Fields, Abby L. “Juvenile Drug Courts.”  
*Abstract:*

Hart, Michelle R. “New Zealand: A World Model for Youth Restorative Justice.”  
*Abstract:*

Jones, Rhonda F. “Hoagy Carmichael.”  
*Abstract:* Examines Hoagy Carmichael’s contributions to Indiana, Richmond, jazz and recorded music.

McQueary, Regina L. “Juvenile Mental Health Courts.”  
*Abstract:*

Miller, Anthony D. “The Infometer.”  
*Abstract:* Professor Bingaman and I constructed an interferometer that makes use of a Helium-Neon laser for its coherent light source, along with specially coated mirrors to enhance the He-Ne laser. Our construction resulted in a hands-on, working interferometer for IUE’s Physics Department. This interferometer will be used for future demonstrations in Professor Bingaman’s P200 classes and to aid in the instruction of physics students, and possibly upper level Physics classes will be offered at IUE.

Johnson, R. Marc “John Mellencamp.”  
*Abstract:* This presentation epitomizes the career of John Mellencamp and the influence of Indiana on his work as well as how he has influenced the Hoosier state. Mellencamp’s musical and artistic creations are inspired by his hometown of Seymour and the characteristics of life as a native and resident Hoosier. The lyrics of his songs reference locations and themes in Indiana. He has achieved great wealth and recognition as a singer, songwriter, artist, movie director and actor. John Mellencamp has shared his success with his home state and fellow Hoosiers by co-founding Farm Aid to relieve the plight of farmers and making charitable contributions to the town of Seymour and Indiana University in Bloomington. Mellencamp’s appreciation and influences of Indiana is shown in his work and by his actions.

Mullen, Rachel (IUE Alum) “Regulation of the Human LHX3 Transcription Factor Gene: Translation to Hormone Deficiency Diseases.”  
*Abstract:* LHX3, a LIM homeodomain transcription factor, is critical for pituitary and central nervous system development. The human LHX3 gene produces two mRNAs, LHX3a and LHX3b, resulting in three protein isoforms: LHX3a, LHX3b, and M2-LHX3 [1]. Mutations in coding regions of LHX3 cause combined pituitary hormone deficiency (CPHD). LHX3 patients are short in stature, have thyroid hormone deficiency, and do not undergo puberty. The majority of LHX3 patients also have a rigid cervical spine and limited neck rotation [2]. Some patients exhibit CPHD plus spine and neck defects but lack a coding mutation for LHX3. My hypothesis is that this form of CPHD can result from mutations in regulatory elements of the LHX3 gene. The key regulatory elements necessary for LHX3 expression in vivo are unknown. In preliminary research, I examined the activity of the LHX3 basal promoters using a *beta galactosidase* reporter gene transgenic mouse model. Bioinformatic searches of the DNA sequences surrounding the human LHX3 gene revealed non-coding regions conserved in multiply species including dog, mouse, and chicken. Conserved non-coding sequences often have regulatory function [3]. These sequences were also tested using the mouse model. A regulatory region directing expression to the developing mouse spinal cord and pituitary was identified. Ongoing experiments include deletion constructs to determine the minimal element(s) necessary for tissue-specific and temporal expression of the LHX3 proteins and identification of putative transcription factors regulating LHX3 expression. In collaboration with our clinical partners at Riley Children’s Hospital, University Children’s
Hospital in Leipzig, Germany, and Children’s Hospital of Brooklyn at Maimonides, New York. I also plan to screen candidate patients for mutations in the identified regulatory element(s). For the majority of CPHD patients, the mutation is unknown. Knowing the genetic defect facilitates patient treatment and enables proper genetic counseling. This research may begin to unravel the genetic questions left unanswered for many CPHD patients.

Agee, Rebecca G. “I Have a Dream: The Metaphoric Power of Martin Luther King.” Abstract: Martin Luther King’s memorable “I Have a Dream” speech motivated the previous generation of Americans to call for a revision of ethical and legal standards regarding race relations—and to peacefully and diligently work towards that end. By using rhetorical analysis, this study explores both how and why King’s words were so effective. The totality of King’s imagery is that of the “American Dream”—of which ALL Americans can identify. Such persuasive, accomplished speakers are rare. New generations of Americans await another of King’s eloquence to continue his work and to take them to the next level of race relations.

Blankenship, J. Melissa “A Slave in the Family: Uncovering Hidden Family Relationships.” Abstract: Beginning with only family stories, this project, to connect slave ownership to one Powell family line between the years 1790 to 1865, involved travel to three states and multiple cities in Texas, Louisiana and Mississippi to uncover any and all official documents existing in the historical record. While the results of slave ownership were inconclusive, what I took away from the research process was invaluable. The exposure to some of the roughest research terrain I have yet traversed, looking back into the sparseness of the historical record in the communities I traveled, created for me a journey of inspiration and education in the ways of historical research. My appreciation for historians has grown immensely and I feel better able to commune with their academic world. I could never have imagined the scope and value of this kind of work before I began this particular research journey, which will go forward as I continue the search for information.

Hart, Michelle R. “Colloidal Silver v. Escherichia Coli.” Abstract: Metals such as gold and silver, in micro quantities have been used for thousands of years to combat disease. Our semester research project explored the hypothesis that colloidal silver would be toxic to a utility strain of Escherichia coli (E. coli). Varying amounts of colloidal silver was added to cultures of E. coli. The degree of silver toxicity was revealed by making serial dilutions of each E. coli/silver culture and putting a sample of each dilution onto an agar plate to grow. The level of toxicity was measured by counting the number of colonies that grew. No colonies were observed.

Mann, Nichole “Male Dominance as a Legacy of Female Sexual Subordination in the United States.” Abstract: While not universal, patriarchy is generally accepted as a predominant system of gender subordination. One possible explanation for this is the nature of human sexuality itself. This is an especially telling idea in Western societies, where female subordination has permeated economic and political interactions as well as social and familial relationships. I suggest that the importance placed on sexual relationships has created a system of male dominance, specifically as related to work. However, as technology expands and American culture shifts, female subordination may be becoming unnecessary to ensure the continuation of the family and maintain social order.

Owen, Christina A. “Degradation of Thiosulfate by Phanerochaete Chrysosporium.” Abstract: Thiosulfate is a sulfur compound that is usually produced from liquid waste products of sodium sulfide or sulfur dye manufacture. Mechanisms such as oxidative and reductive reactions are required for the metabolism of these toxic compounds. Phanerochaete chrysosporium, a filamentous basidiomycete, is a white rot fungus that secretes enzymes to facilitate the degradation of many toxic compounds. We compared different concentrations of thiosulfate, incubation time, media with different concentrations of nitrogen, and the amount of inoculum, to observe the percent change of degradation of thiosulfate. A time curve showed an increase of degradation. The data suggested that as the nitrogen concentration increased in the medium the amount of thiosulfate decreased. The amount of P. chrysosporium inoculum used and the incubation time
decreased the amount of thiosulfate broken down. As the amount of inoculum and incubation time increased the percent change also increased. Additional research would be needed to identify the bi-products produced by this degradation process.

Whitsell, Shawnee & Beach, Dale “Genomic comparison of mRNA localization mechanisms in fungal systems.” Abstract: Saccharomyces cerevisiae utilizes a method of sequestering mRNA to ultimately control the location of translated proteins. The SHE2 pathway localizes mRNA to the newly formed daughter cell (the bud) restricting the translated proteins to this region. Using the coding sequence of the SHE2 protein, a genomic comparison using bioinformatics techniques identified other fungal systems with SHE2 homologs engaging in this pathway. Further study of these other systems will enhance our understanding of the pathway as well as allow us to investigate the evolutionary significance of asymmetrically localized mRNA.

CONCLUDING STUDENT RESEARCH DAY

Closing Comments by Vice-Chancellor Dr. Lawrence Richards

Award Deliberations—Refreshments Served

Award Announcements