



**Centenary
University Academic
Symposium
April 22nd, 2021**



Symposium Schedule

Presentation

Time

*Click on the presenter's name to access the Zoom session

Opening Remarks by President Murphy and Dr. D'Olivo 9:45AM

Brianna Delmar 10:00AM
"Short-term and Long-term Recall in Horses"

Abigail Reilly 10:20AM
"Incidence of soft tissue injury and hours of daily paddock turnout in non-elite performance horses"

Katherine Lyman 10:40AM
"Veterans and Trauma in a Prison System: Comparisons Between Combat/Non-Combat Histories"

Kelsey Denison-Vesel 11:00AM
"Prior Incarceration Impact on Experience of Trauma History in Older Adult Offenders"

Morgan Pierson 11:20AM
"The Impact of CJS Mandated Status on TC Treatment Process"

Alissa Mor & Victoria Viersma 11:40AM
"Spotted Lanternfly Microbiomes: An Initial Investigation into an Invasive Insect"

Nikolina Perrelli 12:00PM
"Developing Our Understanding of the Influence of Environmental Factors and Microplastics on Seal Microbiomes"

Brittany Adams 12:20PM
"Canine Behavioral Study"

Kevin Chroback 12:40PM

“In-Silico Determination of a Protein 3-D Structure”

Kayezhia Alviola & Darnel Burnette..... 1:00PM

“VITA/TCE Program”

BREAK..... 1:20PM

Kimberly Ervey 2:00PM

“Centenary Core Course “The Rights of the Child””

Samantha Johnson..... 2:20PM

“Determination of Microplastics in the Sediment of the
Musconetcong River”

Janell Chuddley 2:40PM

“How Did the Case Cross the Fence?”

Presentation Abstracts

Brianna Delmar, “Short-term and Long-term Recall in Horses”

Understanding the capacity of the horse to remember and recall tasks could help trainers and riders customize programs to be more precise. This may help reduce both frustration with forgotten skills, as well as the risk of overtraining and boredom. To investigate both short-and long-term task recall in horses over the course of one year, horses were tested on the recall time of a previously learned novel task. Twenty-six Warmblood geldings were randomly placed into one of four groups and tested for recall at one week, one month, six months or one year from the final training day. The horses were all initially given an eight day training period to spontaneously learn a novel task, which was touching a ball-shaped target on a stick. They were rewarded with a treat, reinforced with a clicker, and the time in seconds from the visual presentation of the target to the contact time with the muzzle was recorded (Touch time, Tt). A one-way ANOVA of the data showed that there was a significant effect of the period elapsed since training for Tt, $F(J,22)=3.254$, $p<0.05$. Planned contrasts showed a significant difference in Tt between the one month and six month test periods, $t(22)=2.663$, $p<0.01$ (one-tailed). These results show that the horses in this trial had good recall, and therefore retention of the novel task for at least one month, but that the retention and recall of this task at six months or longer was significantly decreased. This suggests that horses may need training reinforcement on a regular basis if tasks or skills are expected to be recalled and repeated beyond one month's time.

Abigail Reilly, “Incidence of soft tissue injury and hours of daily paddock turnout in non-elite performance horses”

Soft tissue injury, to any tendon or ligament, accounts for 13%-18% of horses that require rest and time off and is responsible for 33% of training losses and wastage in sport horses of all disciplines. Among others, two contributing factors to soft tissue injury in horses are an increase in acute workload and fitness level. It has been suggested that baseline fitness is inversely related to soft tissue injuries and that pasture turnout can help maintain fitness in the horse. The aim of this study was to explore the relationship between paddock turnout hours and incidence of soft tissue injury in non-elite performance horses. This retrospective

cohort study examined 146 lesson horses with a median age of 17 years that were housed at the Centenary University Equestrian Center from 2014-2020. All horses were under similar barn management, a consistent workload appropriate to their riding level, and had access to the same arena surfaces. All soft tissue injuries were diagnosed by the resident veterinarian, confirmed by ultrasound (91.5%), MRI (1.7%), or as a diagnosis of elimination (6.8%). A comparison was made between the incidence of soft tissue injury in two groups of horses, one that consistently received more than 12 consecutive hours of turnout per 24-hour period and the other that was turned out less than 12 hours per 24-hour period. Turnout groups were chosen by barn management based primarily on convenience and herd compatibility. Soft tissue injuries were only included after a horse had adjusted to any new turnout schedule or group for 30 days. The chi-square test of homogeneity of proportions was used to compare the proportion of soft tissue injuries for the two groups of horses. Forty-five (50.6%) of the 89 horses that were turned out for less than 12 hours experienced a soft tissue injury as compared to fourteen (24.6%) of the 57 horses that were turned out for 12 or more hours. At the 0.05 significance level, the difference in these proportions, 0.26, was statistically significant ($\chi^2(1) = 9.755, p = 0.002$). This suggests that there is an inverse relationship between the length of paddock turnout and the risk of soft tissue injury in nonelite horses.

Katherine Lyman, “Veterans and Trauma in a Prison System: Comparisons Between Combat/Non-Combat Histories”

Veterans with/without a combat history (N=190) in a state prison system were studied via a path analysis of age predicting trauma history which in turn predicted PTSD symptoms. Across both groups (combat/non-combat histories) age was a negative significant predictor of objective trauma. In addition, across both groups, subjective trauma experience was a significant positive predictor of PTSD symptom severity. Path analysis model comparisons further highlight the key similarities/differences between the combat/non-combat groups.

Kelsey Denison-Vesel, “Prior Incarceration Impact on Experience of Trauma History in Older Adult Offenders”

A moderation model examined the effect of prior incarceration on the predictive relationship between objective (i.e., number of traumatic episodes) and subjective trauma (i.e., emotional distress) in a sample of older adults in a state prison system (N=344). The model accounted for a substantial percentage of the outcome variance and demonstrated a significant moderation effect where those with an incarceration history experienced greater levels of subjective trauma distress than those without an incarceration history.

Morgan Pierson, “The Impact of CJS Mandated Status on TC Treatment Process”

Autoregressive cross-lagged models were run on SUD treatment clients (N=185) in a therapeutic community and focused on criminal justice mandated status, self-reported readiness or motivation for treatment, and self-assessed client progress in treatment. Measures were taken at treatment entry and at day-90. Results indicated how mandated status had a stronger predictive relationship on treatment readiness as compared with motivation and how client self-assessment of progress at treatment entry does not predict motivation/readiness at day-90.

Alissa Mor & Victoria Viersma, “Spotted Lanternfly Microbiomes: An Initial Investigation into an Invasive Insect”

Spotted lanternflies (*Lycorma delicatula*) are invasive insects currently spreading in the mid-Atlantic region of the United States. Spotted lanternflies can feed on crops and cause severe downstream damage to agricultural systems. There is currently not an efficient method for controlling them. However, there is hope for microbial methods of controlling the spread and impact of the spotted lanternfly. The first step in searching for potential microbial methods of control is to categorize the spotted lanternfly microbiome. This study sought to understand what bacteria were present in the microbiome using 16S V4 region of rRNA gene markers. The Earth Microbiome Protocol was followed and the gMAX DNA mini kit from IBI Scientific was used for extractions. The samples were sequenced on an Illumina sequencer using a 300 cycle kit and analyzed using QIIME2. The microbiome was successfully characterized in this study, and future studies will expand on these results by investigating the seasonality of the microbiome.

Nikolina Perrelli, “Developing Our Understanding of the Influence of Environmental Factors and Microplastics on Seal Microbiomes”

Marine mammals play critical roles in oceanic ecosystems and serve as indicators of the health of the environment. Microbiome compositions of marine mammals are understudied but can provide insights into the relationship between mammalian and environmental health. In this study, the microbiome composition of gray seals (*Halichoerus grypus*) was characterized as part of a larger study investigating the relationship between microbiomes and microplastics present in the environment. Gray seals are an ideal marine mammal species to examine because of their haul-out and foraging behaviors. DNA was extracted from 70 fecal, environmental, and direct swab samples from gray seals located on Great Point Beach in Nantucket, Massachusetts, an area protected by U.S. Fish and Wildlife. Samples were processed using the Earth Microbiome protocol and a Zymo Research Quick-DNA/RNA MagBead kit for extraction. The V4 region of the 16S rRNA gene was amplified using Polymerase Chain Reaction (PCR) and sequenced using a 300-cycle kit on an Illumina sequencer. The sample sequences were analyzed using the QIIME2 microbiome bioinformatics platform. The microbiome was successfully characterized, and future studies will seek to analyze the levels of microplastics present in seal fecal samples and their surrounding environment to relate it to microbiome composition.

Brittany Adams, “Canine Behavioral Study”

My research is looking at the difference in response time by dogs to their owners when there are different stimuli present. The dogs were brought to the end of a path and the owner would walk out of sight, the owner would then call the dog's name three times and the dog would then be released and the time the dog took to return to its owner was recorded. The data was gathered by recording the trials from four different points of view. There were four trials completed, the first being a control, then having two strangers doing nothing, then two strangers crying and then two fighting. There was then a statistical analysis completed to interpret the data.

Kevin Chroback, “In-Silica Determination of a Protein 3-D Structure”

POM121C is a protein found in the nuclear pore complex (NPC) located on the nuclear envelope of eukaryotic cells. The NPCs are responsible for the transport of molecules in and out of the cell nucleus and are composed of a variety of nucleoporin proteins. The structure of the NPC and its composite proteins have been the subject of much discussion. While the amino acid sequence of POM121C has been recently discovered, its 3-D structure remains unsolved. By utilizing homology modeling software and bioinformatics tools, we have generated a series of potential 3-D models based on the amino acid sequence of POM121C. Comparative modeling tools were also applied in order to investigate possible structure-function relationships for these models, based on homologous proteins deposited in protein structure databases.

Kayezhia Alviola & Darnel Burnette, "VITA/TCE Program"

The presentation will be about what the VITA/TCE program offers and how we help make a difference in the local community. We will highlight how IRS-certified volunteers in the program assist people who need help with their taxes for free, especially the elderly, persons with disabilities, and limited English-speaking taxpayers. In addition, we will also talk about the general process of how a volunteer can become certified in preparing taxes and give an overview of what is required for someone to be a volunteer. Lastly, we want to emphasize the importance of the program to the community and how we prioritize accuracy to prepare returns.

Kimberly Ervey, "Centenary Core Course "The Rights of the Child""

I will describe what the "UN Convention on the Rights of the Child" is and why this topic is crucial to add to the Centenary curriculum and which students it could benefit. I will present my syllabus and informative PowerPoint regarding the course that I created that could be taught here at Centenary called "The Rights of the Child". I will explain the purpose and benefits for adding this course to the Centenary course catalogue. I will demonstrate how this course could include a service-learning component as well as highlight the type of knowledge and skills students would have developed after completing the course. I will describe the different types of homework, projects, and assignments that would be used and how they would be implemented. I will also explain what the schedule would be for the

class, when assignments would be due, and what would occur during class time. In conclusion, I will show the syllabus and PowerPoint to present the course that I developed for this University.

Samantha Johnson, “Determination of Microplastics in the Sediment of the Musconetcong River”

Microplastic pollution in waterways is an emerging environmental issue. Microplastics pose a threat to the food chain of marine and aquatic ecosystems because of plastic's indigestible nature and potential to release toxic compounds. The Musconetcong River located in northwestern New Jersey undergoes many tests such as macroinvertebrate and water quality sampling and analysis, but lacks research and data in microplastics prevalence. This river is located in a rural section of New Jersey and is a designated Wild and Scenic River. However, this river is not free from human impacts, as it flows through many towns and is utilized for fishing and recreation. In order to identify and track the prevalence of microplastics in the Musconetcong River over time, a preliminary study and establishment of a standard operating procedure is necessary. Samples of sediment were collected along transects at two sites on the Musconetcong River. Sediment samples were processed using a series of density separations and wet peroxide oxidation as outlined by NOAA. Through microscopic analysis, it was determined the dominant plastic type was fibers. Microplastics are everywhere, but the discovery of microplastics in a seemingly healthy river is cause for concern. With the establishment of preliminary data on microplastics in the sediment of the Musconetcong River, more studies can be conducted across more locations to gain a better scope of the issue. Future studies can expand on sediment concentrations, while also investigating the presence of microplastics in the riverbank, water column, and macroinvertebrates.

Janell Chuddley, “How Did the Case Cross the Fence?”

Law enforcement regularly encounters two primary types of handguns at shooting scenes - the revolver and the semi-automatic pistol. Both firearms are designed to discharge a projectile. However, the semi-automatic pistol can potentially leave additional evidence behind at the crime scene as the spent case is extracted and ejected from the firearm at

discharge. These spent cases can be present at a shooting scene and become quite significant to investigators and crime scene personnel in their effort to determine where the shooting occurred. This research project focuses on the height that spent cases are capable of traveling from the ejection port of a semi-automatic pistol over a privacy fence in an effort to identify the shooter's position.