

Categories, Student Names, and Project Titles

Biomedical and Health Sciences

Fernanda Arreola-Lucio	Polymerized Gelatin Microneedle Adhesive (Gel MNA) enabled accessible and effective hemorrhage care alternatives
Brayden Diethelm	Examination of effects of gamma-secretase inhibitors and methylthioninium chloride in <i>Caenorhabditis elegans</i> modeling of human Alzheimer's disease
Andrew Hermanson	In vitro study of commercially available probiotics' survival rate through the gastrointestinal system
Arjav Krishna	Analyzing the correlation between aerobic and anaerobic capabilities in high school-aged individuals
Kyra Martin	The effect of DUB3 inhibition on breast cancer metastasis
Joseph Martinez	Examination of stressed <i>Dugesia dorocephala</i> regeneration when exposed to fluoxetine hydrochloride
Anna Mckinney	Cardiovascular recovery and strength variation coupled with phases of the menstrual cycle
Melissa Nelson	Creation of a left-hand prosthetic for playing violin
Paige Olson	The use of vagal maneuvers in the reduction of tachycardias
Sophia Parmele	The clinical relevance of oleosin in peanut allergy testing
Deepti Pillai	Comparison of language sites employed for bilingual language production and comprehension via different acquisition methods
Sydney Rupert	Experimentation of zinc, <i>Lactobacillus plantarum</i> PS128, and L-Theanine treatments on <i>Faxonius virilis</i> to determine effectiveness at mitigating stimulant withdrawal symptoms
Hemanth Vangala	Effects of a plyometric program on basketball movement performance
Amanda Webster	Effect of cholesterol concentration in liposomes on delivery efficiency of mRNA for application in the central nervous system

Cellular and Molecular Biology

Darby Allen	Effects of neutralizing antibodies on endocrine gene expression
Sameer Bhatia	Cell culture analysis of nail curing lamp radiation
Georgia Constantin	Using iron and graphene oxide nanoparticles to induce targeted apoptosis in cancerous cells
Becker Curry	Identification of bisphenol A and bisphenol S endocrine effects through analysis of the male <i>Procambarus clarkii</i> vitellogenin gene
Milan Darji	A novel use of RFdiffusion, an AI denoising diffusion probabilistic model, to design scaffold proteins
Keegan Feeley	Effects of disease-modifying antirheumatic medications on immune cell communication
Jasmine Goldsmith	Scurvy to stage IV cancer: the efficacy of intravenous vitamin C therapy in combination with cisplatin and paclitaxel treatment on non-small cell lung cancer strain A549
Henry Good	Growth effects of orchid mycorrhizal fungi inoculation in MN Torgy hard red spring wheat
Brynn Kamp	Activin-A on oligodendrocyte progenitor cell differentiation
Valerie Kelling	The effects of colored noise on sleep quality quantified by the expression of GABA in <i>Drosophila melanogaster</i>
Martin Krueger	The effects of fruit juices on bacteriophage transmission
Elisabeth McCallum	Examination of the expression of p16 ^{INK4a} as cervical cells senesce through the utilization of an HDF model
Lukas Murdych	Efficacy of maize-synthesized zinc oxide nanoparticles in suppressing phytopathogens and fertilizing soil
Tyseer Nabi	The gut microbial effects on α -synuclein, SNCA gene expression, and neurodegenerative diseases
Valerie Nelson	Machine learning for growth modeling of MCF7 breast cancer cells
Grace Pralle	The effects of LED light radiation on human dermal fibroblast cell viability
Alisha Schaeffer	Effects of <i>Centella asiatica</i> on human telomerase
William Zhong	Effect of <i>phr1</i> on <i>KaiC domain-containing protein</i> gene in <i>Halobacterium salinarum</i> NRC-1

Chemistry

Cinar Akakin	Production of solanine in potatoes
Liam Cassidy	Quantifying the calorific value of <i>Scenedesmus spp.</i> biodiesel produced using acid-catalyzed direct transesterification
Lindsey Koch	Effects of artificial food dyes on levels of serotonin and dopamine in <i>C. elegans</i>
Lillian Kowal	Using food waste to produce the bioplastic polyhydroxybutyrate (PHB) with the bacteria <i>Cupriavidus necator</i> DSM 545
Rylie Ulett	The simplification of crystalline glazing for ceramic applications

Computational and Information Sciences

Razeen Abdul-Field	Evolving neural networks to exploit both problem and problem-processing regularities: HyperNEAT plus a fixed chemical substrate
Demir Augustine	A comparative analysis of chess with increment to without
Alexander Bartholomew	Statistical analysis of electroencephalography data to detect mild traumatic brain injury in humans
Jaden Cai	Situational recognition and ensemble learning in the Stock Market
Jason Huang	Performance of adaptive keyboards with machine learning for touchscreen devices
Neel Kashyap	Recurrent neural networks using sentiment analysis to predict stock movement
Phoebe Lee	Backpropagation in quantum convolutional neural network for quantum phase recognition
John Malvin	Streamlining the optimization of object detection using machine learning
Henry Miller	Examination of EEG-derived interhemispheric data in predicting emotional and attentive responses to film
Oliver Nelson	Recurrent neural networks for the creation of a versatile 3-DOF active vibration control system
Anthony Pu	Neuroevolution of spiking neural networks using HyperNEAT
Kade Rabe	Investigation of programming techniques in warehouse robotics

Earth and Environmental Sciences

Owen Bar Hoover	The effect of silicate minerals on soil sequestration
Abigail Bendt	The impact of rising atmospheric carbon dioxide concentrations on <i>Fragaria x ananassa</i>
Emily Bodeau	Variability of capsaicinoid concentrations in commercially available Kashmiri peppers
Jos Buffington	Earth system changes across Oceanic Anoxic Event 2 indicated by a southwest Minnesota core section
Tyler Clair	Food Waste-Based Biocoagulants: A novel approach to sustainably remove polystyrene microplastics for future alternatives in water treatment
Julia Constantineau	The measuring and phytoremediation of PAHs in relation to local plants
Gustav Davidson	The effectiveness of natural coagulants in wastewater
Evy Engebretson	Carbon neutral biofuels: the fermentation of Sargassum macroalgae using <i>Clostridium beijerinckii</i> to create butanol
Amelia Erickson	Extension of Minneapolis and Saint Paul public transportation systems into the suburbs to increase usage
Savanna Larson	Evaluating the effects of sympatry on <i>Lynx canadensis</i> and <i>Lynx rufus</i> population dynamics in Minnesota
Julian Lunzer	The effects of plastic mulch liner use on the micro and nano plastic content of melons
Molly O'Neill	The exploration of bio-sealants to assist the longevity of degradable pineapple fabric
Anna-Sofia Pedersen	The impact of varying electroporation voltages on model brown alga <i>Ectocarpus sp.</i> cell viability and growth

Jack Petrin	Effects of road deicing salts on select heavy metal mobility in Minnesota soils
Sabrina Pietrafitta	Excess nutrient removal in estuaries
Becca Reeder	Inhibition effects of <i>Bidens pilosa</i> extracts on algae from water samples taken from local lakes in Minnetonka, Minnesota
Juliet Siikarla	Comparing the nutrients of lettuce grown in a variety of growth mediums to the nutrients needed by the human body
Ellie Stroh	A potential dike for the Savannah, Georgia region to mitigate storm surge
Kyvie Welsbacher	Effect of Minnesotan plant byproducts on growth and nutrition of crickets.
Engineering and Materials Science	
Lux Bodell	Unified field theory as applied to spacetime engineering
Olivia Donaldson	The permeability and compressive strength of concrete using recycled concrete aggregates
Lara Granucci	The characterization of starch-based films by mechanical and compostability testing
Sam McHugh	Design of an animatronic telepresence Face with a full range of human emotions
Noah Measells	Testing of abrasion-resistant fabrics for their use in dual-material glove protectors for skiers and snowboarders
Ayman Mohamud	Developing an innovative electric skateboard for sustainable urban mobility
Andrew Skarohlid	Applications of an active cross-spherical gear as a wrist component
Maddie Thurnblom	Effects of glycerol concentrations on <i>Gracilara gracilis</i> and <i>Sargassum muticum</i> biofilms
Tyler Vos	Maximizing the efficiency of bamboo growth chamber for a Lunar colony
Microbiology	
Myonghai Choi	Evaluating the extent to which <i>Wolbachia</i> induces the activation of the <i>Toll</i> pathway in <i>Culex pipiens</i>
Erika Daniels	Yogurt and acne: Investigating the impact of <i>S. salivarius</i> on the phylotype diversity of <i>C. acnes</i>
Campbell DeLuca	The effects of Glyphosate on the neurological, behavioral, and reproductive behaviors of aquatic organisms
Leander Harrold	Optimization of the metabolic expression of ethylene-forming enzyme(efe) in the bacterium <i>Pseudomonas putida</i>
Isaac Jasper	Genetic modification as a method of biofilm inhibition in <i>Proteus mirabilis</i>
Noah Khemakhem	The effect of heavy metals on the expression of antioxidant enzymes in <i>Caenorhabditis elegans</i>
Mars Moberg	The impact of external factors on bacteriophage function in the model host organism <i>E. coli</i> k-12
Ceris Omar	The use of immunotherapy methods in ticks to prevent the transmission of a tick-borne disease to a host
Isabella Tobin	Degrading plastic with fungi: The effect of pretreating polyester polyurethane on the rate of biodegradation by <i>Pestalotiopsis microspora</i>

As we celebrate the work of this year's students, we would like to recognize the incredible amount of support we received from the local and scientific community. Scientists and researchers from across the globe embraced the opportunity to mentor Minnetonka Research students. Individuals and organizations were generous with their resources and helped us build a network of incredible support. Thank you!