

CELEBRATE

**A CELEBRATION OF
STUDENT RESEARCH
& CREATIVE ACTIVITY
2004**

XAVIER
UNIVERSITY



April 5, 2004

To All Participating Students:

3800 Victory Parkway
Cincinnati, Ohio 45207
Phone 513 745-3000

Welcome to Xavier University's Celebration of Student Research and Creative Activity. Our celebration today is the tenth such event since the Celebration was established in 1995.

Today we honor academic achievements in the areas of undergraduate research and creative activities by students from departments of all three Colleges of the University. Your hard work on these projects throughout the past year most certainly deserves a day of celebration. It is only fitting that each of you has the opportunity to share the results of your efforts with the entire University community. Hopefully this collection of abstracts will testify to the breadth and complexity of your interests. Much appreciation must also be expressed to the many faculty members who have guided you in your work. Their dedication to helping you experience the joy of doing research and pursuing creative endeavors is a wonderful gift to you.

It is our hope that the curiosity which led you to investigate these problems and the excitement that each of you has brought to your work will continue to inspire you in future endeavors. Congratulations on the excellent work that these projects represent. Thank you for enriching the Xavier community by your achievements.

Sincerely,

A handwritten signature in cursive script that reads "Janice B. Walker".

Janice B. Walker
Dean, College of Arts and Sciences

A handwritten signature in cursive script that reads "Neil Heighberger".

Neil Heighberger
Dean, College of Social Sciences

A handwritten signature in cursive script that reads "Ali Malekzadeh".

Ali Malekzadeh
Dean, Williams College of Business

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POSTER PRESENTATIONS

DEPARTMENT OF BIOLOGY

EFFECTS OF IL-6sRF ON BOVINE LAD CORONARY ARTERIES

Rob Alunday, Jacqueline Carpenter, Angela DiCarlo, Kristen Habash, Jeffrey Hill, Kat Muhlbachler, and Christy Miller (Dr. Lisa Close-Jacobs)

Previous studies have shown a relationship between increased interleukin-6 (IL-6) levels and a reduction in endothelium-dependent relaxation in coronary arteries. Although the mechanism of this reduction is not known, cell reception of IL-6 involves the release of interleukin-6 soluble receptor fragment (IL-6sRF). Changes in force in rings of bovine left anterior descending coronary arteries were measured during the administration of U46619, experimental treatments, and bradykinin. Relaxation with the addition of bradykinin was expressed as a percentage of U46619-induced contraction. Results showed no reduction of bradykinin-induced relaxation by IL-6 (66.6%) or IL-6sRF (78.12 %) as compared to a vehicle only control (65.98%).

DIESEL FUEL TOLERANCE OF *AZOLLA CAROLINIANA* BASED ON NITROGEN FIXATION AND DRY WEIGHT

Aaron Butler (Dr. Linda Finke)

Azolla pinnata has been used for biodegradation of diesel fuel in aquatic communities. *Azolla pinnata* has been shown to grow densely in 4% solutions of diesel fuel and mineral salts. A related species, *Azolla caroliniana*, was tested for its ability to tolerate differing concentrations of diesel fuel. *Azolla* was grown in concentrations of 4%, 0.4%, and 0.04% diesel fuel for nineteen days. An acetylene reduction was used to determine if nitrogen fixation rates of the *Azolla* were affected. Dry weight and fresh weight were also measured.

THE EFFECT OF THE INSECTICIDE MALATHION ON NITROGEN FIXATION IN *ANABAENA*

Jeffrey Callis and Tara Weinmann (Dr. Linda Finke)

The purpose of this investigation was to study the effects of the insecticide Malathion on the ability of *Anabaena* to fix nitrogen. It was hypothesized that

because of the high toxicity of Malathion, the nitrogen fixing ability of *Anabaena* would decrease as the concentration of Malathion was increased. Malathion was added to cultures of *Anabaena* in concentrations of 0.2%, 0.02%, and 0.002%. Immediately following the addition of Malathion, the cultures were tested for nitrogen fixing ability every 30 minutes over a three-hour period. The ability of *Anabaena* to fix nitrogen was measured using an acetylene reduction assay.

THE EFFECT OF CHANNELIZATION ON MACROINVERTEBRATE COMMUNITIES IN THE MILL CREEK

Joseph Cionni, Lauren Gertz, Brady Hall, Xerxeser Kayode, Katie Kling, David Murphy, Elizabeth Norris, and Michael Rahn (Dr. Stanley Hedeon)

The effects of stream modification on macroinvertebrates were examined by collecting macroinvertebrates from seven sites along the Mill Creek. Samples were collected in August, September, and October 2003 and the species were identified in the laboratory. Pollution was eliminated as a possible variable because pollution-sensitive organisms were found at each site. Fewer species were recorded at sites that had undergone channelization. Clearly, channelization of streams has an adverse effect on the diversity of macroinvertebrate communities.

PRE-EXPOSURE TO HYPOXIA DECREASES CALCIUM-MEDIATED ACUTE ACTIVATION IN HUMAN LYMPHOCYTES

Kelly Curran (Dr. Jennifer Robbins and Dr. Laura Conforti, Univ. Of Cinti. College of Medicine)

The human immune system is composed of a multiplicity of cell types expressing surface proteins with a different range of functions that circulate throughout the body, where they are subject to a range of physiological conditions, including varying levels of oxygen. This study focuses on how hypoxia affects activation of T lymphocytes. Such activation occurs through the opening of the highly selective calcium release-activated calcium (CRAC) channels that allow influx of Ca^{2+} into the cytoplasm. The

process is observed using the fluorescent calcium-indicator dye fura-2AM. Activation can be induced in Jurkat cells and primary cultures of human T lymphocytes in two distinct ways: through the physiological binding of antigen to T cell receptor (TCR) or through the direct inhibition of the intracellular store-operated (SERCA) pumps. By pre-incubating the cells in normoxia or hypoxia and maintaining those conditions *in vitro*, we can simulate in a novel way antigen presentation in hypoxic lymph nodes. Cells can be stimulated and the Ca^{2+} response in hypoxia compared to that in normoxia. We have found that hypoxia significantly decreases calcium influx into a subset of T cells, thus diminishing the acute activation response.

COMPARISON OF THE PHYLOGENETIC RELATIONSHIP AND CRANIODENTAL MORPHOLOGY AMONG FOUR SPECIES OF HERBIVOROUS AND OMNIVOROUS CARNIVORES

Angelica Falcone (Dr. William Anyonge)

The mammalian order Carnivora consists predominantly of species that ingest meat as the major component of their diet. A few species such as the black bear (*Ursus americanus*) and raccoon (*Procyon lotor*) display omnivorous feeding behavior, whereas others such as the red panda (*Ailurus fulgens*) and giant panda (*Ailuropoda melanoleuca*) are more herbivorous. In this study, the relationship between diet and craniodental morphology was investigated within these two feeding groups. It was hypothesized that the red and the giant panda would show similar craniodental adaptations for feeding on their specialized diet (bamboo). Similarly, the omnivorous black bear and raccoon would be expected to show convergence in craniodental morphology. Our results indicate that the herbivorous species have larger moment arms for jaw muscles, and shorter out-levers to the cheek teeth compared to the omnivorous species, indicating the lack of phylogenetic influence on morphological adaptations for feeding.

THE DETERMINATION OF SEROTONIN RECEPTORS LOCATED ON MOUSE MAMMARY GLAND EPITHELIUM

Brett Friesen and Chereasa Re'nee Williams (Dr.

George Jacob)

Mammary gland epithelia grow and differentiate in response to prolactin, which induces the production of serotonin. It is known that these mammary cells not only produce serotonin but also have mRNA for serotonin receptors, specifically 5-HT_{2A}. Therefore, serotonin may have an autocrine/paracrine function. Lactating mouse mammary gland was homogenized; membranes were purified via centrifugation and assayed by immunoblot using anti-5-HT_{2A} antibodies. It is anticipated that receptor 5-HT_{2A}, a 55 kD protein will be present in immunoblot analysis since the mRNA for this receptor was found in the mammary gland epithelium.

THE EFFECT OF WAVELENGTH OF LIGHT ON RATE OF NITROGEN FIXATION IN ANABAENA

Domantas Gurevicius and Kevin Hartman (Dr. Linda Finke)

Previous studies have shown that light intensity and quality of light have an impact on the rate of nitrogen fixation in photosynthetic, nitrogen fixing organisms. *Anabaena* was chosen because it is a commonly studied nitrogen fixing organism, it is found abundantly, and easily cultured. This study was performed to determine if *Anabaena* exposed to different wavelengths of light from the visible spectrum would exhibit different rates of nitrogen fixation. Cultures were exposed to light from the red, green and blue portions of the visible spectrum for one week. Acetylene reduction assays were performed daily to measure the rate of nitrogen fixation in each culture.

SEQUENCING OF A POSSIBLE INTERMEDIATE FILAMENT GENE IN ASPERGILLUS NIDULANS

Melissa Klabunde, Abby Loftus, Cory Mehl, Victoria Raymond, and Jeremy Sullenberger (Dr. Dorothy Engle)

Intermediate filaments in vertebrates are a component of the cytoskeleton that function to maintain cell shape and hold organelles and the nucleus in the cell. PCR primers from mouse intermediate filament DNA were used to amplify a similar genetic sequence in *Aspergillus nidulans*. This amplified *Aspergillus nidulans* genetic sequence was isolated and then partially sequenced. There were no similar gene sequences found when the isolated sequence was run through online databases. Future

research will be needed to complete sequencing and to find the function of this gene in *Aspergillus nidulans*.

FREQUENCY MODULATION IN MALE-TO-MALE ACOUSTICAL COMMUNICATION IN THE FLORIDA MANATEE

Christopher J. Kluener, Steven T. Herbert
(Physics) and Jeff Johnson (WVXU) (Dr. Charles Grossman)

Since Florida manatees are solitary mammals, it is assumed there is little communication between adults. Thus, most manatee vocalizations are believed to be primarily between mothers and calves. Current research focuses on identifying individual manatees according to their vocalizations, as well as comparing vocalization differences between subspecies of West Indian manatees. However, the extent of adult vocal communication and the call structure of manatee vocalizations are unknown. The aim of this research is to determine if frequency modulation is used as an information vehicle in male-to-male communication of the Florida manatee. Two male manatees are housed at the Cincinnati Zoo and Botanical Garden where digital recordings, between 10 Hz and 50 kHz, were obtained twice weekly for 6 months. Currently, vocalizations have been collected for two manatees and collection on a third continues. The recordings are then paused into individual vocalizations and multiple frequency-based variables are measured using a custom designed computer program. Next, the vocalizations will be categorized according to different frequency modulation patterns using a multivariate statistical analysis, such as principle component analysis. Preliminary data heavily suggests that vocalizations are more varied than the stereotypical frequency modulating arching pattern current papers suggest, with some harmonics reaching 50 kHz.

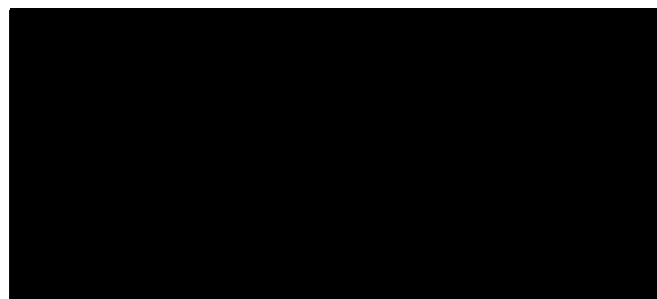
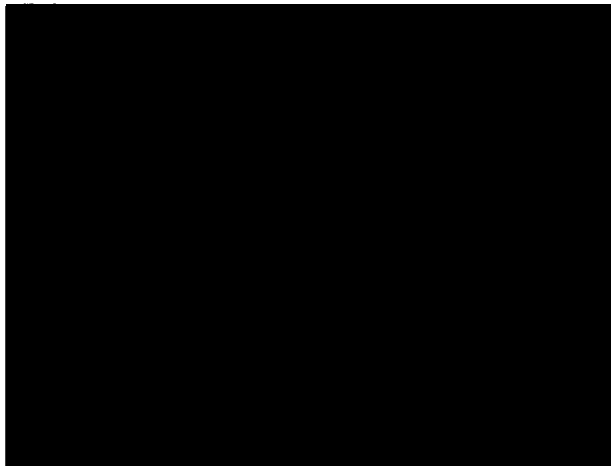
MANATEE DIRECTIONAL RESPONSE TO SOUND. AVOIDANCE AND BEHAVIORAL EFFECTS OF AUDIBLE VS ULTRAHIGH FREQUENCIES

A. Tenkman, C. Kluener, K. Schneider, M. Van Buren, W. Thornton, T. Oppold, S. Nine, M. Palmer, S. Herbert (Physics), J. Johnson (WVXU), D. Bellman (Audiovisual), D. Flaspohler (Math), E. Todd (Cinti Zoo), L. Hughes (Cinti Zoo), and J. Vogel (Cinti Zoo). (Dr. Charles Grossman)

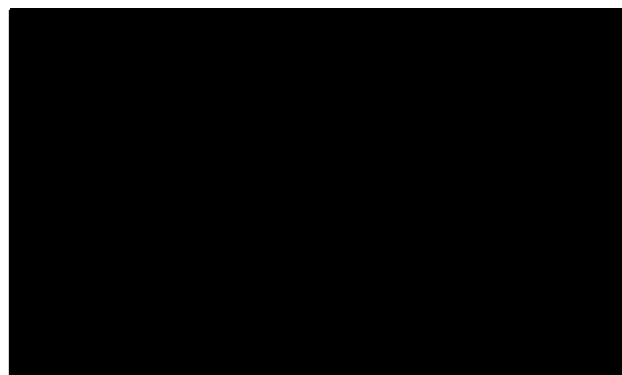
Our group has been studying acoustical responses and associated behaviors in manatees to learn why they are killed in boat collisions in Florida. Previously we reported that manatees at the Cincinnati Zoo demonstrated significant positive avoidance responses (Stoneman $p=0.035$, Douglas $p=0.01$) when exposed to audible mixed frequencies (10 kHz, 15 kHz, and 2 Hz repeat). We now report on the effects to ultrahigh mixed frequencies (25 kHz, 35 kHz, 2 Hz repeat) in these same animals. Generated sounds at 130 dB were projected in the manatee tank which was divided into 13 quadrants and behaviors were videotaped and transcribed by observers, and vocalizations recorded. Data was transferred into Excel spread sheets and analyzed statistically. In studying quadrants traversed there was no significant differences between ultrasonics (0.038 ± 1.063 $n=238$) and controls (0.026 ± 1.326 $n=62$) nor was there any differences in the stress behavior we describe as huddling responses. However, we are still reviewing the data on positive avoidance responses. As in our previous studies Stoneman demonstrated significantly greater general motility than did Douglas ($p=0.0000005$). We are also in the process of reviewing video tapes to ascertain time/quadrant/location utilizing the J Watcher program.

DEPARTMENT OF CHEMISTRY

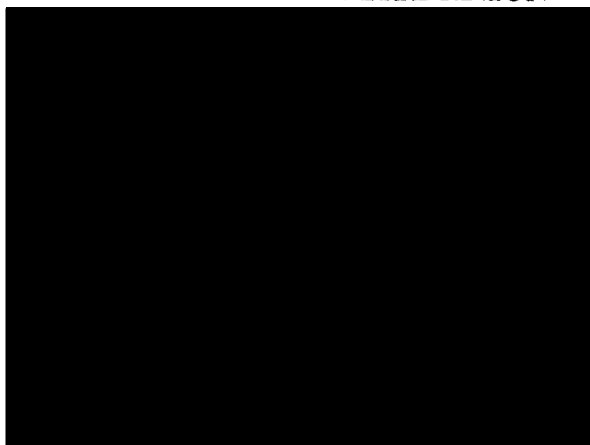
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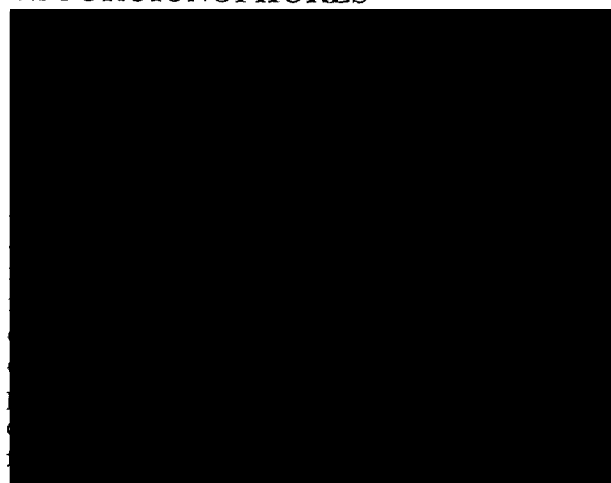
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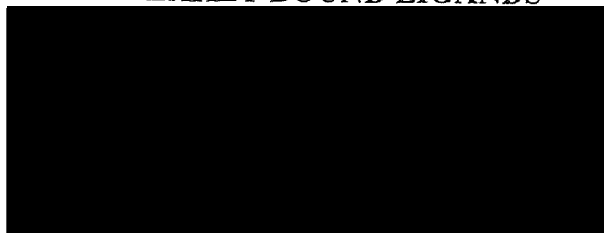
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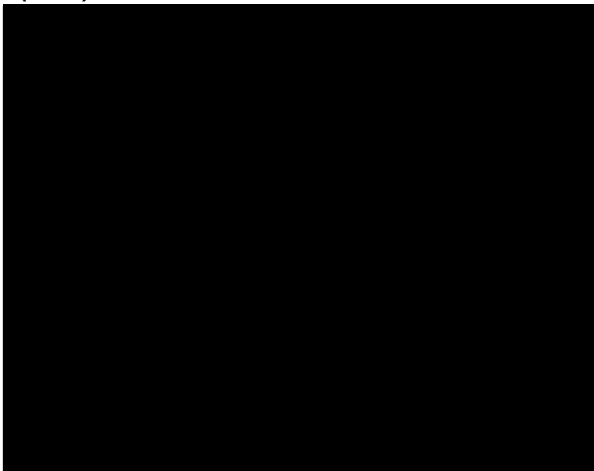
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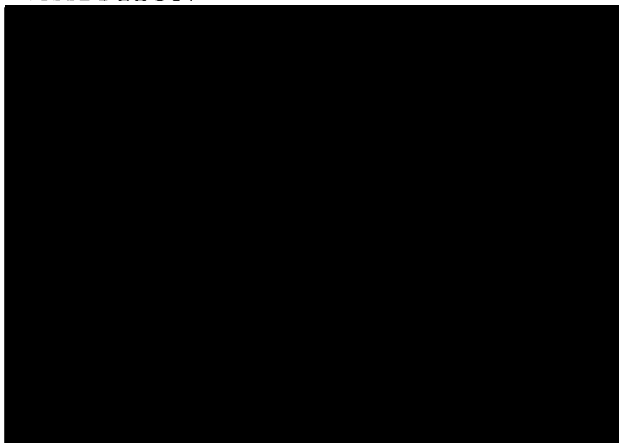
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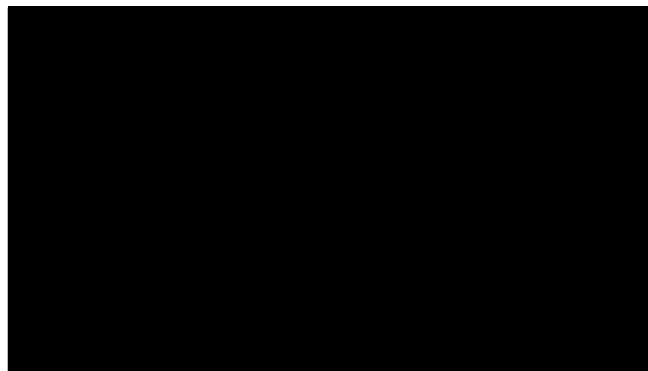
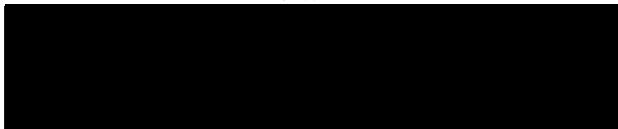
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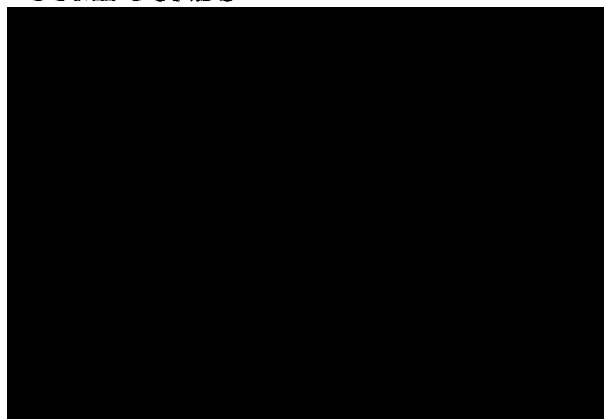
**AN NMR METHOD TO MEASURE
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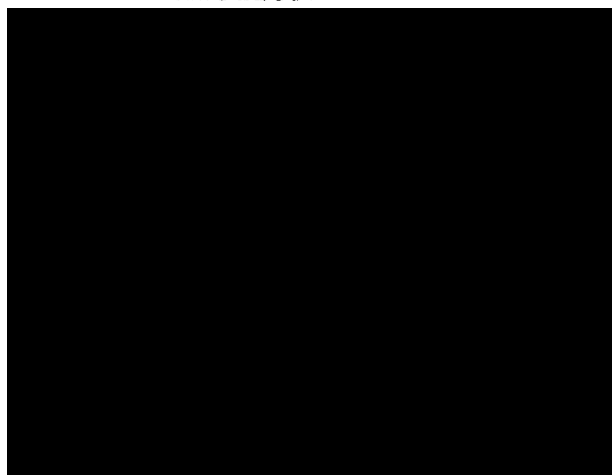
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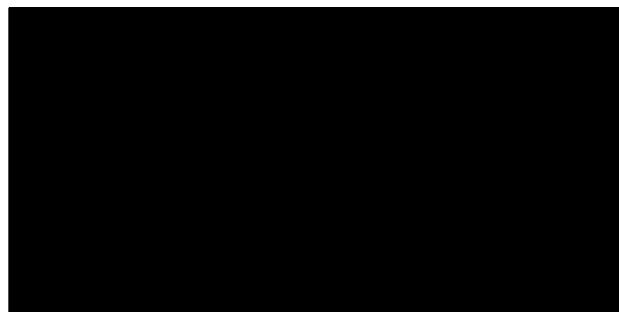
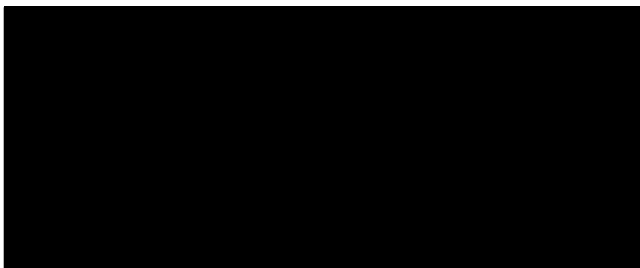
**INORGANIC NITRIDE FLUORIDE
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**AN NMR METHOD TO DISTINGUISH
LONG-RANGE STRUCTURAL
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EFFECT OF SUBSTITUENTS ON THE ACID-BASE PROPERTIES OF RUTHENIUM PHENANTHROLINE COMPLEXES



DEPARTMENT OF HISTORY

INTERNSHIP IN HOLOCAUST EDUCATION

Christopher Kenney, Anne Koenig, Elizabeth Meyer,
Sarah Stuppi, and Kelli Tasset (Dr. Alexandra
Korros)

Students enrolled in HIST 495, Internship in Holocaust Education are engaged in a variety of activities at Hebrew Union College's Center for the Holocaust and Humanities Education. Students from this class will present projects on a variety of topics including the role of interrogators of high level Nazi prisoners during the Nuremburg Trials; the survival story of Henry Maier, former violinist with the

Cincinnati Symphony Orchestra; human stories related to artifacts in the various exhibits at the Center; development of a children's library at the Center, and a self-guided tour of the Center. These projects impact directly on the community since all exhibits at the Center are based on the experiences of survivors and liberators who are local residents

DEPARTMENT OF MATHEMATICS

GENERALIZED FIBONACCI NUMBERS

Jack Kaniecki (Dr. Daniel Otero)

The Fibonacci number sequence $0, 1, 1, 2, 3, 5, \dots$ is a sequence in which each term within the sequence is the sum of the two preceding terms. The Fibonacci numbers have fascinated scholars for centuries and have been thoroughly researched. This research will

show that many of the numerous properties of the Fibonacci numbers are not so rare. They can be characterized by a more general family of second-order recurrences

DEPARTMENT OF OCCUPATIONAL THERAPY

OCCUPATIONAL THERAPY AND GAY MALE, LESBIAN, AND BISEXUAL MALE OR FEMALE CLIENTS

Molly Boehringer and Amanda Christy (Heather A. Gallow, MS, CEES, OTR/L)

The purpose of this study was to determine the extent of training received as well as the preparedness of occupational therapists in working with gay male, lesbian, and bisexual male or female clients. A 14 item survey, created by the authors, that utilized a Likert-type scale was used to gather data. Survey items included therapists' perceptions on their training, their personal comfort level, and documentation procedures related to this population. 1051 surveys were sent, response rate was 38.5%. Preliminarily, a majority of the participants indicated that sexuality and society's views of sexual orientation may affect the way a person leads his or her life. Suggestions for additional training and education were given.

NURSING HOME RESIDENTS' AND STAFF'S PERCEPTIONS OF OCCUPATIONAL THERAPY

Amy Boeke and Jennifer Illig (Georganna J. Miller, M.Ed. OTR/L)

Many people within the general population and among health care professionals fail to understand occupational therapy and the full range of services it can provide (Mu et al., 2001; Jamnadas et al., 2001). Such lack of understanding and knowledge of occupational therapy greatly affect service delivery and referrals for both current and potential clients. This study focused specifically on nursing home residents' and nursing home staff's perceptions of occupational therapy. Data was gathered by interviewing residents in two Midwestern skilled nursing facilities, and by surveying the nursing staff at the same two facilities. The results of the interviews and surveys were analyzed by categorizing the types of descriptions of occupational therapy that were given. The collected data will be used to determine the populations who need further education about potential occupational therapy services and the various performance areas and components occupational therapy can address.

THE ACQUISITION OF POWER MOBILITY SKILLS IN TYPICALLY DEVELOPING CHILDREN

Rita Bushelman and Christie Fitzpatrick (Claire Morress, ATP, OTR/L)

Our research question is what are the power mobility skills present in two typically developing children ages 24-27 months, as measured by the Observation of Power Mobility Skills Tool. The purpose of this study is to determine if there is a developmental sequence of power mobility skills, which is similar to the development of locomotion in typically developing children. It is a descriptive pilot study that is qualitative in nature. We will be compiling themes, patterns, and trends that emerged over the six one hour power mobility sessions.

CAKE DECORATING: AN ARTISTIC EXPRESSION OF SELF-IDENTITY

Nicole Shaw Doucette and Allison Marie Rudolph (Carol Scheerer, Ed.D, OTR/L)

A qualitative study of a unique artistic occupation will be conducted to examine the occupational nature of human beings and to get a greater sense of the role occupation plays in determining overall life-satisfaction. Cake decorating, a unique occupation, will be the occupation studied throughout the research process. Twelve informants, who identify themselves as engagers in the occupation of cake decorating, will be individually interviewed by the authors using a semi-structured interview format. The interview questions were designed by the authors specifically for the purpose of the study. Upon completion of the interviews the authors will conduct a focus group with the twelve informants to readdress the main points discussed in the interviews. Emphasis will be placed on examining the effect occupation has on overall life satisfaction and the degree to which artistic expression can be a predictor in the development of a meaningful self-identity.

YOGA AS A TREATMENT MODALITY FOR CHILDREN WITH PROBLEMATIC BEHAVIORS

Meghan Gleason, Leslie Morrison, and Carrissa Shotwell (Carol Scheerer, Ed.D., OTR/L)

The purpose of this study was to inform occupational therapist in the school system about the use of yoga as a potential treatment modality for children with problematic behaviors. Children with problematic behaviors often disrupt their own learning environment as well as the learning environment of other children. The sample for this study consisted of two male elementary-aged participants who were identified as having problematic behaviors in the classroom. Both students engaged in 30 minute yoga sessions three days a week for six weeks. The students' behaviors were tracked prior, during and after yoga intervention on separate Individual Classroom Behavioral Assessments (ICBA). The results of this study will be presented including changes in the behavior of the children.

CONTROVERSY: THE USE AND EDUCATION OF PHYSICAL AGENT MODALITIES

Kellie Linn and Melissa Lovins (Joanne Estes, MS, OTR/L)

The purpose of this study was to collect data for Xavier University's Occupational Therapy program to determine what information to include regarding education and training of physical agent modalities in the Master's of Occupational Therapy curriculum.

DEPARTMENT OF PHYSICS

TOWARDS A NEAR EYE PROJECTION SCREEN: IMAGING BY RECORDING THE FOURIER TRANSFORM OF NEGATIVES AS A HOLOGRAM

Eva-Marie David (Dr. Heidrun Schmitzer)

Movie projections usually require systems with huge screens. However, light weight LCD and OLED displays worn as glasses may soon become a way to view a film if a large screen is not available. These OLED arrays will display the Fourier transform of each film negative in the front focal plane of the eye. We show the principles of this application with one

The study included a purposive sample of 77 occupational therapy supervisors at physical disability facilities in 12 states. A survey was developed by the searchers and mailed to the occupational therapy supervisors. The researchers conducted the study using a non-experimental research design. The data were analyzed using both quantitative and qualitative methods.

QUALITY OF LIFE IN CHILDREN WHO HAVE BEEN EXPOSED TO DOMESTIC VIOLENCE

Elizabeth Moszkowicz and Amy Perez (Heather Gallow MS, CEES, OTR/L)

Domestic violence and its impact on children is a growing problem in the United States today. The purpose of this study was to gain insight into the quality of life of children exposed to domestic violence. This study examined the social, emotional, physical, and intellectual functioning of children ages 9-12. Data for this study was gathered from three children and two mothers who were living in a shelter for battered women in southwestern Ohio. A standardized assessment and an interview were used to gather data. Data has been collected, but not yet analyzed into relevant themes. The results may provide further information and proof for the need intervention programming, and/or support groups for children who have been exposed to domestic violence.

single negative of the letter E. We produced the Fourier transform of this negative, stored it as a hologram, and also calculated both mathematically. We show how it can project a virtual image on the retina if worn as glasses.

CHAOTIC NATURE OF THE MAGNETIC PENDULUM

Michael Greiner (Dr. Marco Fatuzzo)

The motion of a simple spherical pendulum is easy to predict and describe. But the application of a magnetic field to a pendulum creates an unpredictable and

chaotic motion. In this project we model a system in which a small magnet is suspended by a string above a fixed array of magnets on a planar surface below. We derive the equations of motion for the system. We write a code, which uses the Runge Kutta method of numerical approximation to solve the position of the pendulum. We can see the magnetic pendulum is chaotic in nature.

MODELING THE STABILITY OF EARTH-LIKE PLANETS IN BINARY STAR SYSTEMS

Matthew Lijoi (Dr. Marco Fatuzzo)

Recent discoveries have shown that many Sun-like stars in our galaxy are orbited by planets approximating the Earth in mass. Also, most solar stars are found in binary star systems; that is, they are orbited by a companion star of lesser mass. The stability of an earthlike planet's orbit in such a configuration is therefore relevant to the existence of life on earthlike planets outside our solar system. This project explores the stability of an earthlike planet orbiting about a one solar mass star in a binary star system, first by numerically solving the restricted three body problem, and second by attempting to model the eccentricity of the planet over time as a modified random walk.

SECURITY IMPLICATIONS OF QUANTUM COMPUTING ALGORITHMS

Kevin McGrath (Dr. Stephen Yerian)

Modern computer systems use a combination of passwords and encryption to keep data secure. The security of a password is based upon the difficulty of guessing it, while the security of encryption is based upon the difficulty of determining the encryption key. In both cases, it is infeasible to attack with brute force methods. Two quantum algorithms exist which render both schemes virtually useless. Grover's search algorithm can find a "needle in a haystack" in better than linear time, while Shor's factorization algorithm can factor large integers in polynomial time, something which is currently not possible classically. This project discusses the implications of these two algorithms if they are implemented.

DEPARTMENT OF PSYCHOLOGY

THE EFFECTS OF PARENT-CHILD COMMUNICATION ON SEXUAL ATTITUDES

Ann Laser (Dr. Cynthia Dulaney)

The present study examined the effects of parent-child sexual communication on sexual attitudes. Forty-four participants received a survey containing the Sexual Attitudes Survey and a question concerning the comfort level of communication about sexual topics between the participant and the parent who was their primary caregiver. Findings show that participants who are comfortable communicating to parents regarding sexual topics tend to have more conservative sexual attitudes. These findings suggest that parent-child communication has an effect on sexual attitudes, with high comfort levels in communication resulting in conservative sexual attitudes, and low comfort levels resulting in liberal sexual attitudes.

SECOND LANGUAGE ACQUISITION IN INTERNATIONAL STUDENTS AND THE CRITICAL PERIOD HYPOTHESIS

Katie Porter (Dr. Cynthia Crown)

The relationship between the age at which one begins learning a second language and the proficiency one attains in that language was examined. It was predicted that people who begin studying at a younger age develop better native-like fluency. It was also suggested that a critical period might exist. Fifty-seven international students completed a self-report questionnaire and/or a test of English. There was a significant difference between the self-report scores of those who began studying English before puberty and those who began studying English after puberty, which suggests a possible critical period. More participants are needed.

THE EFFECTS OF GENDER ON RATINGS OF PERSONAL CHARACTERISTICS OF TATTOOED INDIVIDUALS

Brianne Schwanitz (Dr. Cynthia Dulaney)

This study examined people's perception of individuals with tattoos. One-hundred students viewed a photograph of a male or female model, with or without a tattoo. Participants rated the model on 13 characteristics. It was hypothesized that tattooed models would be rated more negatively than non-tattooed models, with the tattooed female model rated more negatively than the tattooed male model. A preliminary analysis of variance showed no significant difference between ratings of tattooed and non-tattooed models of either gender. This failure to replicate previous findings suggests the size and design of the tattoo may affect how tattooed individuals are perceived.

JUSTICE OR PREJUDICE: JUST WORLD BELIEFS AND ATTITUDES TOWARD THE ELDERLY

Erin Weir (Dr. Cynthia Dulaney)

The correlation between just world beliefs and attitudes toward the elderly was examined. Sixty undergraduates were asked to complete a demographic survey, a Just-World Scale (Rubin & Peplau, 1975), and an attitude toward the elderly survey. It was hypothesized that participants with high levels of just world belief would exhibit more negative attitudes toward older people. A preliminary analysis (N=35) revealed no relationship between just world beliefs and attitudes toward the elderly. These results are discussed in terms of factors that affect negative attitudes towards different groups of people (e.g., minorities, older people, and victims).

SENILE OR FORGETFUL: THE EFFECTS OF AGE ON JUDGMENTS OF MEMORY FAILURE

Erin Weir (Dr. John J. Barrett)

This study examined whether a target person's age affects raters' judgments of the target's memory failure. One hundred eight-five undergraduates read a scenario where a target of a specified age (30 or 80) experienced a memory failure. Participants rated how likely the failure was due to poor memory ability or a sign of mental difficulty and how frequently the failure must occur to warrant a professional evaluation. A multivariate analysis of variance (MANOVA) was performed. The older person's memory failure was judged to be a sign of mental difficulty significantly more than the younger person's failure. Implications are discussed.

ORAL PRESENTATIONS

DEPARTMENT OF ART

MAY A LIN: THE SENSIBILITY OF THE ANCIENTS, THE MODERNS, AND THE INTUITION

Megan LaBarbera (Suzanne Chouteau)

The contemporary architect and sculptress Maya Ying Lin draws inspiration from her early roots living near Hopewell mound sites in southern Ohio, and later, finds inspiration in Pre-Puebloan architectural endeavors. Lin's work represents the relationship between entire communities of ancient peoples to their environment, standing as an example of the one and the many, the reinforcement of the individual as it fits into a greater energy - the larger community. The "earthworks" movement of the later 20th century reinvigorated these universal notions of community and spiritual connectedness between human beings and their environment. Earth artists like Robert Smithson, Gary Rieveschl and Andy Goldsworthy manipulate the earth to create living sculpture. Similarly, Lin creates earthworks which incorporate ancient symbolism transformed into configurations easily readable by contemporary society. As Maya Ying Lin states: "Each of my works originates from a simple desire to make people aware of their surroundings, not just in the physical world but also the psychological world we live in."

ALFRED STIEGLITZ AND GERTRUDE KASEBIER: A PHOTOGRAPHIC AFFAIR TO REMEMBER

Tina Orzali (Suzanne Chouteau)

Alfred Stieglitz and his Photo-Secession group desired "to awaken an indifferent world to the new art of photography and to modernize painting, sculpture, and to a lesser degree literature." Within a short time Stieglitz's group through the vehicle of the 291 Gallery elevated American photography to a respected international position and in turn, the 'American School' dominated the art world. While the Photo-Secessionists reversed the "colonial" position of the American artist before WW II, it was also the first art movement in history where a woman was a leader who received deserved recognition. Gertrude Kasebier was that woman. She was among the most acclaimed early 20th Century photographers; "she flouted the convention of her day by insisting and showing that aesthetic interests, generally considered province of amateur photographers, need not be abandoned in a commercial portrait studio." Stieglitz and Kasebier's relationship was born out of their mutual passion for photography which blossomed for 10 years, but ultimately this passion became a heartbreak which resulted in the end of their photographic affair.

DEPARTMENT OF CLASSICS

THE DEATH OF THE EMPEROR SEPTIMUS SEVERUS IN ROMAN BRITAIN

Robert Brewer (Dr. Edmund Cueva)

This paper attempts to investigate the two different understandings of justice and human nature which are operating in the Athenians and their enemies during the Peloponnesian Wars. This paper suggests that the Athenian concept of justice and human nature was deeply rooted in the heroic code of the Homeric world. In contrast, their opponents, the Corinthians, Spartans and Melians, have a more traditional Greek understanding of human nature and justice largely

influenced and captured by such writers as Hesiod, Aeschylus, and Plato.

THE IMPACT OF THUCYDIDES ON HOBBS'S CONCEPTION OF THE STATE OF NATURE

Bryan Corder (Dr. Edmund Cueva)

Thomas Hobbes was the first to translate Thucydides from the original Greek text into English. In his translation, he included an introduction in which he says, "These virtues of my author did so take my affection, that they begat in me a desire to communicate him further" (W. Molesworth, *The*

English Works of Thomas Hobbes of Malmesbury [1966]viii). Thucydides made such an impression on Thomas Hobbes, that Thucydides is an important source for the ideas Hobbes has on human nature. The paper examines this relationship.

The paper focuses on three passages in the Peloponnesian War: the Plague, the civil war in Corcyra, and the Melian Dialogue. The Plague in Athens occurred in the initial stages of the Peloponnesian War and showed how people would live their lives if there was no guarantee for tomorrow. The civil war in Corcyra fought by the oligarchs and democrats displayed people perceived of virtue changed in times of conflict. The inhabitants of Melos and Athenian warships engaged in a “dialogue”, known as the Melian Dialogue, which shows the importance of power and superiority in action. Elements of these events are present in Hobbes’s conception of the state of nature. The paper relates certain themes present in both conditions.

THEMES OF THE *CARMINA BURANA*: MEDIEVAL AND MODERN

Stephen Metzger (Dr. Shannon Byrne)

In the early 1930’s, the German composer Carl Orff searched for a text for which he could write a choral cycle. His endeavors led him to the *Carmina Burana*, the largest collection of medieval Latin secular poetry from the thirteenth century. As a result of his accomplishment, a question arises whether Orff was true to thematic elements in the manuscript itself or whether he put onto those medieval melodies a thoroughly modern meaning. By looking at the

structure of the manuscript with an eye towards the thematic arrangement of the poems therein, it becomes evident that Orff does in deed maintain the themes present in the original.

OPHTHALMOS: AN INVESTIGATION OF THE EYE IN ANTIQUITY

Clayton G. Scanlon (Rev. Fred Benda S.J., Classics and Dr. Lisa Close-Jacobs, Biology)

It is clear from my cursory study of the eye in antiquity that it was surrounded in mystery. This was primarily found in the eye’s elusive anatomy and physiology, which has baffled investigators since the beginning of anatomical reflection and yielded numerous theories from some of the world’s most famous minds. It is also founded in the eye’s enigmatic identity, in a very limited sense, as a window into one’s soul. The eye harnessed a certain power as an external extension of the mind, and this power is discernable in the early language and concepts used to explain ocular mechanisms.

The main goal of this thesis is to investigate and explain some early theories of eyesight, tracing the eye’s anatomical and physiological identity from roughly 600 B.C. to 200 A.D. It is evident that the eye commanded a great deal of respect, as reflected by the intense philosophical and scientific contributions of ancient scholars. The work of the ancients and their elevated respect for the eye is a crucial element to the sometimes unexplainable inherited importance that humans place on their eyes today.

DEPARTMENT OF ENGLISH

DIMENSIONAL REFLECTONS: IN- HERITANCE AND HOMOEROTICISM IN JONSON’S *EPICOENE*

Brian Gogan (Dr. John Getz)

This paper reveals one more layer of comic irony in Ben Jonson’s *Epicoene*; namely that, while *Epicoene* explores the power of legacy and the anticipated death of Morose, one sees that Jonson – ironically rendering inheritance powerless–portrays Morose as a figuratively weak and outwardly impotent character who seems to be–metaphorically speaking – dead. Jonson shows his audience that all three of these

inheritance criteria – virulence, power, and life–remain impossible for Morose. Using these three bonds of inheritance, Jonson joins Morose, Dauphine, and Epicoene in a relational triad. Deliberately using this triangle with relation to characters, text, and audience, Jonson constructs a three dimensional triangular prism, represented by the character Clerimont, that brilliantly reflects the homoerotic humor in *Epicoene*.

"A FELLOW O'TH STRANGEST MIND I'TH WORLD": THE MASOCHISTIC NATURE OF SIR ANDREW AGUECHEEK

Anthony McCosham (Dr. Charles Snodgrass)

Current scholarship on Shakespeare's *Twelfth Night* (TN) caricatures Sir Andrew Aguecheek as an insignificant fool. However, this essay argues that Sir Andrew is a masochist who is aware of the abuse he receives from his fellow revelers, and desires this abuse. This essay examines Shakespeare's use of "rumor" which influences Sir Andrew's categorization as a dolt. Moreover, this paper posits that a competition for abuse between Sir Andrew and Malvolio constitutes the reason for Sir Andrew's absence during the imprisonment scene (4.2). Ultimately, this essay concludes that the concept of the fool and the masochist reside simultaneously within Sir Andrew.

NEW PERSPECTIVES ON SOCIETY: THE FOREST IN JOHN LYLY'S GALLATHEA AND JOHN FLETCHER'S AND WILLIAM SHAKESPEARE'S *THE TWO NOBLE KINSMEN*

Virginia Wilson (Dr. John Getz)

This paper traces the significance of the forest setting in both *Gallathea* and *The Two Noble Kinsmen* as a place of refuge as well as a place for social criticism for the characters. Because the forest has always been viewed as resistant to civilization, its outside perspective provides clear vision of the flaws of social conventions such as heterosexual love and marriage, strict gender construction and honor codes. As the characters emerge from the forest and re-enter society, they are blessed with this new perspective but are deprived of the necessary power to correct these flawed conventions.

DEPARTMENT OF INFORMATION SYSTEMS

AN EXPLORATORY EXAMINATION OF CRITICAL DATA-DRIVEN CRM BUSINESS ACTIVITIES AND THEIR ROI

Anthony Mayer, Marketing Major (Dr. Elaine Crable)

Customer Relationship Management (CRM) is defined as "... a strategy used to learn more about customers' needs and behaviors in order to develop stronger relationships with them." (Deck, S.(2001) What is CRM? Retrieved May 16 from <http://www.darwinmag.com/learn/curve/>). This strategy is implemented by integrating multiple business functions with customer data interpretation. This is done in order to better understand customer needs and behaviors so that businesses can hopefully provide their products or services to the right people, at the right time, and in the right way. The possible profits involved have many companies rushing to implement CRM projects. In a recent survey by Bain

& Co., 78% of marketing executives polled stated that they are deploying CRM strategies (Levey, R. (2003)Tools of the Trade. *Direct*, 8, (15), 47).

The purpose of this study is to discover what specific CRM activities businesses are currently utilizing and if there is a return on the investment. With the rush to take on CRM projects it would be helpful to know what CRM business activities have been critical to success. This study discusses the results of a survey sent to 200 managers in the United States involved with CRM projects in order to determine which activities are most frequently used and if they are making an impact on an organization's profitability.

DEPARTMENT OF MANAGEMENT AND ENTREPRENEURSHIP

INTERNATIONAL MERGERS AND ACQUISITIONS: A REVIEW

Molly Bayer (Dr. Hema A. Krishnan)

The purpose of this research is to review the current literature on international mergers and acquisitions and to identify the gaps that exist in this area. There are several determinants of post-acquisition performance. Previous studies reveal resource complementarity, core competencies, economic, political, and cultural factors in the host country, and acquisition integration to be primary determinants of post-acquisition performance when firms engage in international acquisitions. However, the impact of the top management team's international business experience on acquisition integration and performance, a factor considered to be critical to organizational success, has not been examined in previous research. Our project addresses this lacuna in research.

THE IMPACT OF GENDER AND DECISION STYLE DIFFERENCES ON STRATEGIC ALLIANCE DEVELOPMENT

Michael Burba , Marketing Major (Dr. Daewoo Park)
Strategic Alliance has become an important aspect

of corporate planning for growth and survival in most organizations in the past decade. Although a number of factors affect firm's strategic alliance strategy and performance outcomes, recent management studies suggest a significant impact of people (i.e., executives and managers). Also, interest in the managerial behavior of females in business has increased over the past decade due to women's increased representation in business. Currently, for example, almost 40 per cent of ISM (Institute for Supply Management) members are female managers and executives. By the year 2010, 70 per cent of ISM members will be females. This raises an important question for management researchers and practitioners: Are female managers different from male managers? Not many studies have addressed this issue in management and business fields. However, anecdotal evidence has suggested that women approach decision making differently from men. Extending the findings of previous management studies on gender differences, the purpose of this study is to determine if gender and decision style differences regarding strategic alliances exist.

DEPARTMENT OF MODERN LANGUAGES

MAXIMS AND THEIR MARKERS

Dan Arbezni (Mrs. Margaret McDiarmid)

The maxims of war are the principles which govern the commanders of such enterprises. My theses is intended to first examine those who predominantly gave us these maxims and secondly to follow their application.

In the first section of my thesis, I will present three classical warriors who showed the western world the art of making war: Alexander the Great, Hannibal, and Julius Caesar. In tracing their military careers as given to us in either first hand or secondary accounts, I will

first show that the military genius of any one predecessor would systematically influence the genius of those to follow. Secondly, I will gather these maxims which the generals followed and form them into one cohesive doctrine.

In the second half of my thesis, I will apply this doctrine to the life and military campaigns of Napoleon I in order to evaluate the cause of his successes and postulate on his eventual demise.

THE MORALITY AND IMMORALITY OF PARIS

Kristen Heinke (Dr. Jo Ann Recker, Mrs. Margaret McDiarmid, Dr. Daniella Sarnoff, and Dr. Todd Larson)

This paper focuses on the ways in which the reconstruction of Paris during the reign of Napoleon III incarnates the ideas of morality that governed the 19th century Bourgeoisie in France. During this period, the Bourgeoisie believed that domesticity, patriarchal family structure, cleanliness, and order were the keys to ensuring a morally sound population.

Medieval Paris, however, was crowded, unsanitary, and disorderly. Also, the idea of the working mother threatened the bourgeois idea of domesticity. Thus, not only did the Paris of the baron Haussmann embody ideas central to 19th century morality, but through the reconstruction, the Bourgeoisie tried to reform the working class to fit its moral standard.

DEPARTMENT OF PHILOSOPHY

DEFINITION AND STANDARDS OF DIKE IN HOMER AND HESIOD

Laura Overton (Dr. Richard Bonvillain)

This paper presents an attempt to discover what exactly the term *dike* meant in the minds of the people of the earliest Greek civilizations with particular attention paid to whether or not the term had moral undertones at these early times. In-depth analysis of extant works of both Homer, including the *Iliad* and the *Odyssey*, and Hesiod, including the *Theogony* and

the *Works and Days*, has revealed that *dike* has moral, theological, and practical implications in these stories, but, more importantly, that this word applied differently to different characters within the stories. While humans remain constrained by specific dictates of *dike*, the Heroes and gods seem to be exempt from these rules throughout Homer and Hesiod.

DEPARTMENT OF PHYSICS

STEERING AND ROTATING A BIREFRINGENT PARTICLE IN AN OPTICAL TWEEZER

Christopher Starr (Dr. Heidrun Schmitzer)

The main principle behind optical tweezing is to hold a dielectric particle in the focus of an intense laser beam. These particles can be transported to a different location within a solution. If the particle has anisotropic properties, then it can be rotated under the spin angular momentum transfer from polarized light.

This rotation can be switched from clockwise to counter-clockwise by changing the polarization of the incident light. We describe our experimental setup and procedure for manipulating micrometer-sized highly birefringent PTCDA particles and measuring their rotational frequencies. The particle rotation is illustrated in a short film sequence.