

STUDENT POSTER ABSTRACTS

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** Abstracts for this presentations appears in the 2007 Conference Program.

A Note on Student Abstracts

The abstracts presented in this book were submitted electronically and may contain errors that arose during the transmission. These errors should not be attributed to the authors and Sigma Xi apologizes for any such errors that were missed in editing the abstracts.

BH-21

Impact of Depression on Patient Perception of Voiding Symptoms

Timothy V. Johnson (Emory University), Samantha S. Ehrlich (Emory University), Ammara Abbasi (Emory University), Renee S. Kleris (Emory University), Evan D. Schoenberg (Emory University), Ashli Owen-Smith (Emory University), Advisors: Charles L. Raison MD and Viraj A. Master MD PhD (Emory University)

Purpose: Depression not only increases morbidity and mortality but also alters patient perception of symptom severity and ability to habituate to pain. Written screening tools rely on the patient's ability to perceive symptoms and discriminate symptom severity. We evaluated depression's impact on the ability of patients to self-administer properly, as an illustrative model, the International Prostate Symptom Score (IPSS).

Materials and Methods: This prospective cohort study involved 138 male patients over the age of 40 who completed the Geriatric Depression Scale (GDS) once and the IPSS

twice: first self-administered and then interviewer-administered. To assess patient demographics, descriptive analyses and frequencies were conducted. To evaluate whether IPSS scores differed by mode of questionnaire delivery (self-administered versus interviewer-administered) and by presence or absence of depression, paired sample t-tests were conducted.

Results: 22% of our patients had some level of depression: 16% were strongly suggestive of depression (GDS>10) and 6% were indicative of depression (GDS>5). Depressed patients reported significantly more severe symptoms (mean=17.04, SD=9.42) compared to non-depressed patients (mean=10.38, SD=7.66) (F=13.36, p<0.001). Non-depressed patients reported significantly more severe symptoms on the self-administered IPSS (mean=10.43, SD=7.69) compared to the interviewer-administered IPSS (mean=8.24, SD=6.88; t=5.72, p<0.001). Depressed patients (GDS>5), by contrast, reported statistically insignificant differences between self- and physician-administered questionnaires (t=0.926, p=0.364), with identical results for patients with a GDS>10.

Conclusions: Depression significantly impacts a patient's IPSS score, suggesting that depressed patients either have more severe disease states or they misperceive similar symptoms, the latter predisposing depressed patients to inappropriate care.

Key Terms: Depression
Medicine

CH-14

Study of the Thermal Properties of Irradiated Poly(vinyl alcohol-co-ethylene)

Dan Suchy (The Pennsylvania State University), Jeremy Smith (TA Instruments), Advisor: Bratoljub H. Milosavljevic (The Pennsylvania State University)

The previously measured sol phase vs. dose relation corresponding to the radiation induced cross-linking of the copolymer of polyethylene-polyvinyl alcohol, PVA-co-PE, (Nucl. Instrum. Meth B., 2003, 208, 185-190) showed that water embedded in the PVA-co-PE matrix markedly affects the radiolysis; the full hydration reduces the gel dose about three times. In order to further elucidate the effect of water on the cross-linking efficiency the thermal properties of PVA-co-PE were studied. The TGA data showed that the fully hydrated sample contained 10.6% of water. The DSC data obtained at the heating rate of 10°C related to the dry PE-PVA sample showed that the melting point is at 127.5 °C whereas the corresponding crystallization point was found to be at 93.5 °C. The significant increase in the melting point (160°C) was observed in the irradiated sample which is consistent with an increase in the average molar mass induced by cross-linking. Kinetic analysis of the data was performed and fully discussed.

Key Terms: Polymers
Thermal Properties
Ionizing Radiation

STUDENT POSTER ABSTRACTS

EB-19

Do Herbivory and Secondary Metabolite Production in Morning Glory Vary with Distance from an Urban Center

Sakinah Miller (Fort Valley State University) and Jim Lewis (Fordham University, Louis Calder Biological Research Center)

Changes in herbivory associated with urbanization may cause changes in secondary metabolite production. These changes may in turn affect plant growth. In this study, we examined herbivory, secondary metabolite production and growth of morning glory grown along an urbanization gradient. Plants were grown at five sites that differed in distance from Central Park. I measured growth, leaf damage and defensive compounds to test my hypotheses. Growth and herbivory appeared to decrease with distance from Central Park to Ashokan (Catskills). Anthocyanin production was consistent across all sites. My results are consistent with other studies, and suggest that urbanization may independently affect herbivory and growth, but may not affect secondary metabolite production. As a result, my data are not consistent with the theory of defense tradeoff.

IR-34

Anxiety-Related Behavior and *sepp1a* Expression in the Zebrafish Brain

Shayna Williams (Claremont McKenna College), Advisors: Barrie Robison (University of Idaho) and Robert Drew (University of Idaho).

To better understand the relationship between anxiety-related behavior and gene expression in the brains of bold and shy fish, an experiment was conducted using two domesticated strains, two wild strains, and a domesticated x wild F2 population of zebrafish. Boldness and surface orientation data were collected for each fish and the results showed the domesticated fish were significantly bolder and had higher surface orientation than the wild strains, and the F2 fish showed variable degrees of each behavior. To identify differentially expressed genes between bold and shy fish, microarray analysis was used on pooled brain RNA samples. Several differentially expressed genes were identified and 15 genes were chosen from these for further study using quantitative Real Time PCR (qRT-PCR) on individual, unpooled fish brain RNA samples. Interestingly, the microarray and qRT-PCR results did not often agree. Only *ptpra*, *cyp19a1b*, and *sepp1a* were shown to be differentially expressed between the domesticated and wild strains by both microarray and qRT-PCR analysis and only *sepp1a* was differentially expressed between the boldest and shyest F2 fish using both methods. Unexpectedly, while *sepp1a* was differentially expressed in both groups of fish, bolder fish had higher *sepp1a* expression in the domesticated and wild fish but less

bold fish had higher *sepp1a* expression in the F2 population. These results suggest that while *sepp1a* expression in the brain could be involved in anxiety-related behavior, this relationship is complex and merits further study.

Key Terms: Neuroscience
Behavioral Genetics

PA-04

Asteroid Classification and Detection with Orbital Analysis

Jon Plotner (Saint Mary's College of California), Advisor: Ron Olowin (Saint Mary's College of California)

Abstract available at the conference.

Key Terms: Astronomy
Astrophotography

PA-05

Infrared Spectra of Comet-Asteroid Transition Object 944 Hidalgo

Kelsey Hargrove (University of Central Florida), Humberto Campins (University of Central Florida), Michael Kelley (University of Central Florida), Yan Fernández (University of Central Florida), Julie Ziffer (University of Central Florida and University of Southern Maine), Javier Licandro (Inst. Astrofísica de Canarias), Josh Emery (NASA Ames Research Center), Dale Cruikshank (NASA Ames Research Center), Carl Hergenrother (LPL/Univ. of Arizona), Noemí Pinilla-Alonso (Telescopio Nazionale Galileo, Spain), Devon Clautice (University of Central Florida).

944 Hidalgo is one of the asteroids most likely to be an inactive comet. Last year, we reported rotational variability in ground-based near-infrared spectra of Hidalgo. Since then, we carried out a rotationally resolved study of Hidalgo in the mid-infrared using the Spitzer Space Telescope. No detectable rotational variability in the 7-38 micron emissivity was found. One possible explanation is that the mineralogy across Hidalgo's surface is similar, but some areas have fresh material exposed by collisions (less affected by space weathering) with different near-infrared properties.

All the Spitzer spectra show clear emissions from silicates. These emissions are qualitatively similar to those seen in Trojan asteroids (Emery et al. 2006) and in comet Hale-Bopp (Crovisier et al. 1997). Such similarities are consistent with Hidalgo's suspected cometary origin, and with an analogous formation and evolutionary environment for Trojan asteroids and Jupiter-family comets (as proposed by some, based on dynamical arguments; e.g., Morbidelli et al. 2005).

Key Terms: Comet-Asteroid Transition Object
Spectra
Silicate Emission
