Dalhousie Integrated Science Program Research Projects 2020-2024

2023-2024 Dalhousie Integrated Science Program Projects			
Title	**Department**	**Supervisors**	**Students**
Creating an Accessible Ethogram	Psychology and Neuroscience	Dr. Jennifer Stamp	Drishti Deepchand
			Elle MacFayden
			Emily Pastorious-French
			Ryan Russell
Finding the Nesting Habitat of the Endangered Chimney Swift	Biology	Dr. Cindy Staicer and Caleb Gibbons	Camden Chin
			Paige Cunningham
			Scott Mitchell
			Siobhan Hourihan
Assessing the Impact of Forestry Beneficial Management Practices-On Olive-Sided Flycatcher Conservation in Nova Scotia!	Biology	Dr. Cindy Staicer and Hannah Freeman	Bridget McPhail
			Maia Baxter
Using 13C-NMR to Classify Fish Oils	National Research Council	Ian Burton	Felix Bieger
			Meira Heinrich
Localization of Pre- and Post-Retinal Proteins: Implications for Synapse Formation	Physiology and Biophysics	Dr. Melina Agosto and Faiyaz Abid Ali Khan	Owen Lang
			Abby Armstrong
Investigating Hemlock Woolly Adelgids and Hemlock Health	Earth and Environmental Sciences	Dr. Chris Greene and Evelyn Rusnak	Jonah Carrington
			Ruben Segal
Mussel Foot Proteins: Enhancing Adhesion with Amino Acids	Chemistry	Dr. Alexander Baker	Layla Owens
			Zoe McNeil
Human Attention and Perception	Psychology and Neuroscience	Dr. Raymond Klein and Nick Murray	Shabad Kaur
			Elijah Leinwand
Early AI Diagnostic Tool for Sepsis	Microbiology and Immunology	Dr. Gustavo Sganzerla-Martinez	Anna Field
			Mara Pearce
Drosophila melanogaster: A Study in Population Dynamics	Biology	Dr. Jen Frail-Gauthier	Juliette Gunn
			Nia Devonald
			Riko Boudi
Bioremediation and Biocontrol Potential of *Bacillus amyloliquefaciens* N1	Biochemistry and Molecular Biology	Alexander Mora Collazos and Dr. Claudio Slamovits	Caitlyn Hall
			Chloe Bazinet
			Alexandra Fieltsch

			Quinn McAleer
Impact of Plant-Growth Promoting Bacteria on Pisatin Level in Pea (*Pisum sativum)* Roots	Microbiology and Immunology	Dr. Junzeng Zhang and Dr. Zhenyu Cheng	Ella Kang
			Kate Kennaugh
Comparison of Silk Spinning Techniques: Wet Spinning and Contact Drawing	Biochemistry and Molecular Biology	Dr. Melissa Reith and Dr. Jan K Rainey	Asia Aiken
			Ben Jansen
Development of Spider Silk Foams for Biomedical Uses	Biochemistry and Molecular Biology	Sara Evans and Dr. Jan Rainey	Rosalia van Schouwen
			Shaimaa Eissa
Nickel-Catalyzes Hydrogenation of Alkenes	Chemistry	Dr. Laura Turculet and Tyler Saunders	Abby McGillis
			Mark Fischer
			Brynn Killins
Human-Automation in Underwater Mine Detection	Kinesiology, Cognitive and Motor Performance	Dr. Heather Neyedli, Grace Barnhart, and Brett Feltmate	Owen Atkinson
			Vanessa Partila
Comparing Trust in News Articles Authored by Humans and ChatGPT	Kinesiology, Cognitive and Motor Performance	Dr. Heather Neyedli, Grace Barnhart, and Brett Feltmate	Marco Chow
Dual-Triggered Plasmonic Liposomes for Cancer Photoimmunotherapy	Microbiology and Immunology	Dr. Deepak Chauhan, Dr. Channakeshava Umeshappa	Cali Ryan
			Campbell Smith
Producing CYP2D6 Autoantigens to Develop Tetramers and Track Autoreactive B Cells	Microbiology and Immunology	Dr. Harish Kolla + Dr. Kumari Alka + Dr. Channakeshava Umeshappa	Caitlin Gormley
			Josie Burke
Why is the CLASSICAL Simulation No Tree Growth?	Earth and Environmental Sciences	Dr. Sian Kou-Giesbrecht	Ella Clarkson
			Naomi Katseva Noseworthy
			Paige Hamilton
An Investigation into Septarian Nodule Genesis	Earth and Environmental Sciences	Dr. Lexie Arnott	Liz Cousineau
			Hannah Docking
			Madeleine McCurdy
			Leaf Neville
Effects of a Chill Coma on Feeding in Zombie Caterpillars	Psychology and Neuroscience	Dr. Shelley Adamo + Dylan Miller	Bhreagh MacIntyre
			Claire Martin
How Does Temperature Effect Wellbeing in Nunatsiavut?	Biology	Kate Ortenzi	Jade Muir
			Sarah MacKinnon
			Amaya Dobson

			Amber Salter
Algae Admixtures: a CONCRETE Solution to Rising CO_2 Emissions	Oceanography	Jayda Kruger, Dr. Hugh MacIntyre and Cat London	Georgia McLenaghan
			Kate Cameron
Bridging Age and Health Through Frailty in Relation to Damage and Repair Rates	Physics and Atmospheric Science	Dr. Andrew Rutenberg and Glen Pridham	Zoe Sacuta
Levels of Competence, Flow, & Well-Being Across Personally Expressive Activities	Psychology and Neuroscience	Taylor Hill	Dishita Deepchand
Exploring the Impact of Environmental Factors of Coastal Microbial Diversity	Biology	Dr. Joe Bielawski	Affan Uzair
			Nikki Nadarevic
Green Synthesis of Gold Nanoparticles for Anti-Cancer Applications	Chemistry	Tyler Ziehl and Dr. Peng Zhang	Kate Miske
			Sarah MacIntyre
			Claire Covert
Environmental Preferences of Atlantic Sturgeon in Minas Passage	Biology	Dr. Charles Bangley	Jordyn Mackey
			Megan Laslop
Tiny Earth: Antibiotic Discovery from Soil	Microbiology and Immunology	Maggie Hosmer and Dr. John Rhode	Sammy Brown
			Addison Braham
			Samantha Gupta
			Jordyn Soberman
			May Engelhardt
Investigating the impact of beam profiles and spectra of LCUs on dental composite cures	Dentistry	Dr. Richard Price and Soheil Ghaffari	Anubhav Galuti

2022-2023 Dalhousie Integrated Science Program Projects			
Project	**Department**	**Supervisor(s)**	**Students**
Exploring chordae tendineae splitting mechanism during fetal development	Biomedical Engineering and Physics and Atmospheric Science	Dr. Sarah Wells and Megan Martin	Tim McCowan
			Parker Whittick
			Kate Gillet
Tiny Earth: Student sourcing antibiotic discovery	Microbiology and Immunology	Trinity Tooley and Ruth Riley	Maggie Hadskis
			Kaeleigh Clark
			Julia Nelson
			Lochlan Kotzer
			Erin O'Brien-Rogers
			Paige McMillan
			Sofia Day
Anishinaabe plant species: ethnobotanical comparison	Biology	Dr. Jonathan Ferrier and Kate McElroy	Themba Hlahatsi
			Allison Taillefer
Measuring executive functioning with AttentionTrip	Psychology and Neuroscience	Dr. Raymond Klein, Brett Feltmate and Colin McCormick	Katharine Druzina
			Sarah Campbell
			Clare Dallimore
A Novel Flickering Oddball Paradigm for Brain-Computer Interfaces (BCIs)	Psychology and Neuroscience	Daniel Godfrey and Dr. Aaron Newman	Eva Nechvatal
			Kaelyn Collins
			Emma Abray
Impacts of mounded seismic lines on abiotic conditions	Earth and Environmental Sciences	Dr. Caroline Franklin	Amie Thibodeau
Measuring Hemlock Wooly Adelgid damage on Eastern Hemlock using remote sensing	Earth and Environmental Sciences	Dr. Chris Greene	Sydnee Clair
Examining antibiotics secreted by newly isolated soil bacteria	Microbiology and Immunology, and National Research Council	Dr. Lois Murray and Dr. Junzeng Zhang	Beatrice Hao
			Emma McCormack
Effects of simulated ocean alkalinity enhancement on	Oceanography	Dr. Hugh MacIntyre, Marie	Jayda Kruger

photodamage and photorepair in phytoplankton		Egert, Cat London, and Mikaela Ermanovics	Cora Johnson
The impact of KCl precipitation and varying organic solvent levels on Sodium Dodecyl Sulfate depletion and protein recovery in ultraviolet spectrometry	Chemistry	Dr. Alan Doucette	Grace Hamilton
			Tia Augustine
Quantification of spices in curry powder	National Research Council	Ian Burton	Abby O'Reilly
			Hasan Murad
Boron, nitrogen, and aluminum as Li15Si4 suppressing dopants in silicon anode lithium-ion batteries	Chemistry	Dr. Mark Obrovac and Jun Wang	Heather McNamara
			Clara Knox
Congenital stationary night blindness: mutations of Grm6 result in reduced expression and incorrect localization of mGluR6 in Rod ON-type bipolar cells	Physiology and Biophysics	Dr. Melina Agosto and Mustansir Pindwarawala	Liam McPhee
			Elizabeth Charman
Optimizing the quantity of Fe in Na-ion batteries	Physics and Atmospheric Science	Dr. Penghao Xiao and Shivam Beniwal	Talia Field
			Courtney Slaunwhite
Acute exercise effects on stress and attention in humans	Kinesiology, Cognitive and Motor Performance Lab	Dr. Heather Neyedli, Chelsey Hall and Corey Munroe	Eva Scott-Sheldon
			Paula Lugert
Air quality monitoring and pollution disparities by income	Earth and Environmental Sciences	Dr. Kelvin Fong	Ty Martin
Using marine snails to monitor benthic biodiversity	Integrated Science and Biology	Dr. Gabrielle Tompkins and Sophie Roy	Georgia Brady
			Rhianna Baker
			Gabrielle Jauvin
			Lena Chown
			Kate Andrews
Characterization of wind speed and particle concentration	Physics and Atmospheric Science	Philippe Gauvin-Bourdon	Ronan Jensen
			Bridget Hart

observed at the PEARL station in the Canadian arctic			
Rating central venous catheterization (CVC) tutorials	Anesthesiology	Christian Neira and Dr. Victor Neira	Michael Purcell
Measuring ocean proximity effects on Halifax urban microclimates with portable sensors	Physics and Atmospheric Science	Dr. Manuel Helbig	Reegan Reid
			Dakota Sa
Immunoregulation of juvenile autoimmune disease: assessing autoreactive B-cells through the development of a fluorochrome autoantigen tetramer	Microbiology and Immunology	Dr. Channakeshava Umeshappa and Harish B. Kolla	Briley Hillyard
			Carleigh King
Strengthening nanotubes using disulfide bonds between cyclic peptide monomers	Chemistry	Dr. Carlie Charron and Zainab Bello	Sam Hopkins
			Charlotte Polo
Influence of cheerio mutation on Drosophila fecundity	Biology	Dr. Nicanor Gonzalez-Morales and Tiara Mulder	Jasmine Day
			Sean Yu
			Jody Connors
			Jordan Sampson
Defining the role of peroxisomes in intestinal epithelial health	Microbiology and Immunology	Dr. Francesca Di Cara and Marinella Pinelli	Han Tran
The peroxisome: effects on locomotor ability and neuronal death	Microbiology and Immunology	Dr. Francesca Di Cara and Stephanie Makdissi	Magdelena Klunder
Measuring accuracy in localizing brain activity	Physics and Atmospheric Science	Dr. Tim Bardouille	Leah Cuff
			Amanda Feld
Investigating the use of drones for species at risk in Nova Scotia: a focus on the Olive-sided Flycatcher (Contopus cooperi)	Biology	Dr. Cindy Staicer and Emilie McBeath	Maksym Dmytryshyn
			Tabitha Hafenbrak
			Teslyn Pfisterer
			Emma Daigle
Pandemic surveillance	Microbiology and Immunology	Dr. Gustavo Sganzerla Martinez	MJ Velasco
			Sequoia Thoms

2021-2022 Dalhousie Integrated Science Program Projects			
Project	**Department**	**Supervisor(s)**	**Students**
Advanced Battery Material Design and Synthesis	Chemistry	Dr. Mark Obrovac & Roby Gauthier	Lister de Vitre
			Angela Xu
Measuring the Effect of Hydroxide on Phytoplankton Sinking Rate Using Chlorophyll-a Fluorescence	Oceanography	Dr. Hugh McIntyre, Mikaela Ermanovics & Cat London	Christine Latimer
			Emily Meldrum
			Metyn Rehman
Bycatch Distribution for Pelagic Longline Fisheries?	Bedford Institute of Oceanography	Dr. Heather Bowlby	Isabella Battiston
			Hannah Millar
			Jessica Wong
Attention Trip: How Can We Make It Harder to Ignore Flankers?	Psychology and Neuroscience	Dr. Raymond Klein & Colin McCormick	Paige Parsons
			Ryan Sangster
			Lukas Zeisberger
Discriminating Rock Types Under Bermuda Using pXRF and Machine Learning	Earth and Environmental Science	Dr. Lexie Arnott & Wednesday Gillespie	Alex Petkov
			Owen Yoshida
Breeding Habitat Characteristics and Bird Population Decline in SWNS	Biology	Dr. Cindy Staicer & Caleb Gibbons	Claire Hamer
Identifying Critical Habitats for Two Landbird Species at Risk	Biology	Dr. Cindy Staicer & Caleb Gibbons	Emily Logan
			Grace O'Connor
Is Extreme Weather Becoming More Frequent in Nova Scotia?	Physics and Atmospheric Sciences	Dr. Manuel Helbig	Cambrie Levy
			Samantha Rebitt
Trends and Variability in Sea Ice Along the Labrador Coast and Shelf	Oceanography	Dr. Christoph Renkl & May Wang, Dr. Eric Oliver's Lab	Peter MacGregor
			Alexa MacIsaac
			Lily Musselman
			Kaitlyn Quinn
Exploring Public Interest in Canadian Endangered Species	Biology	Kayla Hamelin, Dr. Jeffrey Hutchings Lab	Emily MacPhee
			Hana Mehadzic
			Rachel Murphy
			Aava Raeesah
Chemical Hydrogen Production Using Mesoporous Silicon	Chemistry	Dr. Mita Dasog & Sarah Martell	Jaime Barrett
			Matthew Murphy
			Ally Roberts
		Dr. Clark Richards & Mathieu Dever	Brooke Cramer
			Melina Gobel

Dissolved Oxygen Sensor Response Under Varying Flow Conditions	Bedford Institute of Oceanography, Dal Oceanography, RBR		Madelyn Richardson
Search Abilities of Dogs: Does Age or Breed Matter?	Psychology and Neuroscience	Dr. Sophie Jacques	Sara Greenough
			Emma Harrington
Identifying the Extracellular Matrix Composition of Bovine Chordae Tendineae During Pregnancy	School of Biomedical Engineering, Physics and Atmospheric Science	Dr. Sarah Wells & Meghan Martin	Eva Abou-Samra
			Mark ten Haaf
			Madison Turner
Parental Conflict, Seed Size, and Germination in Lobelia cardinalis	Biology	Dr. Mark Johnston	Rachael Ansems
			Paige Burns
			Clare Frymire
			Alexa Petrie
Tiny Earth: Studentsourcing of Antibiotics	Microbiology and Immunology	Dr. John Rhode	Zoe Fullarton
			Laura Harrison
			Nicole Jones
			Mattie Leslie-Toogood
			Megan VanderWal
			Lydia Zhang
Collagen Assembly in Oscillatory Flow	Physics and Atmospheric Science, School of Biomedical Engineering	Dr. Laurent Kreplak	Emily Andrews
			Kaitlyn Blakney Burns
			Reagan Leslie
			Eda Ozsan
Quantifying Sediment Transport from High Spatial Resolution LiDAR Data	Earth and Environmental Science	Dr. Lexie Arnott & Dr. Chris Greene	Ronnie Philip
			Darby Sullivan
Using Fruit Flies to Study Muscles and Flight Behavior	Biology	Dr. Nicanor Gonzalez-Morales	Grace Law
			Aidan LeBlanc
			Emily Smith
Investigating the Optimal Conditions for Biofilm Formation of Neisseria sicca in an Aqueous Two-Phase System	School of Biomedical Engineering, Applied Oral Sciences	Dr. Brendan Leung & Dr. Naeimeh Jafari	Hannah Laquerre
			Emma Lirette
Human Automation in Underwater Mine Detection	Kinesiology, Cognitive and Motor Performance Lab	Dr. Heather Neyedli & Chelsey Sanderson	Eshia Bungay
			Andreah Martin
			Hannah Snook

			Alyssa Theriault
Geographic Characterization Of Coffee By Statistical Analysis Of 1H-NMR Data	National Research Council	Ian Burton	Devin Fraser
			Emma Manzie
How do operating conditions impact enzyme catalase activity?	National Research Council	Dr. Laleh Nazari	Abby Morris
			Defne Sezer
Comparison of signalling molecules in lentil root and seed exudates using LC-MS	National Research Council	Dr. Junzeng Zhang	Nicole Dion
			Starla Phillips

2020-2021 Dalhousie Integrated Science Program Projects			
Project	**Department**	**Supervisor(s)**	**Students**
Measuring Executive Function in Undergraduate Students and Dogs	Psychology and Neuroscience	Dr. Sophie Jacques	Rebecca Burbidge
			Jonah Hanley
			Sierra Tanner
Does Earlier Greening Lead to Enhanced CO2 Uptake in the North?	Physics and Atmospheric Science	Dr. Manuel Helbig	Victoria Chopin
			Sylvia Lloyd
Envirovote: A Global Initiative	Biology	Isabelle Hurley and Dr. Derek Tittensor	Lauren Burton
Tiny Earth: Studentsourcing of Antibiotics	Microbiology and Immunology	Dr. John Rohde	Andrew Allen
			Kiara Berganini
			Lily Coates
			Bella Hajdu
			Lauren Fong-Hollohan
			Shuya Li
			Kate Pennyfather
Continuous Wave Surface Enhanced Stimulated Raman Spectroscopy to Analyze Biomolecules	Physics and Atmospheric Science	Ben Hansson and Dr. Kevin Hewitt	Diana Adamo
			Emily Butler
			Caleb Galbraith
Ocean Alkalization as a Carbon Capture Technology	Oceanography	Dr. Hugh MacIntyre and Mikaela Ermonovics	Jacob MacDonald
			Meghan Oliver
			Phoebe Seeley
Is Searching in Time Like Searching in Space?	Psychology and Neuroscience	Brett Feltmate and Dr. Raymond Klein	Abiaz Hossain
			Annika Setterington
			Rachel Fody

Attention Trip: How Can We Make It Harder to Ignore Flankers?	Psychology and Neuroscience	Swasti Arora and Dr. Raymond Klein	Georgia Hall
			Emily Niskanen
Crowdsourcing Fisheries Science	Biology	Dr. Kayla Hamelin	Xinya Calhoun
			Isabella Johnson
			Shannon O'Brien
Validating a New Technology for Measuring Brain Activity	Physics and Atmospheric Science	Lindsey Power & Brendan Brady (Dr. Bardouille's Lab)	Joshua Feld
			Arenn Osadzuk
Anishinaabe Ethnobotany: Metabolomics for Biochemical Discovery and Characterization of Indigenous Foods, Medicines, and Material	Biology	Dr. Jonathan Ferrier	Nicole Grass
			Kiah Heneke-Flindall
			Natasha Fortin
Investigating Peroxisomes as an Immunometabolic Organelle	Microbiology and Immunology	Dr. Francesca Di Cara	Mustansir Pinwardawala
Differentiation of the Volcanic Basement Rocks of the Bermuda Rise	Earth and Environmental Sciences	Dr. Lexie Arnott	Wednesday Gillespie
			Alex Hancock
			Emma Stainforth
Nano-Silver: Computer Analysis Toward Biochemical Applications	Chemistry; Biomedical Engineering	Dr. Peng Zhang and Andrew Walsh	Rakan Al-Bader
			Justin Cosmatos
			Gabrielle Cote
Scintillators: All in One Dosimeter	Physics and Atmospheric Science	Cody Church and Dr. Thalat Monajemi	Madison McLean
			Emma Ward
Habitat Change and Bird Population Decline in Nova Scotia	Biology	Dr. Cindy Staicer	Mia Castell
			Rori Mulholland
Human Automation of Underwater Mine Detection	Kinesiology	Dr. Heather Neyedli	Sierra Gaudreau
			Flora Machovsky Mendes-Pinto
			Kendra Sturdee
Using Growth Bands to Determine the Age and Growth Rates of the Deep-Sea Coral Keratosis sp.	Earth & Environmental Science	Dr. Simone Booker, Dr. Owen Sherwood's Lab	Lottie Pascal
			Anna Morris
Blue Shark distribution	Bedford Institute of Oceanography	Dr. Heather Bowlby	Kendra Mainprize
			Brooke Reid
On-time Use and Wellbeing: The Role of Personal and Project Characteristics	Psychology and Neuroscience	Taylor Hill	Alanna Kaser
			Sophie Keddy