few studies have been done on investigating the effects of plants from RF-EMF radiation, particularly in higher frequency bands, as advancing technologies such as 5G will use higher frequency bands for applications. However, some studies on plants from RF-EMF radiation exposure have been reported to cause some morphological changes, cellular/molecular effects, and decreased growth rate. In my research, I plan to investigate the effects of RF-EMF radiation on plant growth rate & morphology, as plants have similar cell structure as humans and animals, and pose some effects that may possibly extrapolate to humans and animals. My research involves using 40 small plants, along with a NETGEAR Nighthawk AX4 4-Stream AX3000 WiFi 6 Router (RAX40) and a Faraday cage, with half growing inside the Faraday cage, and the other half without it. I'll let the plants grow within some time and measure the growth rate and morphology and compare the differences.

Advisor(s): Major Preston J Dihle, Major Erin E Milner,
West Point Military Academy

The intestinal bacteria community (microbiota) in humans contains tens of trillions of microorganisms, including approximately 1000 different species of known bacteria with more than 3 million genes (150 times more than human genes). The diversity of bacteria in the intestines assist with the degradation of nutrients prior to intestinal absorption. The population of intestinal microbiota, a crucial “hidden organ”, could result in maladaptations (dysbiosis). Identifying correlations between dysbiosis and diseases associated with obesity, gastritis, diabetes, and improper food and drug metabolism is an area of interest within the medical research community. Improper drug metabolism due to intestinal dysbiosis, an area of interest that affects the absorption of active pharmaceutical compounds, results in decreased drug exposure and potential adverse side effects. In addition, due to enterotype variability, oral medication absorption varies significantly within the human population. Furthermore, intestinal dysbiosis has been known to occur during antibiotic treatment where probiotics are usually used at the same time to treat such bacterial imbalance in the intestines. This project will focus on identifying the interaction between antibiotics and probiotics by utilizing liquid chromatography mass spectrometry instrumentation to determine the concentration of the parent drug, the probiotics, and subsequent metabolic products.

Advisor(s): Dr. Klos, Marist College, Maiji Niemisto of the DEC

Plastic pollution is one of the largest forms of pollution in the water today. The average person consumes about 5g of microplastics a week, about the amount of plastic in a credit card. Microplastics, pieces of plastic smaller than 5 mm in size, can be found in every natural water source on the planet. Primary microplastics are pieces of plastic that are produced to be tiny. Some examples of these are micro



Advisor(s): Dr. Clare Thomas-Pino, Adjunct Professor at UMaine

Dementia is a general term for diseases and conditions characterised by a decline in memory, language, problem-solving and other thinking skills that have an effect on a person's capability to perform day-to-day activities. Alzheimer's Disease (AD) is the most common cause of Dementia. An estimated 5.8 million Americans suffer from Alzheimer's dementia. The vast majority (80%) are aged 75 or older of those who suffer from cognitive decline. One in ten people (10 %) aged 65 and older has Alzheimer's disease and about one-third of people aged 85 and older (33%) have Alzheimer's disease. Limited but compelling data suggests that exercise may decrease cognitive decline and increase hippocampal neurogenesis. Aside from improving memory loss, it has positively impacted those with emotional and mental health deficiencies as well. For this paper, a systematic review consisting of 28 published studies demonstrating the effect of physical activity in improving memory in Dementia and Alzheimer's patients have been conducted. There are currently no disease-modifying or preventive treatments for AD. However, research suggests that exercise positively impacts brain health through neurotrophic, neurogenic and vascular mechanisms.


Advisor(s): Dr. Suparna Bhalla (Doctor of Philosophy, McGill University, Montreal, Quebec, Canada) & Dr. Evan Merkhofer (University of North Carolina at Chapel Hill, PhD, Genetics and Molecular Biology)

Bacteriophages are considered the most abundant entities on Earth. Phages are viruses that infect a specific bäre c

Science R

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Public Health, MPH, Oxford Brookes
University, UK, Class of 2021

: Graduated from SUNY
Oneonta '20 with a Bachelor's in Political
Science, Minor in Communications, and
Pre-Law Concentration, Seeking Paralegal
Certification at Marist College '21 (GPA:
3.9), Full-time Legal Secretary at Workers'
Compensation & SSD Law Firm
Stony Brook University,
major in Applied Mathematics minor in
International Studies.

SUNY University of
Albany, History major, Biology minor, Fall
2019 & 2020 Dean's List, Fall 2020 Dr. Seth
Spellman, Jr. Academic Achievement Award
Receivment

Eastern Gateway
Community College, Education major,
provides community rehabilitation for the
disabled

University of Albany,
Computer Engineering major

Mount St. Mary
College, Orange Ulster Boces, working
towards LPN certification

SUNY Orange,
Pre- Nursing major

