



*Join us in celebrating the hard work done by our summer undergraduate research students. Learn more about the benefits of working with a faculty member on scholarship and creative arts and celebrate the accomplishments of some of our research students. This event will feature posters and talks by students from the Summer Undergraduate Research Experience (SURE) Program.*

8:30am-10:00am

Open House: Poster Presentations  
*Alfond Science Center, 2<sup>nd</sup> and 3<sup>rd</sup> Floors*











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*Presenter: Benjamin Katz*

*Advisor: Jennifer Stiegler-Balfour*

*Major: Psychology*

For successful comprehension, readers must be able to detect and monitor the goals of a protagonist. In this current study, we examined whether decline in cognitive functioning (as measured by scores on the Montreal Cognitive Assessment (MoCA)) in elderly participants would influence their ability to monitor the goals and actions of a protagonist. Based on data collected thus far, individuals with lower scores on the MoCA tend to be less sensitive to subtle nuances of written text such as detecting small inconsistencies. Further analyses determined that the attention and language sub-scales of the MoCA are most predictive of losing the ability to comprehend text effectively.

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*Presenter: Joseph Langan*

*Advisors: James Sulikowski, James Quinlan, Michael Arciero*

*Major: Marine Science*

Increased fishing-induced mortality during the late 20th century has led to the severe decline of Atlantic cod (*Gadus morhua*) populations throughout the Gulf of Maine (GOM). Despite the common supposition that commercial fishing is the foremost factor influencing cod stocks, recent reductions in annual commercial harvests have not allowed the fishery to recover as expected. This trend suggests that other factors, such as the growing GOM recreational fishery, may be significant drivers of cod populations. In addition to the mortality attributed to harvest, Atlantic cod are known to experience increased mortality after being discarded by recreational fishermen. However, the mortality of cod in response to such recreational fishing activity is not clearly understood. This study aims to evaluate the





*Presenters: Taylor Littlefield*

are the most common prey item retrieved. In addition, the preliminary results of benthic grabs, beam trawls and beach seines conducted within the Saco river, suggest that the distribution of prey items found in the stomach contents, were correlated with the acoustic data. Further research on diet and

production (marsh growth) versus microbial decomposition (marsh decay), the marsh may be able to keep pace with another threatening aspect of climate change, sea level rise.

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*Presenter: Xiomarah Ramos*

*Advisor: Zachary Olson*

*Major: Animal Behavior*

Objective of this research was to determine if the presence of carrion, and therefore the presence of scavengers, affects the perception of predation risk (i.e., fear) by small mammals.

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on the abiotic characteristics of the SRE suggests that the estuary exhibits large fluctuations in relative salinity (0-30ppt) and surface water temperatures (13-31°C). In addition, preliminary data suggests that abundance and diversity of juvenile fish species in the SRE fluctuates on relatively short (month) and long (annual) temporal scales, with highest overall abundance and species diversity occurring in mesohaline water (5-18ppt). Furthermore, fresh and oligohaline (0-5ppt) sampling events yielded 61% freshwater, 33% estuarine, and 6% marine fish species while mesohaline sampling events yielded 14%, 33%, and 53%, respectively, suggesting that salinity has the most influence on fish abundance. When this knowledge is combined with the idea that current threats to this region (e.g. climate change, overfishing, and pollution) can affect recruitment, understanding the dynamics of the SRE fish community is crucial to proper conservation and management.

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aggregation is not reflective of experimental behavior, the model was altered to correct it. This new model was then employed to study multiple DNA duplexes bound to a surface and their hydrogen bonding patterns.

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*Presenters: Emily Mitchell and Cassandra Simmons*

*Advisor: Michael Burman*

*Major: Animal Behavior*

Fear conditioning involves the association of a previously neutral stimulus with a fear-inducing stimulus and is a common model of anxiety disorders such as specific phobias and post-traumatic stress disorder. Although the neural circuitry involved in fear conditioning in adult organisms is well understood, the development of these circuits is less well studied. The major research question underlying our work was whether perirhinal cortex lesions would disrupt fear conditioning early in life, postnatal day (PD) 18 or 25 in rats. We assessed two types of fear. Auditory fear resulted from the pairing of a tone with a mild footshock. Contextual fear occurred incidentally during auditory conditioning, as fear also develops to the experimental apparatus. Fear was measured by the percentage of time the rats exhibited freezing behavior either during replacement into the conditioning apparatus (contextual fear) or replay of the tone in a novel chamber. We believed lesions to the perirhinal cortex would disrupt much of the fear conditioning circuit by cutting off communication between the amygdala and hippocampus, identifying this as a key area of development. Our hypotheses were not supported. PD 25 rats had higher levels of contextual and auditory fear, compared to PD 18. However, there were no meaningful main effects or interactions caused by the lesion. We believe animals were using an alternative neural circuit (compensatory mechanism) which allows them to complete the task. To preclude this a new study is be

pain/motivation interactions in rodents. The overall goal is develop a version of this operant procedure for future studies that will evaluate delta/mu opioid receptor interactions on analgesic endpoints. Parallel studies will assess the same delta/mu receptor interactions on bone joint

antimicrobial profiles that may block robust human MRSA strains. Future efforts will be aimed at genetic analysis of the *Ulv* to confirm speciation. Chemical analysis by GC-MS and LC-MS toward the isolation and structural identification of the compound or compounds with antimicrobial activity is also ongoing.









being less strenuous than constantly low salinity is in agreement with the conditions in the crabs' natural habitat as they are rarely exposed to constantly low salinity.

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