Skidmore College

FACULTY STUDENT SUMMER RESEARCH P

"VIVES SOLO:" TRANSNATIONAL FATHERHOOD AND RETURN MIGRATION FROM THE U.S. TO MEXICO
Samantha Velez, 2020
Ruth Hernandez, Lecturer, Sociology Department

ROOM C

EVALUATING PRIVACY POLICIES AND PERMISSIONS OF MOBILE HEALTH SMARTPHONE APPS
Matthew Clark, 2021, and Ha Linh Nguyen, 2022
Aarathi Prasad, Assistant Professor, Computer Science Department

MODELING THE PLAGUE IN EYAM
Katie Yan, 2022
Rachel Roe-Dale, Associate Professor, Mathematics and Statistics Department

EFFECTS OF CAPSAICIN ON BLOOD PRESSURE AT REST AND DURING EXERCISE: INFLUENCE OF RACE
Tawn Tomasi, 2022 and Brian Lora, 2021
Stephen Ives, Department of Health and Human Physiological Scienc-14()-5 (an)-4 (d)-4 (ci)-6 (en4 T9/P 4MC

Christopher G. Vecsey, Assistant Professor, Neuroscience Program

CRACKING THE CODE: EVALUATING THE IMPACT OF RESIDENTIAL BUILDING CODES ON ENERGY EFFICIENCY AND CLIMATE
Nicol La Cumbre-Gibbs, 2020
Karen Kellogg, Associate Professor, Environmental Studies and Sciences Program

OPTOGENETIC ACTIVATION OF SIFAMIDE NEURONS DURING ADULTHOOD CAUSES SLEEP INDUCTION IN DROSOPHILA MELANOGASTER
Haoyang Huang, 2020
Christopher G. Vecsey, Assistant Professor, Neuroscience Program

ELDER SELF-NEGLECT REPORTING AND RESPONSE
Shana Kleiner, 2020
Kelly Melekis, Associate Professor, Social Work Department

ROOM B

CHILDREN ENCODE AND RETAIN WORDS LONGER WHEN INITIALLY EXPOSED TO FEWER WORDS
Lauren Ehrreich, 2020
Dr. Erica Wojcik, Assistant Professor, Psychology Department

INVESTIGATING GLUCAN PHOSPHATASE LSF2 IN STARCH METABOLISM
Molly Cole, 2021 and Jiayue Hong, 2021
Madushi Raththagala, Assistant Professor, Chemistry Department

THE SMALL AND LARGE VENTROLATERAL CLOCK NEURONS ARE NOT RESPONSIBLE FOR SLEEP PROMOTION MEDIATED BY SHORT NEUROPEPTIDE F.
Emily Perkins, 2020
Christopher G. Vecsey, Assistant Professor, Neuroscience Program

THE EFFECT OF MATING AND FOOD ON SLEEP IN THE PHORID FLY MEGASELIA SCALARIS
Sidney Gregorek, 2022, Princeton University
Christopher G. Vecsey, Assistant Professor, Neuroscience Program

CORRELATING OPTICAL CHANGES OF SILVER NANOPARTICLES TO THE THICKNESS OF THEIR SILICA SHELL
Quincy Lucin, 2021; Maleeha Farzansyed, 2022
Maryuri Roca, Teaching Professor, Chemistry Department

ROOM C

DEVELOPMENT OF 3D PRINTED TESTING DEVICE
Khaly Diagne, 2021
Kimberly Frederick, Professor, Chemistry Department

THERE'S A NAP FOR THAT: NUDGING USERS TO LET THEIR PHONES SLEEP

Aaron Slonaker, 2021
Aarathi Prasad, Assistant Professor, Computer Science Department

PARTICIPANT OFF -TASK BEHAVIOR ON AMAZON'S MECHANICAL TURK
Riley Filister, 2021
Daniel Peterson, Assistant Professor, Psychology Department
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FIGHTER'S TRAINING REALTED DEATH
Ben Wu, 2021
Denise Smith, Tisch Distinguished Professor, Health and Human Physiological Sciences Department

ROOM B

DEVELOPMENT OF A MICROFLUIDIC DEVICE FOR MEASUREMENT OF NITRATE/NITRITE IN WATER AND SOIL
Mastura Mukhamedova, 2022
Kimberley A. Frederick, Professor, Chemistry Department

DEVELOPMENT OF A MICROFLUIDIC ASSAY FOR ANALYSIS OF IODIDE IN WATER SYSTEMS
Jessica Gaetgens, 2022
Kimberley A. Frederick, Professor, Chemistry Department

THE EFFECTS OF SUBCELLULAR -DISRUPTING AGENTS AND CELL WALL BIOSYNTHESIS INHIBITORS ON ENDOMEMBRANE SYSTEM STRUCTURE AND DYNAMICS IN PENIUM
Wenqin He, 2021
David Domozych, Professor, Biology Department

A PERSON SHAPED HOLE
Emily Egan, 2020
Sarah Sweeney, Associate Professor, Art Department

CHILDREN WANT TO LEARN FROM, BUT DO NOT TRUST SMART DEVICES
Samantha Hutchinson, 2020, and Kyla Shen, 2019
Aarathi Prasad, Assistant Professor, Computer Science Department
Erica Wojcik, Assistant Professor, Psychology Department

ARKA12 PROLINE ISOMERIZATION
Jonathan Stabile, 2021
K. Aurelia Ball, Assistant Professor, Chemistry Department

ROOM C

PHOTOCHEMISTRY IN THE OCEAN- ATMOSPHERE INTERFACE: ALTERNATIVE PATHWAY FOR HONO FORMATION
Heather Ricker, 2022; Angelina Leonardi, 2020
Juan G. Navea, Associate Professor, Chemistry Department

EXPERIMENTAL AND THEORETICAL STUDY OF A MODELED SYSTEM FOR MARINE PHOTOSENSITIZER
Onita Alija, 2021; Grace Freeman-Gallant, 2021
Juan G. Navea, Associate Professor, Chemistry Department

Project:

EFFECT OF SALT ON THE ARKA -SH3 COMPLEX

Anna Carhart, Colin Mcclure, Kristina Foley, Ben Lantz, Elliot J Stollar*
K. Aurelia Ball, Assistant Professor, Chemistry Department

SH3 domains are common interaction domains in the human body which foster cellular communication through protein-protein interactions. SH3 domains often bind to intrinsically disordered proteins (IDPs). IDPs are proteins that are more flexible. The mechanism of these interactions is difficult to study experimentally, so Molecular Dynamics (MD) simulations were used to support experimental data and analyze the interactions between AbpSH3, an SH3 domain found in yeast, and the disordered peptide, ArkA. ArkA contains several positively charged residues and AbpSH3 has a net negative charge. This enables electrostatics to stabilize the ArkA-SH3 complex, but salt disrupts electrostatic interactions. We performed MD simulations with and without salt. We found that salt creates a more unstable complex because it interferes with protein-protein interactions.

*Eastern New Mexico University

Project:

SH3 BINDING VIA CONFORMATIONAL SELECTION

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them to occupy both the cis and trans conformations. We are investigating how proline isomerization affects the binding pathway of IDP, ArkA12, with an SH3 domain using Molecular Dynamics (MD) simulations.

Project:

A BIOCULTURAL RECONSTRUCTION OF SUBADULT MORBIDITY AND MORTALITY AT TELL ABRAQ (UNITED ARAB EMIRATES) DURING THE BRONZE AGE

Sophia Barrett, 2020, and Samantha Mackertich, 2021
Kathryn Baustian, Visiting Assistant Professor, Anthropology Department

A stone burial tomb at the Bronze Age site of Tell Abraq (United Arab Emirates) was used for 200 years (2200BC-2000BC) and contained the intermixed remains of over 400 people. This research investigates high mortality and morbidity rates of children in the community through pathological and developmental analysis of the arm bones (humerus and radius). Analysis resulted in a minimum of 108 children ranging from fetal to adolescent ages and found consistent age representations as previous research using leg bones. Evidence of pathology was found among 5.6% of right humeri, 23% percent of left humeri, and 12.3 % of radii. Our results suggest that cultural practices such as consanguineous marriage and child brides may have factored into subadult mortality and morbidity.

Project:

THE EFFECTS OF SUBCELLULAR-DISRUPTING AGENTS AND CELL WALL BIOSYNTHESIS INHIBITORS ON ENDOMEMBRANE SYSTEM STRUCTURE AND DYNAMICS IN PENIUM

SKIDMORE COLLEGE
Wenqin He, 2021
David Domozych, Professor, Biology Department

Penium margaritaceum is an effective unicellular model to study the cell wall dynamics in plants. As important, cell wall studies will provide information of life processes that were critical to the invasion of land. Cell wall development in Peniumconsists of two major parts: a) biosynthesis, packaging and transport of wall precursors through the endomembrane system and to the cell surface and b) the extracellular organization of wall preof wall 0 (c)6 (r)5 (itic)6 10 (e0.48 0.48 reb1)]TJu8 0.4

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first-generation are crucial to understanding and predicting the trajectories of the second-generation. Specifically, we evaluate the levels of educational attainment of each group by year and by gender. In our research, we analyze the four largest African immigration cohorts: Nigerians, Ethiopians, Egyptians and South Africans. We utilize public-use U.S. Census and American Community Survey samples from 1990 to 2015. Through analysis of this immigration cohort's educational attainment, we can say with confidence how much better or worse certain groups of the second generation are expected to do.

Project:

DEVELOPMENT OF 3D PRINTED TESTING DEVICE

Khaly Diagne, 2021
Kimberly Frederick, Professor, Chemistry Department

3D printing has made it possible to produce complex devices rapidly and with multiple types of functionality. This is exciting for the production of microfluidic testing devices that need to perform multiple functions. As one example, we are developing a 3D printed testing device for farmers and environmental specialist to measure localized nutrients soil content. The 3D printed chip should be able to filter out soil particles, using a filament that has porous characteristics, to isolate the nutrients and water. The nutrient content of the soil will be measured by the intensity of a color changing reaction. An open-source software program, Image J, will be used to measure the intensity of the color of the reaction.

Project:

DEVELOPMENT OF A MICROFLUIDIC ASSAY FOR ANALYSIS OF IODIDE IN WATER SYSTEMS

Jessica Gaetgens, 2022
Kimberley A. Frederick, Professor, Chemistry Department

Flowback water is a major byproduct of oil and gas drilling and is undrinkable because of contamination from radioactive species, trace organic species and high concentrations of ions. While not itself toxic, iodide is a good "tracer" ion that when detected at hig

Project:

“VIVES SOLO:”

Project:

CRACKING THE CODE: E VALUATING THE IMPACT OF RESIDENTIAL BUILDING CODES ON ENERGY EFFICIENCY AND CLIMATE

Nicol La Cumbre-Gibbs, 2020
Karen Kellogg, Associate Professor, Environmental Studies and Sciences Program

Buildings consume 41% of energy used in the United States and are responsible for 40% of the

APS does not have oversight. While the inclusion of self-neglect into the broad category of elder abuse and neglect is often perceived as vital for service provision, findings indicate it may exacerbate the challenges inherent in defining and conceptualizing both the term and its response.

Project:

to HONO formation in the presence of sunlight. We show that terrestrial humic substances, a proxy of m-CDOM, can photosensitize NO_2 and form HONO and NO_x. Finally, we worked on the extraction of m-CDOM from the marine boundary layer in a wave-channel experiment that will allow testing this HONO formation pathway using marine photosensitizers.

Project:

COMPASSIONATE HANDS: REMEMBERING SKIDMORE COLLEGE DEPARTMENT OF NURSING

Grace Heath, 2019
Tillman Nechtman, Professor, History Department

This project exists to carry on the work that was done by Professor Tillman Nechtman's Public History Class. The goal of the class was to design and create an exhibit and presentation about Skidmore College's Nursing Department. While the exhibit and presentation were finished during the semester it was important that the work be continued by a student throughout the summer. My role this summer was to firstly present the classes' work to the nursing alumni who returned for reunion weekend in June. In order to save all the work done on this project I created a webpage to showcase the information and act as an archive. Along with creating this webpage I continued to carry out interviews with many nursing alumni in order to document and archive their stories.

Project:

USING THE BARYONIC TULLY- FISHER RELATION FOR GALAXIES TO MEASURE INFALL INTO COSMOLOGICAL FILAMENTS

Ramirez Raymi, 2021; Trevor Viscardi, 2020; Adam Warner, 2022
Evan Halstead, Senior Teaching Professor, Physics Department
Mary Crone Odekon, Professor, Physics Department

Cosmological simulations predict the existence of large filaments dominated by dark matter. These filaments should gravitationally attract nearby galaxies, creating an infall pattern. We test this prediction by mapping the positions and velocities of galaxies near the Perseus-Pisces Supercluster filament. We analyze radio data from the Arecibo Telescope in Puerto Rico and optical data from the Sloan Digital Sky Survey, and use the "Baryonic Tully-Fisher Relation" (a relationship between a galaxy's rotation speed and its mass in gas and stars) to determine positions and velocities. While this study is ongoing, a particular result from this summer is that we need to exclude data from galaxies that are oriented nearly face-on, since we cannot adequately measure their rotation speeds.

Project:

IN OUR OWN VOICES: PERSPECTIVES AND EXPERIENCES OF TRANSGENDER AND GENDER EXPANSIVE (TGE) FORMER FOSTER YOUTH OF COLOR

Sophia Helmkamp, 2020
June Paul, Assistant Professor, Social Work Department

[redacted]

Project:

ASPERTAME INTERATION WITH CIRCADIAN RHYTHM ACTIVITY OF DROSOPHILIA MELANOGASTER

KeAnna Nelson, 2022
Bernard Possidente, Professor, Biology Department

Does aspartame influence the circadian rhythm in Drosophila Melanogaster- fruit flies? Aspartame, an artificial sweetener commonly found in beverages and foods, may have unknown effects on the circadian rhythm, a roughly 24-hour physiological cycle in living beings. Fruit flies were given the equivalence of three cans of diet Coke worth of aspartame in order to assess developmental effects that aspartame may have on their offspring. Activity levels and rest activity levels of the immediate offspring were then measured using activity monitors. The results will demonstrate if there are any correlations between aspartame and activity levels in fruit flies in relation to aspartame and gender.

Project:

GENETIC ANALYSIS OF EFFECTS OF LEAD ON THE REST- ACTIVITY CYCLE OF DROSOPHILA

Chenhao (Scott) Shangguan, 2020
Bernard Possidente, Professor, Biology Department

I am researching effects of the heavy metal lead(Pb) on the rest-activity cycle of fruit flies at the genetic level. This project models developmental lead exposure in humans. The SAS statistical program was used to process the genetic effects and correlations. The correlation of the rest-activity changes with genetic effects was analyzed and will be presented.

Project:

Project:

THERE'S A NAP FOR THAT: NUDGING USERS TO LET THEIR PHONES SLEEP

Aaron Slonaker, 2021
Aarathi Prasad, Assistant Professor, Computer Science Department

As a response to negative backlash about smartphone addiction, Apple and Google released ScreenTime and Digital Wellbeing respectively to help smartphone users make informed decisions about their phone usage. These features allow smartphone users to allot a specific amount of time usage per app, and show a warning and temporarily block the users from returning to the app when that time is up. However, our previous study on ScreenTime revealed that the warning affects users negatively. Users reported experiencing anxiety, stress, and disappointment when alerted that they exceeded their daily time limits. This summer, I have been working on improving time limit warnings to reduce user anxiety and instead help the user change their behavior through nudging and mindfulness techniques

Project:

chromatography. Successful purification of SEX4 and LSF2 will allow us to obtain structural and functional details of glucan dephosphorylation.

Project:

MONOMETHYL FUMARATE REVERSES DIET INDUCED OBESITY IN C57BL/6J MALE MICE

Noa Mills, 2021, Dakembay Hoyte, 2020, Katy Ehnstrom, 2020
T.H. Reynolds, Professor, Health and Human Physiological Sciences Department

The prevalence of obesity has increased substantially over the past three decades resulting in a major public health problem. Currently, there are very few effective treatments for obesity. The purpose of this study was to examine the effects of monomethyl fumarate (MMF) treatment on diet-induced obesity in male C57BL/6J mice. It was hypothesized that MMF treatratat094 Tw 0.1 (a)4 (t)[i)

Additionally, I present results obtained with an agent-based model using the software NetLogo to help answer my research question, “was the quarantine In Eyam effective?”

Project:

CHARACTERIZATION OF THE DUAL PATHWAYS FOR B. HALODURANS ASPARAGINYL -tRNA FORMATION

Jon Matthew Bilé, 2021
Kelly Sheppard, Associate Professor, Chemistry Department

Protein synthesis requires the attachment of an amino acid to its cognate transfer RNA (tRNA). Two distinct pathways for attaching asparagine (Asn) to $tRNA^{Asn}$ are known: the direct pathway, in which Asn is directly attached to $tRNA^{Asn}$ by AsnRS; and the indirect pathway, in which Asn is attached to tRNA by non-discriminating AspRS and GatCAB. Bacillus halodurans uses both routes for the formation of the Asn-$tRNA^{Asn}$ complex. To better understand why B. halodurans possesses both pathways, we are purifying its AsnRS and AspRS in order to test and compare their activities under different chemical conditions such as reactive oxygen species and pH. This research will provide insight into how B. halodurans has adapted to survive in different

Using geostatistics to model variation in space, we created high-

expression level using SIFaRNAi diminished the sleep-promoting effect induced by the activation of SIFa neurons, suggesting a key role for SIFa itself.

Project:

THE SMALL AND LARGE VENTROLATERAL CLOCK NEURONS ARE NOT RESPONSIBLE FOR SLEEP PROMOTION MEDIATED BY SHORT NEUROPEPTIDE F.

Emily Perkins, 2020
Christopher G. Vecsey, Assistant Professor, Neuroscience

Short neuropeptide F (SNPF) is a sleep promoting neuropeptide widely expressed in Drosophila melanogaster. Because it is so widely expressed, the specific populations responsible for this effect

(z = -3.160, p = 0.002), and technology experience (parent report) did not significantly explain request choice, (z = 1.234, p = 0.217). However, children were equally as likely to trust the Echo as the human (z = -1.479, p = 0.139). These findings suggest that although children want to interact with smart devices, they may not trust this source of information.

Project:

18th -C. FRENCH SHIPPING LOGS: EARLY EVIDENCE OF BLACK RESISTANCE TO FRENCH SETTLEMENT

Nicole Wong, 2021; Soren Barnett, 2020
Adrienne Zuerner, Associate Professor, World Languages and Literatures Department-French

Shipping logs from the early years of the French transatlantic slave trade enact the first constructions of race as we understand these today. These logs, however, also unwittingly document some of the earliest instances of resistance to enslavement and thus reveal the agency of Blacks and other indigenous peoples. Examining the precise vocabulary of race found in slave shipping logs allows scholars to identify the conceptual frameworks that coded Blacks as sub-human, and at the same time, such study illuminates key episodes of Black resistance omitted from official French history. This archival research, informed by postcolonial theory, delves into early conceptions of race and resistance overlooked by modern-day French society, showing that French society has never been the “colorblind” society that it claims to be, and that resistance has existed for as long as racism has.