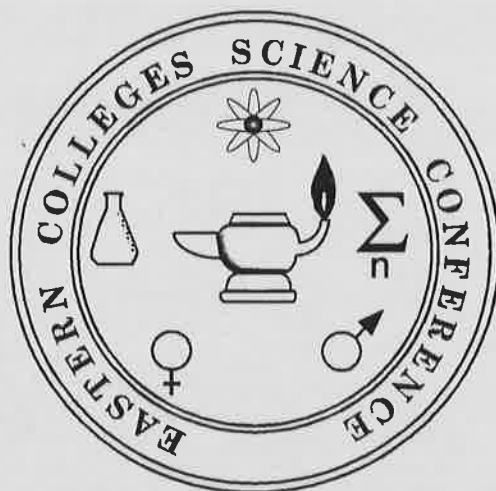


1947 - 1998

52nd Annual Eastern Colleges Science Conference



in conjunction with the
Canisius College Science Fair and Colloquium
sponsored by the Howard Hughes Medical Institute

and the
6th Annual Niagara University
Undergraduate Research Conference

NIAGARA UNIVERSITY

Niagara University, New York

April 24 & 25, 1998



Schedule of Activities
ECSC 1998

Friday . April 24

Registration	6:00 - 9:00 pm
<i>Skyline Brock Hotel, main lobby</i>	
<i>Niagara Falls, Ontario, Canada</i>	

Saturday. April 25

Registration and continental breakfast	7:45 - 8:50 am
<i>Kiernan Center, Niagara University campus</i>	

Welcome & orientation	8:30 - 8:50
<i>Kiernan Center</i>	

PAPER SESSIONS	9:00 - 12:00
<i>Dunleavy Hall</i>	

Coffee available	10:30 - 11:30
<i>Dunleavy Hall foyer</i>	

Lunch	12:00 - 1:00 pm
<i>Kiernan Center</i>	

SPEAKER: Phyllis M. Wise, Ph.D.	1:00 - 1:45
Department of Physiology, College of Medicine	
University of Kentucky	
"Menopause: A window into the aging brain"	
<i>Kiernan Center</i>	

POSTER SESSION	2:00 - 3:30
<i>Castellani Art Museum</i>	

FACULTY MEETING	3:00 - 3:30
<i>Dunleavy Hall, room 127</i>	

Soda available	3:00 - 4:00
<i>Dunleavy Hall foyer</i>	

PAPER SESSIONS	3:30 - 5:10
<i>Dunleavy Hall</i>	

Banquet and Awards (cocktails preceding)	7:00 -
<i>Skyline Brock Hotel, main banquet room</i>	



NIAGARA UNIVERSITY

To all students, professors and staff,

It is our pleasure to welcome you to the 52nd Annual Eastern Colleges Science Conference hosted for the first time by Niagara University. The hosting of this conference exemplifies Niagara University's commitment to undergraduate research as a valuable component of undergraduate education. Your participation, as faculty or student, signifies a similar commitment by your home institution. The opportunity to become involved in research as an undergraduate is an uncommon one and an experience that is a valuable addition to your undergraduate career.

This year, the ECSC meeting has two additional components. The Canisius College Science Fair and Colloquium, sponsored by the Howard Hughes Medical Institute, is represented by fourteen poster presentations. So that all participants may take full advantage of the colloquium, the poster session scheduled for one and a half hours. The conference is also organized in conjunction with the 6th Annual Niagara University Undergraduate Research Conference which is represented by platform presentations in Communication Studies, International Studies, Political Science, and Social Work.

Our aspirations for this conference are to provide a comfortable and supportive atmosphere for students to present the results of their research and additionally to provide a forum for the exchange of ideas between individuals from different institutions. In so doing, we hope that this conference will serve as a model for productive scientific interactions.

In organizing this meeting, we have tried to incorporate the essence of Western New York and the Niagara Frontier. The lunch buffet presents a host of regional foods and the Brock Hotel is situated adjacent to Niagara Falls and the many Falls attractions. We hope that you will have a rewarding and pleasant experience.

Robert S. Greene, Chair
Department of Biology

Mary M. Schreiner, Chair
Department of Chemistry

Peter C. Butera, Chair
Department of Psychology

Michael A. Kotarski
1998 Conference Coordinator

Acknowledgements

As the organizer of this conference I would like to gratefully acknowledge the contributions of the Niagara University administration, especially Dr. Susan Mason, Vice President for Academic Affairs, and Dr. Nancy McGlen, Acting Dean of the College of Arts and Sciences. Without the cooperation and financial support of the administration, this conference would not have been possible.

I would also like to thank the director of the Castellani Museum, Dr. Sandra H. Olsen, and the museum staff for their generous donations of both time and space.

Michael A. Kotarski
1998 ECSC Coordinator

The Castellani Art Museum of Niagara University

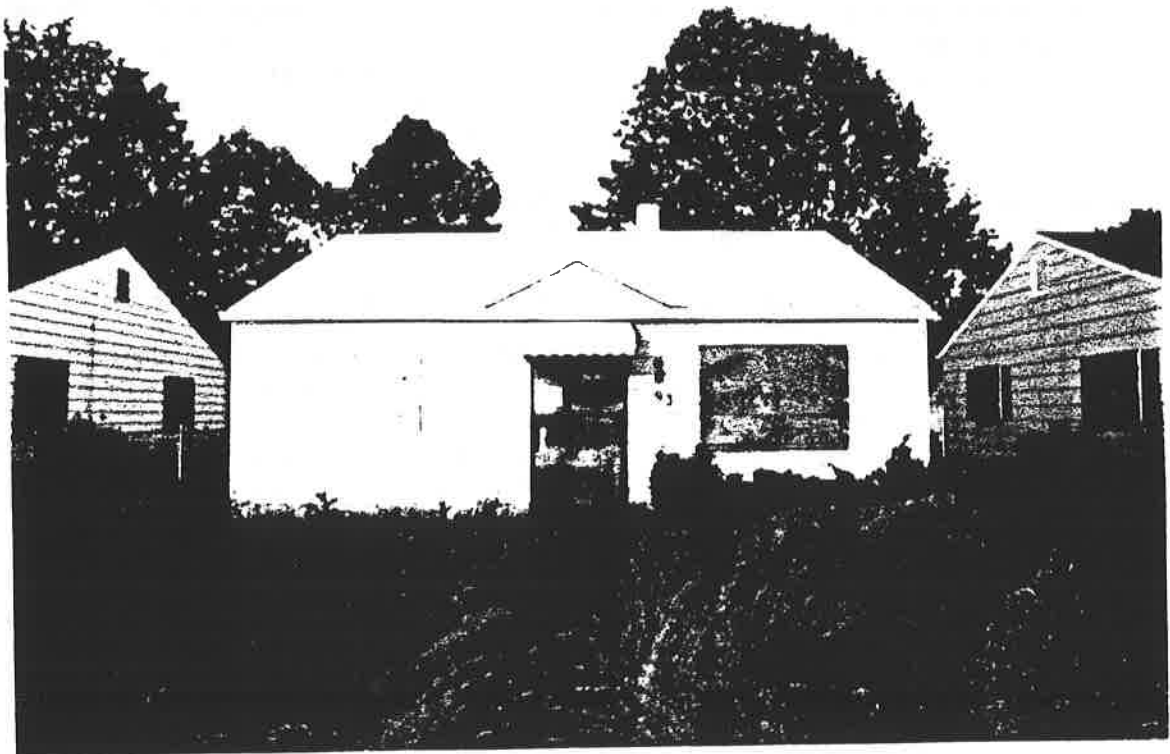
Contemporary Art and the Sciences

Real life is cross-disciplinary. The Castellani Art Museum of Niagara University's programming consistently attempts to present all the different subject matter and thematic intersections of contemporary art, in accordance with the diverse audiences we serve. Artists today make work which addresses sociopolitical concerns such as feminism, the environment, media culture, and many other issues. In addition, many contemporary artists and art historians continue to demonstrate how all art is deeply embedded in its historical context.

Art's engagement with the sciences is equally wide-ranging. In the late 19th century, the Impressionists sought to capture the optical effects of light, occasionally even trying to analyze the sensation of vision through painting. Since that time, artists throughout the 20th century have used scientific principles in their working aesthetic. More recently, contemporary artists have begun to analyze the effects of science and industry and to question the costs of scientific advancements upon the environment and the human race. Since its founding in 1978, the Castellani Art Museum has held a number of exhibitions in which scientific subject matter is an important component, including:

Tainted Prospects: Photographers and the Compromised Environment (1991)

This exhibition was organized in response to a 1988 presentation at the museum by the Ecumenical Task Force in which community members and artists discussed the environmental integrity and aesthetic legacy of Niagara County after the Love Canal disaster. That evening, museum director Sandra Olsen and artist/photographer John Pfahl decided to organize an exhibition of artworks that depict threats to our natural environment. In photography series by 12 artists, subject matter such as Three Mile Island, Love Canal, mining, deforestation in



James D. Colby, Love Canal, 1, 1979 - 1980. Tainted Prospects Exhibition

South America, development in California's Central Valley, nuclear testing, and the effects of the Chernobyl disaster in Lapland was vividly portrayed. One of the problematic aspects of the exhibition was that many of the photographs were beautiful works of art in spite of their ominous subject matter, as artist Masumi Hayashi admits in discussing her series about hazardous waste sites: "There is a contradiction between the beauty of the images and the insidious, dangerous, invisible contamination of the site, but it gives the images an edge that the mind has to deal with." To help address this problem and to give visitors a chance to express their views, Tainted Prospects was accompanied by a video and a viewer response board, which asked direct questions about environmental issues.

Mathematics and Art (1980)

Starting with Albrecht Dürer's *Melancholia I*, a 1514 woodcut in which the artist created a symbolic representation of measurement, pure geometry, applied geometry, and descriptive geometry, this exhibition featured a wide range of artists whose work is clearly defined by mathematic principles. In works by Tom Wesselman, Barbara Hepworth, Robert Mangold, and others, viewers could explore how natural forms are based on geometric forms and see the progress of 20th century art towards the purest geometric form. In works by artists such as Robert Indiana, Alfred Jensen, and Jasper Johns, actual numerical figures and scientific equations can be seen. Other artists such as Josef Albers and Richard Anuszkiewicz use geometry and color to create optical effects that became popularized in the Op Art movement. This exhibition was organized in conjunction with the Association of Mathematics Teachers of New York State and the National Council of Teachers of Mathematics conferences, hosted by Niagara University in 1980.

Adele Henderson: Accretions (1995)

In this subtle and beautiful exhibition of innovative prints by a widely-respected University at Buffalo faculty member, questions about the female body and its treatment by the male medical establishment were raised. Henderson's prints employ imagery from scientific textbooks, particularly older scientific engravings, which show 18th and 19th medical procedures. Henderson combines this imagery with abstract forms and other original drawings, creating mysterious dream-like compositions which bring up the sense of the unknown so central in scientific culture. Although her works do not lend themselves to simple interpretations, her use of older scientific illustrations suggests a history of scientific intrusions on the human body, both productive and destructive. **An image from this exhibition is now hanging in the Museum Resource Center (near the video monitor).**

Joseph Paul Bergel: The Grand Invention (1998)

In *The Grand Invention*, University at Buffalo Masters of Fine Arts candidate Joseph Bergel illustrates the breakdown of rational prediction by creating a "machine" which is designed to ignite and extinguish a large amount of candles. Using a cause and effect scenario, the installation is designed like a house of cards which uses prediction as a foundation for future prediction. Bergel's installation employs satire to demonstrate the impossibility of making a pattern out of irrationality, of creating objective "truth" in a context filled with subjective and unexpected interventions and factors. Bergel deliberately avoided any preliminary testing of his invention to highlight the hundreds of variables that can affect results. The invention was set into motion on Sunday, April 5 during the opening of Bergel's exhibition. Its remains can now be viewed in the museum as well as a video which features some highlights from the event. **This installation is now on view in the Tops Gallery.**

Elizabeth Licata, Exhibitions Curator
Castellani Art Museum of Niagara University

HISTORY OF THE EASTERN COLLEGES SCIENCE CONFERENCE

The first Eastern Colleges Science Conference (ECSC) was organized in 1947 by undergraduate Pauline Newman at Vassar College in Poughkeepsie, New York. The aim then, as now, was to stimulate interest in undergraduate research in the sciences and related fields and to provide a lively forum for the presentation of research papers. Pauline Newman received her bachelor's degree in chemistry and went on to receive a Ph.D. in chemistry from Yale University. About 22 schools attended the first conference and the theme of the conference was "Science, Philosophy and Society."

The constitution of the ECSC was ratified on April 24, 1948 at Union College in Schenectady, New York making the conference a self-sustaining body.

In 1972, the Pennsylvania State University was named official repository for all official documents of the ECSC. Professor Stanley Shepherd was named the permanent secretary of ECSC. In 1980, Professor Shepherd stepped down as permanent secretary and Professor Gerard O'Leary from Providence College was elected permanent secretary. At the 35th annual conference, a steering committee was established to assist in directing the activities of the ECSC.

In 1983, The Eastern Colleges Science Conference was incorporated in the state of Rhode Island and now operates with a Board of Directors elected from the faculty of the participating colleges and universities. In 1986, Professor Gerard O'Leary stepped down and Professor Edward Gabriel of Lycoming College was elected Chair of the ECSC. In 1995, Professor Lance Evans of Manhattan College replaced Dr. Gabriel.

Over the years, interest increased in the conference and over 50 colleges and universities have attended the annual event. The range of subject matter covered in the conference has also increased to include computer sciences, the behavioral and social sciences, as well as biology, chemistry, mathematics, physics and engineering.

ECSC HOST INSTITUTIONS

1947	Vassar College, Poughkeepsie, NY	1973	Penn. State Univ., University Park, PA
1948	Union College, Schenectady, NY	1974	Worcester Polytechnic, Inst., Worcester, MA
1949	Adelphi College, Garden City, NJ	1975	Widener College, Chester, PA
1950	Bernard College, New York, NY	1976	Rhode Island College, Providence, RI
1951	Yale University, New Haven, CT	1977	Fairleigh Dickinson Univ., Rutherford, NJ
1952	Penn. College for Women, Pittsburgh, PA	1978	Union College, Schenectady, NY
1953	NY State College for Teachers, Albany, NY	1979	Wilson College, Chambersburg, PA
1954	Brooklyn College, Brooklyn, NY	1980	SUNY at Cortland, Cortland, NY
1955	Seton Hall University, South Orange, NJ	1981	Jersey City State College, Jersey City, NJ
1956	Temple University, Philadelphia, PA	1982	Lycoming College, Williamsport, PA
1957	Georgetown University, Washington, DC	1983	Wilkes College, Wilkes-Barre, PA
1958	Wilkes College, Wilkes-Barre, PA	1984	Providence College, Providence, RI
1959	Suffolk University, Boston, MA	1985	SUNY at Fredonia, Fredonia, NY
1960	Hunter College, New York, NY	1986	Duquesne University, Pittsburgh, PA
1961	SUNY College of Forestry, Syracuse, NY	1987	Lycoming College, Williamsport, PA
1962	North Carolina State College, Raleigh, NC	1988	Ithaca College, Ithaca, NY
1963	Boston University, Chestnut Hill, MA	1989	US Military Academy, West Point, NY
1964	Jersey City State College, Jersey City, NJ	1990	Manhattan College, New York, NY
1965	Danbury State College, Danbury, CT	1991	SUNY at Fredonia, Fredonia, NY
1966	DC Teachers College, Washington, DC	1992	US Naval Academy, Annapolis, MD
1967	Fordham University, New York, NY	1993	Central Connecticut State Univ., New Britain, CT
1968	Yale University, New Haven, CT	1994	Duquesne University, Pittsburgh, PA
1969	Yale University, New Haven, CT	1995	Ithaca College, Ithaca, NY
1970	Wilkes College, Wilkes-Barre, PA	1996	Lycoming College, Williamsport, PA
1971	Rosary Hill College, Buffalo, NY	1997	Central Connecticut State Univ., New Britain, CT
1972	US Military Academy, West Point, NY	1998	Niagara University, Niagara University, NY

Papers Submitted for Review

Thomas Arnold
John Carroll University

"The Effects of Stress on the Thymus in Normal and Vasopressin Deficient Animals"

Dana R. Dresser
John Carroll University

"Progression of Aortic Stenosis is Related to an Echocardiographic Index of Aortic Leaflet Pathology"

Carrie A. Tarantina
John Carroll University

"Incentive Shift Utilizing 4% and 32% Sucrose Solutions with Vassopressin-Containing and Vassopressin-Deficient Rats"

James Evans & Jason Valent
John Carroll University

"Stress Response of Food-Restricted and Non-Food-Restricted Rats during Simulated Graveyard Shifts"

Robert L. Miravite
The College of Mount St. Vincent

"Comparison of Root Growth and Cell Production Rates of Two Cultivars of *Pisum sativum*"

Kerryn A. Mortimer &
John A. Blaho
Manhattan College and
Mount Sinai School of Medicine

"Viral and Immunological Implications and Aspects in Multiple Sclerosis"

Keir Lolacono
Manhattan College

"The Effects of Sewage Effluents on the In Situ Growth Rates of *Mytilus edulis*"

Joseph R. Feliciano
College of Mount St. Vincent

"Mesophyll Cell Injuries to Needles of Red Spruce"

Jaime Paladino
Manhattan College

"*Chlamydomonas acidophila*: How Acidic Is It?"

Karen Quadrini, Victor Adler &
Ze'ev Ronai
Manhattan College,
College of Mount St. Vincent, and
Mount Sinai School of Medicine

"Cellular Effects of p7 - a 20 Amino Acid Sequence that Alters p52 Phosphorylation"

ECSC 1998 SESSIONS

Paper Sessions in Dunleavy Hall

Session A	Molecular Biology & Genetics	9:00 - 12:00 n 3:30 - 4:50 pm	Rm 227
Session B	Physiology	9:00 - 12:00 n 3:30 - 4:10 pm	Rm 212
Session C	Animal Ecology	9:00 - 12:00 n 3:30 - 3:50 pm	Rm 330
Session D	Plant Ecology	9:00 - 11:40 am	Rm 329
Session E	Clinical & Developmental Psychology	9:00 - 11:40 am	Rm 127
Session F	Developmental & Cognitive Psychology	9:00 - 11:40 am	Rm 211
Session G	Psychology of Humor	3:30 - 4:50 pm	Rm 127
Session H	Learning and Perception	11:40 - 12:00 n 3:30 - 5:10 pm	Rm 211
Session I	Chemistry	9:00 - 12:00 n	Rm 228
Session J	Biochemistry	3:30 - 4:30 pm	Rm 228
Session K	Niagara Undergraduate Conference	9:00 - 11:40 am	Rm 219
Session L	Computer Science, Economics, Engineering, and Math	11:40 - 12:00 n 3:30 - 5:10 pm	Rm 219
Session M	Environmental Science	3:30 - 5:10 pm	Rm 329

Poster Session in Castellani Museum

2:00 - 3:30 pm

Canisius College Science Fair and Colloquium
Howard Hughes Medical Institute (P1 - P14)

Biology P1 - P11
Chemistry P12 - P13
Physics P14

Mathematics P15
Biology P16 - P21
Physiology P22 - P29
Molecular Biology P30 - P35
Biochemistry P36 - P40
Chemistry P41 - P51
Psychology P52 - P62
Teaching P63

SCHEDULE OF PAPER SESSIONS

Room	227 <u>Molecular Biology and Genetics</u>	Session A
9:00 am	GENETICS OF THE SHORN (<i>shn</i>) MUTATION IN THE RAT: ORIGIN, HERITABILITY, AND POSSIBLE LINKAGE ON CHROMOSOME 10. Amy Webber and Thomas R. King	A1 C. Connecticut State Univ.
9:20 am	GENETICS OF THE SHORN (<i>shn</i>) MUTATION IN THE RAT: SEARCH FOR GENETIC LINKAGE. Raye Mutcherson, Alex Castillo, Bill Campbell, David Ornitz, Thomas R. King	A2 C. Connecticut State Univ
9:40 am	IDENTIFICATION AND CHARACTERIZATION OF THE <i>Hxa</i> GENE COMPLEX IN MICE Matthew Balanda, Sharla Strole, James Hancock, Richard Kisson, Thomas R. King.	A3 C. Connecticut State Univ
10:00 am	FINE-STRUCTURE MAPPING OF THE MALE STERILITY AND HISTOINCOMPATIBILITY (<i>mshi</i>) MUTATION IN MOUSE Andrew Foss, Megan Ellis, Susan Murcko, Tien Nguyen, Michael Rule, Thomas R. King.	A4 C. Connecticut State University
10:20 am	THE IN VIVO EFFECT OF C-CAM 1 EXPRESSION IN TUMORS OF NUDE MOUSE PROSTATE EPITHELIAL TISSUE Andrea Mazzacua, Douglas Hixson, and Meghan Comegys	A5 Providence College
10:40 am	BCL-2 AND P53 ARE INVOLVED IN PHOTODYNAMIC THERAPY INDUCED APOPTOSIS IN MCF-7 BREAST CANCER CELLS Joseph Senn, Jean C. Gallo, Robert S. Greene	A6 Niagara University
11:00 am	VIRAL AND IMMUNOLOGICAL ASPECTS AND IMPLICATIONS IN MULTIPLE SCLEROSIS Kerryn A. Mortimer, John A. Blaho.	A7 Manhattan College
11:20 am	DEVELOPMENT OF A RAPID AMPLIFICATION-BASED METHOD FOR DETECTION AND DISCRIMINATION BETWEEN STRAINS OF MYCOBACTERIUM PARATUBERCULOSIS/Luis X. Campodonico, Sheldon T. Brown, Ian C. Brett.	A8 Manhattan College
11:40 am	PHENOTYPE CHARACTERIZATION OF MUTANT RHIZOBIUM ETLI Crystal R. Weatherill, presenter; Dr. Jack Deihl.	A9 Lycoming College
3:30 pm	ANALYSIS OF A HYPERMORPHIC MUTATION OF <i>STAR</i> Stacey A. Sedore, Deborah A. Leonard, Michael A. Kotarski	A10 Niagara University

3:50 pm	EXPRESSION OF LUCIFERASE GENE IN MEDAKA FISH EGGS Mike Mahar, Chris Miller, Wayne Yunghans	A11 SUNY College at Fredonia
4:10 pm	ANALYSIS OF A REVERTANT IN SUBUNIT 11 OF CYTOCHROME C OXFDASE Tina Marie Kristoff, Michael Mazourek and Vicki Cameron	A12 Ithaca College
4:30 pm	SEPARATION OF DNA FRAGMENTS PRODUCED BY RESTRICTION ENZYME Heidi Mortenson, Wayne Yunghans	A13 SUNY College at Fredonia

Room	212	<u>Physiology</u>	Session B
9:00 am	THE EFFECTS OF ACTIVIN-γ-WHEEL AND FOOD-RESTRICTION STRESS ON THE THYMUS IN NORMAL AND VASOPRESSIN-DEFICIENT ANIMALS Thomas Arnold. Drs. H. M. Murphy and C. H. Wideman		B1 John Carroll University
9:20 am	INCENTIVE SHIFT UTILIZING 4% AND 32% SUCROSE SOLUTIONS WITH VASOPRESSIN-CONTAINING AND VASOPRESSIN-DEFICIENT RATS Carrie Tarantina. Drs. H. M. Murphy and C. H. Wideman		B2 John Carroll University
9:40 am	A COMIPARATIVE STUDY OF THE SENSITIVITY OF BULLFROG TADPOLE THYROIDS TO TSH UNDER VARYING SEASONAL CONDITIONS AND STRESS Krista Proctor and Mary L. Wright, SSJ.		B3 Elms College
10:00 am	A STUDY OF THE EFFECT OF EXOGENOUS T_4 ON PLASMA AND OCULAR MELATONIN, IN BULLFROG TADPOLES Christina Alves, Mary L. Wright, SSJ .		B4 Elms College
10:20 am	EFFECTS OF INTERLEUKIN-10 ON FOOD INTAKE DURING THE RAT ESTROUS CYCLE Francesca Roberto, Peter Butera, Amy Parkhill.		B5 Niagara University
10:40 am	EFFECTS OF INTERLEUKIN-1β ON FOOD INTAKE IN OVARIECTOMIZED RATS Patricia Lynch, Peter Butera, & Francesca Roberto		B6 Niagara University
11:00 am	EFFECTS OF INTERLEUKIN-1β ON FOOD INTAKE DURING THE RAT ESTROUS CYCLE: ROLE OF ENDOGENOUS CHOLECYSTOKININ Amy Parkhill, Peter Butera & Francesca Roberto		B7 Niagara University

Room	212	<u>Physiology</u>	Session B
11:20 am	ORIGIN OF PITUITARY ADENYLATE CYCLASE-ACTIVATING POLYPEPTIDE (PACAP)-CONTAINING FIBERS IN THE MUDPUPPY CARDIAC GANGLION Linda Shoenfeld and Jean Hardwick.		B8 Ithaca College
11:40 am	MICROCIRCULATION IN THE FROG WEB: AN OPPORTUNITY TO CONSIDER MECHANISMS GOVERNING BLOOD FLOW Margaret Alexander and Carl S. Hoegler.		B9 Marymount College
3:30 pm	COPPER ACCUMULATION DYNAMICS IN RELATION TO ENVIRONMENTAL OXYGEN TENSION IN THE ZEBRA MUSSEL, DREISSENA POLYMORPHA Michael J. Mahar and Roger A. Byrne.		B10 SUNY College at Fredonia
3:50 pm	GROWTH AND CELL POPULATION KINETICS DURING DEVELOPMENT OF ROOTS OF PISUM SATIVUM L. Robert Miravite.		B11 Manhattan College
Room	330	<u>Animal Ecology</u>	Session C
9:00 am	ANTI-PREDATOR BEHAVIOR IN WOOD THRUSHES Ellen M. Litzenberger, Faculty advisor: Melinda S. LaBranche		C1 SUNY College at Fredonia
9:20 am	ENVIRONMENTAL INFLUENCES ON RESTING GULL ORIENTATIONS Scott Hevner, James Lanza, David Spector		C2 C. Connecticut State Univ.
9:40 am	CONTRIBUTIONS OF INHERITANCE AND LEARNING TO MOUSE BARBERING BEHAVIOR Edward L. Carruthers, Sylvia L. Halkin & Thomas R. King.		C3 C. Connecticut State Univ.
10:00 am	FEEDING AND SOCIAL BEHAVIOR IN A GROUP OF CAPTIVE AFRICAN ELEPHANTS, LOXODONTA AFRICANA Ruth Lambert and Bruce A. Schulte		C4 Providence College
10:20 am	CHANGES IN PREY CAPTURE DURING DEVELOPMENTAL STAGES OF THE JELLYFISH CYANEA SP. John Higgins III and Dr. John Costello		C5 Providence College
10:40 am	THE FEEDING METHODS OF LOBATE CTENOPHORE MAEMIOPSIS LEIDYI ON ADULT AND NAUPLII STAGES OF CALANOID COPEPODS ACAR77A TONSA Rebecca Waggett and John Costello		C6 Providence College

Room	330	<u>Animal Ecology</u>	Session C
11:00 am	THE FUNCTIONAL ORIENTATION FOR TOOTH MORPHOLOGY. IS IT A USEFUL APPROACH? Marc Molenat, Craig B. Wood.		C7 Providence College
11:20 am	THE EFFECTS OF SEWAGE EFFLUENTS ON THE IN SITU GROWTH OF MYTILUS EDULIS Keir Lo Iacono, Michael L. Judge.		C8 Manhattan College
11:40 am	REACTION OF MALE CONVICT CICHLIDS, <i>CICHLASOMA NIGROFASCIATUM</i>, TO VARIOUS BAR PATTERNS OF FEMALES Ryan Burky, and Dr. Simon Beeching		C9 Slippery Rock University
3:30 pm	ONTOGENY OF MELANISTIC PATTERN ELEMENTS IN THE CONVICT CICHLID, <i>CICHLASOMA NIGROFASCIATUM</i> Brent Holt, Dr. Beeching.		C10 Slippery Rock University

Room	329	<u>Plant Ecology</u>	Session D
9:00 am	AN INVESTIGATION OF THE BIOGEOGRAPHY AND PHYLOGENY OF <i>HILLEBRANDIA SANDWICHENSIS</i> Jaime E. Blair with Susan Swensen		D1 Ithaca College
9:20 am	WETLANDS-PRESERVATION OF PAST, PRESENT AND FUTURE Barbara Davison, Dr. Barbara Nicholson		D2 C. Connecticut State Univ.
9:40 am	EFFECTS OF OUTCROSSING DISTANCE ON REPRODUCTIVE SUCCESS James Simonds, Faculty Advisor: Melinda S. LaBranche		D3 SUNY College at Fredonia
10:00 am	EFFECTS OF SEEDINESS ON GERMINATION SUCCESS Christine R. Babcock, Faculty Advisor: Melinda S. LaBranche		D4 SUNY College at Fredonia
10:20 am	MESOPHYLL CELL INJURIES TO NEEDLES OF RED SPRUCE Joseph Feliciano		D5 Manhattan College
10:40 am	VASCULAR TISSUE AS A STRUCTURAL SUPPORT FOR ACROPETAL STEM SEGMENTS OF <i>OPUNTIA LAEVIS</i> Christopher Frenz		D6 Manhattan College
11:00 am	ROOT GROWTH STRATEGY OF AGAVE PLANTS Louis Noto. Manhattan College		D7 Manhattan College

Room	329	<u>Plant Ecology</u>	Session D
11:20 am	CHLAMYDOMONAS ACIDOPHILA: HOW ACIDOPHILIC IS IT? Jamie Palladino and Ioanna Visviki		D8 Manhattan College

Room	127	<u>Clinical & Developmental Psychology</u>	Session E
9:00 am	CHILDHOOD EXPERIENCES AND INTROVERSION AS FACTORS PREDICTING EROTOPHOBIA Stephanie Posa, Gregory Staniszewski, Donald Hartel, Kera Walowender, Dr. Judith Larkin, Dr. Harvey Pines		E1 Canisius College
9:20 am	OVERDIAGNOSING PSYCHOPATHOLOGY: COMPARING MMPI-2 AND MMPI-A PROFILES IN LATE ADOLESCENT SAMPLES Danielle Poland, Timothy Osberg		E2 Niagara University
9:40 am	RELIGIOUS FAITH ON THE REACTIVITY TO A STRESSOR Kathleen Wawrzyniak		E3 Providence College
10:00 am	INCREASED SATISFACTION AND ENDURANCE OF EXERCISE AND OTHER VARIABLES AS A FUNCTION OF RELAXATION TECHNIQUES Rachel D. Kaplan, Mary O'Keeffe		E4 Providence College
10:20 am	MEASURES OF FUTURE BEHAVIORAL INTENTIONS TOWARDS SUN EXPOSURE AND USE OF SUNSCREEN Tara L. Fitzgerald, Mary O'Keeffe		E5 Providence College
10:40 am	A DEVELOPMENTAL STUDY OF MEDIA USE AND BODY IMAGE Carolyn Roper, Shannon Youst, Darragh Foley, Kari Lehman, Tanya Lenezewski, Rachel Levi, Peter Melchiori, Lisa McCaig		E6 Ithaca College
11:00 am	EXTENT OF PARENTAL KNOWLEDGE OF NEW TELEVISION RATINGS AND ITS EFFECT ON CHILDREN'S TELEVISION VIEWING HABITS Kimberly Ruliffson, Stephanie DiMeglio, Rebecca Laformara, Marnie D'Uva, Jenny Brennan, Megan Roberts, Matt Thouin, Amy Vavra		E7 Ithaca College
11:20 am	A CONTENT ANALYSIS OF THE PORTRAYAL OF DEATH ON TELEVISION Jennifer R. Piazza, Brian C. Coate, Shawna M. Cutting, Kate M. Knauf & Lisa M. Valentine		E8 Ithaca College

Room	211 <u>Developmental & Cognitive Psychology</u>	Session F
9:00 am	LATERALIZED FUNCTIONS IN DRUG-EXPOSED INFANTS Stacy Mac Kenzie, Pamela Schuetze, and Rina Das Eiden	F1 Buffalo State College
9:20 am	EXPLORATORY PLAY AS A FUNCTION OF DAYCARE IN INFANTS Audra Lewis, Pamela Schuetze	F2 Buffalo State College
9:40 am	THE EFFECTS OF A GESTURAL COMPONENT ON LEXICAL ACQUISITION: AN EMPIRICAL STUDY OF INFANT LANGUAGE DEVELOPMENT Laura J. Polvino, Nancy Rader, and Research Team 04	F3 Ithaca College
10:00 am	INFANT RESPONSES TO REFLECTIONS ON A VISUAL CLIFF APPARATUS Jennifer R. Piazza, Nancy D. Rader & Research Team 04	F4 Ithaca College
10:20 am	VISUAL CLIFF BEHAVIOR AND LATER IMPULSIVITY AND INHIBITION Amanda J. Piece, Karen I. Ban, Nancy D. Rader and Research Team 04	F5 Ithaca College
10:40 am	CHILDREN'S RESPONSE ON A COGNITIVE TASK TO PEER AND AUTHORITY PRAISE ACROSS GENDERS Stella Gilgur, Nancy Rader, and Research Team 04	F6 Ithaca College
11:00 am	LATERALIZATION OF PHONOLOGICAL PROCESSING OF LANGUAGE BY GENDER Pavitra Sundar and Nancy Rader	F7 Ithaca College
11:20 am	SEX AS AN INFLUENCE ON HEMISPHERIC LATERALIZATION OF VISUAL AND PHONOLOGICAL PROCESSES IN LANGUAGE April M. Smith, Pavitra Sundar, and Nancy Rader	F8 Ithaca College
Room	127 <u>Psychology of Humor</u>	Session G
3:30 pm	HOW FUNNY IS THIS JOKE?: IT'S AS FUNNY AS WE TELL YOU IT IS William E. Breen, David J. Wimer, William Doiron, Brian F. Falvey, Gina Feinman, Margaret V. Grondin, Holly M. Larrabee, & Bernard C. Beins	G1 Ithaca College
3:50	EVALUATION OF HUMOR: COGNITIVE AND SOCIAL FACTORS William Doiron, William E. Breen, David J. Wimer, Brian F. Falvey, Gina Feinman, Margaret V. Grondin, Holly M. Larrabee, & Bernard C. Beins	G2 Ithaca College

Room	127	<u>Psychology of Humor</u>	Session G
4:10 pm	CHANGES IN MOOD DO NOT EQUAL CHANGES IN APPRECIATION OF JOKES Tisha G. Miller, David J. Witner, Erin T. Fortier, Melissa Killeleagh, Eric J. Sambolec, & Bernard C. Beins		G3 Ithaca College

4:30 pm	MOOD DOES NOT AFFECT THE FUNNINESS OF JOKES BUT JOKES AFFECT YOUR MOOD David J. Wimer, William E. Breen, William Doiron, Gina Feinman, Margaret V. Grondin, Hofly M. Larrabee, & Bernard C. Beins		G4 Ithaca College
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Room	211	<u>Learning & Perception</u>	Session H
11:40 am	STRESS RESPONSE OF FOOD-RESTRICTED AND NON-FOOD-RESTRICTED RATS DURING SIMULATED GRAVEYARD SHIFTS Jim Evans and Jason Valent. Drs. H.M. Murphy and C.H. Wideman		H1 John Carroll University

3:30 pm	CONDITIONED FOOD AVERSION IN THE TERRESTRIAL HERMIT CRAB, <i>COENOBITA CLYPEATUS</i> Bruno A. Sousa and Laurence J. Nolan		H2 Wagner College
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3:50 pm	FACIAL CONTEXT EFFECTS IN PIGEONS James Lanza, Keith Johnson and Daniel Witt		H3 C. Connecticut State Univ.
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4:10 pm	AUDITORY THRESHOLDS IN MUSICIANS VERSUS NON-MUSICIANS Amanda E. Morgan, Dr. Howard C. Berthold		H4 Lycoming College
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4:30 pm	THE EFFECT OF TIME DELAYS ON DEPTH PERCEPTION Michelle Johnson, Dr. Howard C. Berthold		H5 Lycoming College
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4:50 pm	EFFECT OF AGE ON ACCURACY IN FACIAL RECOGNITION Kelly S. Spigelmeyer, Dr. Howard C. Berthold		H6 Lycoming College
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Room	228	<u>Chemistry</u>	Session I
9:00 am	AN INVESTIGATION OF CARBONYL COUPLING PROCEDURES FOR ADAMANTYLIDENE SYNTHESIS Heather Clarke, Katie Ferreira, Arianne Lozan, Kerry Murphy, Sheila Adamus		I1 Providence College

Room	228	<u>Chemistry</u>	Session I
9:20 am	SYNTHESIS OF ADAMANTYLIDENE COMPOUNDS AND TETRASUBSTITUTED ALKENES: STEREOSELECTIVITY OF ELECTROPHILIC ADDITIONS Kathryn Ferreira, Dr. Sheila Adamus		I2 Providence College
9:40 am	SYNTHESIS OF SUBSTITUTED ADAMANTANONE COMPOUNDS FOR USE IN THE STUDY OF TBE STEREOSELECTIVITY OF ELECTROPHILIC ADDITION TO TRIGONAL CARBONS Arianne Lozan, Kathryn Ferreira, Heather Clarke, Kerry Murphy, Sheila Adainus		I3 Providence College
10:00 am	A NEW METHOD OF PREPARING N-HYDROXYUREAS Brian D. Leskiw, Josef G.Krause		I4 Niagara University
10:20 am	ISOLATION AND CONFORMATION OF SWINHOLIDE A FROM TWO DIFFERENT <i>STELLETA CLAVOSA</i> SPONGES Chris Wegerski, Dr. Leif Abrell, Dr. Yengsheng Wanggui, and Dr. Phil Crews		I5 Niagara University
10:40 am	NEW TRICKS FROM OLD DOGS: THE STRUCTURE AND ELECTROCHEMISTRY OF COBALT COMPLEXES OF THE TRIS(SALICYLAIDEHYDE)TAME LIGAND Cathy A. Yelen, Derrick J. Swartz, Bruce C. Noll * and William S. Durfee		I6 Buffalo State College
11:00 am	NEW SUBPHTHALOCYANINES AND SUBTRIAZAPORPHINES Kenneth S. Bousman, Cathy A. Yelen, Merced M. Molnar, Phillip J. Farris, Jr., Bruce C. Noll, Gordon T. Yee and William S. Duffee		I7 Buffalo State College
11:20 am	KINETICS OF FORMATION OF A TRIDENTATE CHELATE Daniel P. Jamieson, Barry L. Westcott		I8 C. Connecticut State Univ.
11:40 am	MICROWAVE INDUCED ESTERIFICATION REACTIONS USING SOLID STATE SULFONIC ACID RESIN CATALYST Brian R. Chapados, Konrad G. Kabza		I9 SUNY Fredonia
Room	228	<u>Biochemistry</u>	Session J
3:30 pm	METALLOTHIONEIN AS A BIOCHEMICAL MARKER OF METAL CONTAMINATION L. M. Miller, M. M. Schreiner, and A. R. Steward		J1 Niagara University

Room	228	<u>Biochemistry</u>	Session J
3:50 pm	CELLULAR EFFECTS OF P-7 a 20 AMINO ACID SEQUENCE THAT ALTERS p53 PHOSPHORYLATION Karen J. Quadrini, Victor Adler and Ze'ev Ronai		J2 Manhattan College

4:10 pm	ALTERATIONS IN CYCLIC AMP LEVELS IN CULTURED ASTROCYTES INDUCED BY EXOGENOUSLY ADDED MYELIN MEMBRANES Thao Doan, Francis Musyoki		J3 Manhattan College
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Room	219	<u>Niagara Undergraduate Conference</u>	Session K
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9:00 am	Jacques Chirac's Fall from Grace Sandra Karkau, Dr. Wayne Northcutt		K1 Niagara University
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9:20 am	THE CHANGING ROLE OF THE UNITED NATIONS Melissa J. Mahoney, Dr. Meredith Sarkees		K2 Niagara University
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9:40 am	DOING FEMINIST RESEARCH IN POLITICAL SCIENCE Rebecca Lyn Ryan, Dr. Meredith Sarkees		K3 Niagara University
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10:00 am	THE POLICY OF DEINSTITUTIONALIZATION AND ITS EFFECTS ON SOCIETY Katy Howard, Dr. Meredith Reid Sarkees		K4 Niagara University
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10:20 am	READER PERCEPTIONS OF ADVERTORIALS Camilla Morgan, Dr. James Wittebols		K5 Niagara University
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10:40 am	THE EFFECTS OF ANGER CONTROL TRAINING Colleen Johnson, Dr. Laverman		K6 Niagara University
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11:00 am	ASSESSING THE TRANSPORTATION NEEDS OF A MATURING POPULATION IN NIAGARA COUNTY Christy Gress, Kerrie Sine and Dr. Laverman		K7 Niagara University
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11:20 am	GOD AND ETHICS Nanagyali Amin, Dr. Waters		K8 Niagara University
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Room	219 <u>CS, Economics, Engineering & Math</u>	Session L
11:40 am	SOLAR OVEN Dierdre M. Curry, Brian A. Smith, Dr. J. Ghorieshi	L1 Wilkes University
3:30 pm	AUTOMATED-FLIP CONCERT STAGE Brian A. Smith, Dr. C. Mirman	L2 Wilkes University
3:50 pm	DESIGN AND DEMONSTRATION OF AN FPGA Gregory Burda, Lanphuong Pham, Stanley Stanski, Dr. John B. Gilmer	L3 Wilkes University
4:10 pm	LOW COST SPREAD SPECTRUM EXPERIMENTATION William Stockdell, Dr. M. Anthony Kapolka	L4 Wilkes University
4:30 pm	A SIMPLIFIED METHOD OF INTEGRATING (tan x)ⁿ Scott Wilson, Osman Yurekli	L5 Ithaca College
4:50 pm	PUBLIC EXPENDITURES AND ECONOMIC GROWTH: THE FAN-TASTIC APPROACH Delia Furtado, Yvonne Arsenault, Alyssa Nadeau, Emmanuel Kaparakis	L6 Providence College

Room	329 <u>Environmental Science</u>	Session M
3:30 pm	EFFECT OF TRICLOSAN (5-CHLORO-2-(2,4- DICHLOROPHENOXY)PHENOL) ON GROWTH OF THE GREEN ALGA <i>SELENASTRUM</i> <i>CAPRICORNUTUM</i> Paul Trippi, Joshua Prey, and David Orvos	M1 SUNY Fredonia
3:50 pm	EFFECT OF TRICLOSAN (5-CHLORO-2-(2,4- DICHLOROPHENOXY)PHENOL) ON SOLUBLE PROTEIN PRODUCTION BY THE GREEN ALGA <i>SELENASTRUM CAPRICORNUTUM</i> Jeffrey Giardini, Peter McKenney, and David Orvos	M2 SUNY Fredonia
4:10 pm	ENVIRONMENTAL IMPACT ASSESSMENT USING GIS Jason Iaccio, Darren Gates	M3 Wilkes University
4:30 pm	HOW ACCURATE ARE NATIONAL WETLAND INVENTORY MAPS: AN ANALYSIS FROM NORTHEASTERN PENNSYLVANIA Malika Mohseni and Dr. Kenneth Klemow	M4 Wilkes University
4:50 pm	CORRELATION OF NATIONAL WETLAND INVENTORY MAPS TO DELINEATED WETLAND BOUNDARIES: A FOLLOW-UP ASSESSMENT Jessica Azarewicz, Jane Jesse, Carrie Chipeco, Malika Mohseni, Dan Siani, and Dr. Ken Klemow	M5 Wilkes University

PAPER SESSION ABSTRACTS

A1

GENETICS OF THE SHORN (*shn*) MUTATION IN THE RAT: ORIGIN, HERITABILITY, AND POSSIBLE LINKAGE ON CHROMOSOME 10. Amy Webber and Thomas R. King. Central Connecticut State University.

A spontaneous hypotrichotic rat (lacking a normal hairy coat) was recently discovered among a colony of hairy albino rats at CCSU. A series of standard Mendelian crosses revealed that shorn is heritable and is transmitted as a recessive, autosomal allele (designated *shn*). To determine if *shn* is a new mutation in a previously undiscovered gene, complementation tests with other available hypotrichotic mutants (*fz*, *mu*, *hr*) were conducted. All three mutations complemented *shn*, suggesting that *shn* might identify a novel gene. However, many other known hypotrichotic mutants would also have to be tested to rule out remutation. To narrow our search field, linkage tests with other visible markers in our colony were then executed. Our current results show that *shn* is not linked with albino (*c*), *fz*, *hd* or *hr*. Linkage tests with *mu*, however, indicated possible linkage at about 30% recombination. To test this tentative linkage assignment on Chromosome 10, an intraspecific backcross was conducted with our partially inbred hypotrichotic rats and standard inbred Brown Norway (BN) rats. Molecular analysis of the panel of backcross progeny produced should allow unambiguous linkage assignment and fine-structure mapping of the *shn* mutation.

A2

GENETICS OF THE SHORN (*shn*) MUTATION IN THE RAT: SEARCH FOR GENETIC LINKAGE. Raye Mutcherson, Alex Castillo, Bill Campbell, David Ornitz, Thomas R. King. Central Connecticut State University.

A spontaneous hypotrichotic rat (lacking a normal hairy coat) was recently discovered among our colony of hairy albino rats at CCSU. To make a linkage assignment for the affected gene, designated shorn (*shn*), an intraspecific backcross was conducted with our partially inbred hypotrichotic rat strain and standard inbred Brown Norway (BN) rats. Molecular analysis of the panel of backcross progeny produced should allow unambiguous linkage assignment and fine-structure mapping of the *shn* mutation. While no linkage is yet indicated with any of the seven locations tested so far, we expect to reveal at least a partial exclusion map by April 25, if not an actual linkage assignment. A genetic location for *shn* would allow us to advance our analysis of *shn*'s role in skin and hair development to the molecular level by facilitating identification of flanking primers, candidate genes, and perhaps homologues of shorn in other mammalian species. This detailed insight into skin and hair biology could lead to the development of therapeutic and preventive medicines for disorders of the hair and skin.

A3

IDENTIFICATION AND CHARACTERIZATION OF THE *Hxa* GENE COMPLEX IN MICE Matthew Balanda, Sharla Strole, James Hancock, Richard Kisson, Thomas R. King. Central Connecticut State University.

We have recently identified a minor histocompatibility antigen controlled by a gene or genes on the X chromosome in mouse. By analogy with similar known genes on the mouse Y chromosome, we named these histocompatibility gene(s) on the X *Hxa*. Our proposed studies have two short-term goals: First, we aim to identify by skin graft exchange assay those strains of inbred laboratory mice which encode distinct histocompatibility antigens on their X chromosome. Second, for pairs of mice with distinct X-encoded antigens, we will use available Recombinant Inbred strain sets to map such variable loci into defined regions on the X-chromosome. Progress with these two objectives should allow us ultimately to make a molecular assignment for each gene (or genes) responsible for X-mediated graft rejection.

A4

FINE-STRUCTURE MAPPING OF THE MALE STERILITY AND HISTOINCOMPATIBILITY(*mshi*) MUTATION IN MOUSE

Andrew Foss, Megan Ellis, Susan Murcko, Tien Nguyen, Michael Rule, Thomas R. King. Central Connecticut State University.

The male sterility and histoincompatibility (*mshi*) mutation is an autosomal recessive mutation discovered in the BALB/cBy inbred strain of mice. The mutation causes male sterility due to apparent spermatogonial depletion and also causes individuals homozygous for the mutation to reject allografts from non-mutant BALB donors. Analysis of progeny from an intraspecific backcross using the polymerase chain reaction (PCR) has placed the *mshi* locus between *DIOMit5* and *DIOMit2l2* and *DIOMit2j3* on Chromosome 10 - markers which are within 1.1 cM of each other - and clarified the order of other Chromosome 10 microsatellite markers. Analysis of sterile males that have retained long-term a BALB skin graft has failed to genetically dissect this locus into separate components, but has instead revealed incomplete penetrance of the histoincompatibility phenotype. We expect that this high-resolution backcross panel and genetic map of the *mshi* locus will facilitate the identification of probes and candidate gene sequences, leading to the eventual molecular identification of the gene or genes affected by this interesting mutation.

A5

THE IN VIVO EFFECT OF C-CAM 1 EXPRESSION IN TUMORS OF NUDE MOUSE PROSTATE EPITHELIAL TISSUE

Andrea Mazzacua, Douglas Hixson, and Meghan Comegys. Providence College, Providence, RI; Brown University, Providence, RI; Rhode Island Hospital, Providence, RI.

In this project we examined the in vivo effects of C-CAM 1 on tumor morphology in nude mouse prostate epithelial tissue. When transfected with C-CAM 1, some cell lines exhibit suppression, while others show aggressive tumor growth. The cell line differences responsible for these different growth patterns are as yet undetermined. We have done quantitative analysis of nuclear and nucleolar convolution" qualitative analysis of electron microscope images, and immuno-gold labeling to visualize the localization of C-CAM. Immunofluorescence microscopy was also utilized to localize several proteins.

A6

BCL-2 AND P53 ARE INVOLVED IN PHOTODYNAMIC THERAPY INDUCED APOPTOSIS IN MCF-7 BREAST CANCER CELLS

Joseph Senn, Jean C. Gallo, Robert S. Greene. Niagara University Department of Biology, Niagara University, NY 14109

In the treatment of cancer the processes of apoptosis and necrosis represent two distinct pathways leading to the destruction of tumor cells. Apoptosis, or programmed cell death, is an active process requiring ATP that results in the specific death of individual cells. The process of necrosis is non-specific and is typically associated with conventional chemotherapy. Induction of apoptosis in tumor cells is the goal of photodynamic therapy (PDT) because of its specificity and lack of inflammatory side effects. In the present study the process of apoptosis has been investigated in MCF-7 human breast cancer cells in culture. Cells were treated with photodynamic therapy and the levels of induction of p53 and Bcl-2 protein were assayed using Western Blot techniques. With PDT treatment, the levels of p53 protein appear to increase with drug alone. However when treated with light the levels decline. Bcl-2 appears to have the opposite relationship; in the presence of drug followed by light treatment Bcl-2 levels increase. These results suggest that in PDT treatment p53 and Bcl-2 activities may be reciprocal in their association with MCF-7 apoptosis. These results provide insight towards understanding the process of apoptosis and may have implications for the use of these methods in cancer therapy.

A7

VIRAL AND IMMUNOLOGICAL ASPECTS AND IMPLICATIONS IN MULTIPLE SCLEROSIS Kerry A. Mortimer, John A. Blaho*. Manhattan College, Riverdale, NY 10471, Dept. of Biology. *The Mt. Sinai School of Medicine, NY, NY 10029. Dept. of Microbiology.

The pathogenesis of Multiple Sclerosis (MS) is unknown. Past research has focused on the idea that MS is either an autoimmune or a viral disease. Studies suggest that herpes simplex virus (HSV) proteins and central nervous system/peripheral nervous system proteins possess similar post translational modifications. Currently, biochemical analyses of 2', 3'-cyclic nucleotide 3'-phosphodiesterase (CNP) focused on brain derived protein. The project goal was to develop an *in vitro* modification system for the human CNP protein. First, human epithelial (HeLa) cells were tested for the presence of CNP, second, the generation of a series of recombinant forms of CNP was sought. The results are as follows; (1) a HeLa cell protein, which reacts with an anti-CNP antibody comigrates with the nucleotidylated H2/3 protein, suggesting that H2/3 is CNP, (ii) a series of recombinant plasmids containing portions of the CNPI and CNPII proteins were constructed, (iii) a 1500 base pair (bp) portion of CNPI was placed into a vector containing a unique EcoRI site, allowing future insertion of a 300 bp pieces of CNPI to generate a full-length gene, (iv) a portion of the CNP gene was cloned into a vector which should enable the expression of CNP as a GST fusion protein.

A8

DEVELOPMENT OF A RAPID AMPLIFICATION-BASED METHOD FOR DETECTION AND DISCRIMINATION BETWEEN STRAINS OF MYCOBACTERIUM PARATUBERCULOSIS/Luis X. Campodonico, Sheldon T. Brown, Ian C. Brett, Manhattan College/College of Mount Saint Vincent, Riverdale, NY 10471, Department of Biology/Bronx Veterans Affairs Medical Research Foundation, Bronx, NY 10463

Mycobacterium paratuberculosis causes enteritis in ruminants, its role in human disease remains controversial. Recovery from culture of clinical specimens is insensitive and takes from 10 to 50 weeks. Clarification of the epidemiology and pathogenicity due to *M. paratuberculosis* requires more rapid and sensitive diagnostic techniques. A novel amplification method for identification and discrimination between strains of *M. paratuberculosis* in a single reaction was developed. The method was tested using type strains and clinical isolates of *M. paratuberculosis*. Sensitivity and specificity of detection were comparable to existing methods that employ PCR amplification species specific insertion sequences. The method provides greater discrimination between closely related strains than conventional fingerprinting using RFLP analysis. This technique has potential application in veterinary medicine and for investigating the role of *M. paratuberculosis* infections in humans.

A9

PHENOTYPE CHARACTERIZATION OF MUTANT RHIZOBIUM ETLI Crystal R. Weatherill, presenter; Dr. Jack Deihl, faculty advisor. Biology Department, Lycoming College

The purpose of this study was to confirm the presence of an induced mutation in the YJII gene on the chromosome of *Rhizobium elti* and to phenotypically characterize the mutant. Methodology for confirming the mutation included electrophoretic analysis of PCR product generated within a defined primer region on genomic extract. Phenotype analysis included anabolic and catabolic study of carbohydrates and amino acids in minimal media. Other test media included: citrate, indole, methyl red, Voges-Proskauer, urea and milk and lipid agar plates. Results indicate that the mutation was present on the chromosome in single copy. Urea hydrolysis was the only metabolic difference between the mutant and wild-type. Further study of transport mechanism suggest the YJII gene may be involved in transport of urea or urease for generating nitrogen for purine synthesis.

A10

ANALYSIS OF A HYPERMORPHIC MUTATION OF *STAR* Stacey A. Sedore, Deborah A. Leonard, Michael A. Kotarski. Dept. of Biology, Niagara University

Mutations of the *Star* gene that have been characterized are loss of function mutations which are homozygous lethal and as heterozygotes produce a dominant rough-eyed phenotype. *Star* functions in the Egfr-signaling pathway necessary for neurogenesis and is active at two different times during development. In the embryo, lethal mutations produce an aberrant cuticle and abnormalities in neural development. In the adult eye, mutations cause the production of extra photoreceptor cells causing jumbled ommatidia and a rough-eye surface. A gain of function *Star* mutant, *hyperStar*, has been identified which produces a five-fold increase in *Star* mRNA. This mutant has characteristics that are similar but not identical to the loss of function *Star* mutants and represents a new class of mutations. This mutant prompts a new model for how *Star* functions in signal transduction pathways.

A11

EXPRESSION OF LUCIFERASE GENE IN MEDAKA FISH EGGS Mike Mahar, Chris Miller, Wayne Yunghans. Dept. of Biology, SUNY College at Fredonia.

We prepared bacteria which contained a plasmid (POL) which carried the luciferase gene. Bacteria upon lysis produced light in a luciferase reaction. We prepared purified plasmid from the bacteria, and injected the plasmid under the shell of Medaka eggs. Eggs were electroporated and then tested for light in the luciferase reaction. One fish produced light over several days of testing.

A12

ANALYSIS OF A REVERTANT IN SUBUNIT 11 OF CYTOCHROME C OXIDASE Tina Marie Kristoff, Michael Mazourek and Vicki Cameron. Ithaca College, Biology Department

Cytochrome c oxidase is the terminal member of the electron transport chain, responsible for the transfer of electrons from cytochrome c to molecular oxygen. The enzyme complex is composed of 13 polypeptides, 10 encoded on nuclear DNA and 3 encoded on mitochondrial (mt) DNA. Subunit 11 of this enzyme is encoded on mtDNA by the gene *COX2* and is responsible for entry of electrons into the complex from cytochrome c. To understand the function of this subunit, we analyzed mutants with amino acid alterations which destroyed the function of the enzyme. We then grew large number of mutant cells to select those which had recovered the ability to respire due to a second compensatory mutation. These "revertant" strains were analyzed to discover how they had recovered function. The mutant strain m5353 has lost function due to substitution of isoleucine for threonine at position 163 in the amino acid chain. A revertant of that strain, m5351DR46, was shown to retain the original mutation in an otherwise wild type *COX2* gene. We showed that the second mutation, which compensated for that found in m5353, resided in the 15s rRNA. Presumably, this mutation results in less accurate ribosomes, leading at low frequency to the production of functional *COX2*.

A13

SEPARATION OF DNA FRAGMENTS PRODUCED BY RESTRICTION ENZYME Heidi Mortenson, Wayne Yunghans. Dept. of Biology, SUNY College at Fredonia.

We prepared fragments of DNA by digesting plasmid (POL) with Hind III restriction enzyme. The plasmid appeared to be digested to linear pieces as observed on mini-gel electrophoresis. Plasmid fragments were separated on HPLC for comparison.

B1

THE EFFECTS OF ACTIVITY-WHEEL AND FOOD-RESTRICTION STRESS ON THE THYMUS IN NORMAL AND VASOPRESSIN-DEFICIENT ANIMALS

Thomas Arnold. (Drs. H. M. Murphy and C. H. Wideman, advisors). John Carroll University, Department of Biology.

Activity-wheel revolutions, plasma glucocorticoid levels, and percentage of thymus weight to body weight were compared in vasopressin-deficient (DI) and vasopressin-containing (LE) rats under ad-lib and food-restricted conditions. Activity-wheel revolutions were significantly different between strains when the animals were food restricted. Corticosterone levels were significantly increased with food restriction and further enhanced with the addition of the activity wheel in both strains. Unlike observed corticosterone levels, the percentage of thymus weight to body weight was significantly decreased only when food-restriction was coupled with activity in both strains. In addition, activity levels were influenced by the presence of vasopressin. These observations indicate that activity-wheel and food-restriction stress affect wheel revolutions, corticosterone levels, and percentage of thymus weight to body weight.

B2

INCENTIVE SHIFT UTILIZING 4% AND 32% SUCROSE SOLUTIONS WITH VASOPRESSIN-CONTAINING AND VASOPRESSIN-DEFICIENT RATS

Carrie Tarantina. (Drs. H. M. Murphy and C. H. Wideman, advisors). John Carroll University, Department of Biology.

This study was designed to examine the reactions of vasopressin-containing (LE) and vasopressin-deficient (DI) rats when shifted either from 4% to 32% sucrose solutions or from 32% to 4% sucrose solutions. Following introduction to randomly-assigned start solutions and to food restriction, half of the subjects were shifted to the contrasting solution while the other half maintained access to their original solution. Rats had ad lib access to their designated sucrose solutions as well as to a 0% sucrose solution. Data revealed significant differences between the pre- and post-shift consumptions for LE rats shifted from the 32% to the 4% solution, DI rats shifted from the 4% to the 32% solution, and DI rats shifted from the 32% to the 4% solution. Greater preference for the post-shift solution over the 0% solution by rats shifted to the 4% from the 32% solution was observed, while a decreased preference by groups shifted in the opposite manner was also seen. Both LE and DI rats consumed a greater total fluid percentage of 32% sucrose solution after having been shifted from a 4% solution, and both consumed a lesser total fluid percentage of 4% solution after having been shifted from a 32% solution.

B3

A COMPARATIVE STUDY OF THE SENSITIVITY OF BULLFROG TADPOLE THYROIDS TO TSH UNDER VARYING SEASONAL CONDITIONS AND STRESS

Krista Proctor and Mary L. Wright, SSJ. Elms College, Biology Dept.

Thyroid Stimulating Hormone (rSH), a hormone released by the pituitary gland, is known to induce the production and release of T_4 by the thyroid gland. To determine what effects different seasons and stress factors have on the sensitivity of thyroids to TSH, *Rana catesbeiana* tadpoles were collected in the winter and the summer. A group of summer tadpoles were placed in the cold for three weeks, a second group was starved for one week, and a third group were put on our normal incubator temperature of 22°C. The winter tadpoles had been at winter temperatures before collection but were kept at 22°C in the lab. The thyroids were removed and cultured in two groups; a control group and a TSH group. The media were collected 24 and 48 hours after culture and assayed for T_4 . The results showed that the output of T_4 was greater during the summer than the winter, but was higher than expected in starved tadpoles and in the tadpoles exposed to the cold.

B4

A STUDY OF THE EFFECT OF EXOGENOUS T_4 ON PLASMA AND OCULAR MELATONIN, IN BULLFROG TADPOLES Christina Alves, Mary L. Wright, SSJ . Elms College, Biology Department

Thyroxine (T_4) is a hormone secreted by the thyroid gland and it is primarily responsible for the metamorphosis of the tadpole into the adult frog. Melatonin (ML) secreted by the pineal gland and the retina inhibited metamorphosis, under an 18:6 light/dark cycle. Since T_4 levels rise but ML concentrations decline at metamorphosis climax, we investigated the effect of exogenous T_4 on plasma and ocular melatonin. Prometamorphic *Rana catesbeiana* tadpoles on an 18:6 light/dark cycle were injected with 0.2 ug T_4 or saline for five days at 1930 hr. On the sixth day, blood was collected at 0900, 1300, 1500, 1700, 2100, 0100, 0300, 0600 hr. and later assayed for plasma T_4 , and plasma and ocular melatonin. T_4 injection increased plasma T_4 and decreased plasma, but not ocular, melatonin. The results suggest that T_4 causes the decline in plasma ML that occurs at the metamorphic climax.

B5

EFFECTS OF INTERLEUKIN-1 β ON FOOD INTAKE DURING THE RAT ESTROUS CYCLE Francesca Roberto, Peter Butera, Amy Parkhill. Niagara University, Department of Biology

Interleukin- 1 beta (IL- 1 β) is a proinflammatory cytokine released when the immune system is activated and is responsible for "sickness behavior" in many animals (e.g., anorexia, hypersomnia, lethargy, and lack of interest in usual activities). In female mammals, ovarian hormones also modulate immune system function, suggesting that gonadal hormones may contribute to sex differences in immune function. The present experiment investigated whether the anorectic response to IL- 1B is influenced by female reproductive cycles. Twelve female rats were treated with IL- 1B or saline during estrous cycle phases characterized by low levels of estradiol (diestrous) or high levels of estradiol (proestrous). We found that although IL- 1 decreased food intake in both cycle phases, its effects appeared to be enhanced during proestrous. These findings indicate that female reproductive cycles can modulate behavioral responsiveness to IL-1. These data highlight the ways in which the immune and endocrine systems interact, and are consistent with the hypothesis that differences in the gonadal hormone environment may underlie sex differences in immune function.

B6

EFFECTS OF INTERLEUKIN-1 β ON FOOD INTAKE IN OVARIECTOMIZED RATS Patricia Lynch, Peter Butera, & Francesca Roberto. Niagara University, Department of Psychology

Ingestive behavior in female mammals is influenced by changes in endogenous estrogens and by exogenous estrogen treatment. There is also evidence indicating that the cytokine interleukin-1beta (IL-1 β) inhibits food consumption. The present experiment evaluated the hypothesis that the suppression of food intake by IL- 1 β is modulated by estradiol. Our findings indicate that estradiol treatment significantly decreased food intake during the first 2 hours of nighttime feeding and throughout the 2-day treatment period. Although IL- 1 β suppressed nighttime food intake, its effects on eating were not equivalent in all animals. Specifically, the anorectic effects of IL- 1 β appeared to be enhanced in estradiol-treated females. This suggests that there is a connection between the functioning of the immune and the endocrine systems, and lends support to the idea that there are fundamental sex differences in immune function.

B7

EFFECTS OF INTERLEUKIN-1 β ON FOOD INTAKE DURING THE RAT ESTROUS CYCLE: ROLE OF ENDOGENOUS CHOLECYSTOKININ Amy Parkhill, Peter Butera & Francesca Roberto. Niagara University, Department of Biology

Contact with an infectious agent causes the release of proinflammatory cytokines like interleukin-1 β (IL-1 β), which elicit behavioral and physiological responses. One of the responses to IL-1 β is a pronounced decrease in food intake. The gut peptide cholecystokinin (CCK) also inhibits food intake, and previous research indicates that IL-1 increases plasma levels of CCK in male rats. The present experiment examined the hypothesis that IL-1 β induced anorexia depends upon the actions of endogenous CCK. Twelve female rats were treated with IL-1 β or saline alone and in combination with the type A CCK receptor antagonist, devazepide. Injections were administered during cycle phases associated with low levels of estradiol (diestrus) or high levels of estradiol (proestrus). IL-1 β significantly decreased food intake in both stages of the estrous cycle. More importantly, devazepide did not attenuate IL-1 induced anorexia during either cycle phase, but did block the estrogenic suppression of food intake at proestrus. These findings suggest that IL-1's effects on feeding do not depend upon the activation of CCK receptors, and they also provide further support for the hypothesis that the effects of estradiol on feeding involve interactions with CCK.

B8

ORIGIN OF PITUITARY ADENYLATE CYCLASE-ACTIVATING POLYPEPTIDE (PACAP)-CONTAINING FIBERS IN THE MUDPUPPY CARDIAC GANGLION

Linda Shoenfeld and Jean Hardwick. Ithaca College, Biology Department

Cardiac function is regulated by the autonomic nervous system (ANS). In addition to the release of classical neurotransmitters, nerve fibers containing peptides have also been demonstrated to alter cardiac function. One such peptide that may play an important role in the regulation of autonomic function is the peptide PACAP, which has been localized in nerve fibers innervating the heart. The amphibian *Necturus maculosus*, commonly called the mudpuppy, was used to determine the origin of these PACAP-containing fibers. To determine if this peptide originated in neurons of the vagal ganglia, bilateral vagotomies were performed on animals, followed by a recovery period of 1-3 weeks. The cardiac ganglion was then removed and examined using immunohistochemical methods. Following vagotomy, the amount of PACAP staining was significantly diminished, whereas the levels of PACAP were unchanged in control animals. These results indicate that a significant source of PACAP in the mudpuppy cardiac ganglion is carried by the vagus nerve and probably originates in vagal ganglia of the brainstem.

B9

MICROCIRCULATION IN THE FROG WEB: AN OPPORTUNITY TO CONSIDER MECHANISMS GOVERNING BLOOD FLOW Margaret Alexander and Carl S. Hoegler. Dept. of Biology, Marymount College Tarrytown, NY

This exploratory research studied the blood flow of the tarsal web microcirculation in the leopard frog (*Rana pipiens*) by using a variety of physical and chemical agents to determine the cellular mechanisms responsible for changes in blood flow. After frogs were anaesthetized with 2% MS-222 (tricaine methane sulfonate), the web was observed microscopically and recorded with a video camera. Blood flow changes were based on two criteria: (1) the number of open capillaries in the tissue and (2) the diameter of the supply pulsating arteriole. Ringer's solution (37°C) increased blood flow, as did topical application of oil of wintergreen. Castor oil even after thirty minutes had no effect. Acetylcholine (10^{-4} M) also increased blood flow, but this could be blocked by the application of NOLA(N^G-nitro-L-arginine) (50×10^{-6} M), a nitric oxide synthase inhibitor. Nitroprusside (10^{-4} M) alone caused increased blood flow, suggesting the nitric-oxide based mechanism governing vasodilatation. Intact sciatic nerve stimulation (0.1-4V at 2-20Hz) predominantly caused vasoconstriction and decreased blood flow; this was blocked with the subcutaneous injection of the α -1-antagonist, phentolamine (10^{-4} M).

B10

COPPER ACCUMULATION DYNAMICS IN RELATION TO ENVIRONMENTAL OXYGEN TENSION IN THE ZEBRA MUSSEL, *DREISSENA POLYMORPHA*

Michael J. Mahar and Roger A. Byrne. Department of Biology, SUNY College at Fredonia.

Zebra and quagga mussels (*Dreissena* sp.) filter large volumes of water and may transfer pollutants from the water column to the benthic compartment. We need to examine environmental factors which may affect the bivalve's ventilatory activity, and to incorporate these factors into current models of pollutant flux. We examined the effects of hypoxia and return to normoxia on the ventilatory behavior of *D. polymorpha*. As we found significant effects we then examined the uptake of the xenobiotic, copper, in relation to periods of hypoxia, and on return to normoxia. Under normoxic conditions (pO₂ 153 torr) ~45% of individuals displayed open valves, suggesting mantle cavity ventilation. After 3-6h hypoxia (~0 torr) only 3% of individuals were actively ventilating. Normoxic animals were more active at night (95% ventilating), as were hypoxic animals (10% ventilating). On return to normoxia after a 96h hypoxia treatment animals displayed increased ventilation (~100%) which remained elevated over control for 24h. We exposed animals to high amounts of dissolved copper, (1 mgCu/L; CuCl₂·2H₂O). We determined uptake rates of Cu into tissues both under hypoxic conditions and on return to normoxia after 48h hypoxia. Preliminary results suggest that uptake of copper is reduced under hypoxic conditions and that initial rates of uptake on return to normoxia are elevated.

B11

GROWTH AND CELL POPULATION KINETICS DURING DEVELOPMENT OF ROOTS OF *PISUM SATIVUM* L. Robert Miravite. Manhattan College/College of Mt. St. Vincent, Riverdale NY 10471. Department of Biology.

Growth and cell production kinetics were determined in terminal root segments as roots of two cultivars of *Pisum sativum* which grew from 20 to 40 mm. These parameters were determined from data of root growth rates and numbers of cells in terminal root segments. Root growth and cell production rates were not constant. Root growth rates varied from about 0.2 mm hr⁻¹ for 20 mm long roots to 0.60 mm hr⁻¹ for 40 mm long roots. Since numbers of cells in root segments did not change during root growth, calculated cell production rates were a function of root elongation rates. Average cell production rates were 0.6 and 1.9% per hour for the two cultivars when roots were 20-30 mm in length while average cell production rates were 3.5 and 3.9% per hour as roots grew from 35-40 mm. Calculated cell doubling times decreased as roots grew from 20 mm to 40 mm roots. The results indicate that steady-state conditions may not always occur in roots and that cell proliferation and cell maturation activities of complex tissues, with several tissue types and cell sizes, of terminal root segments should not be over-simplified or characterized with simple mathematical expressions.

C1

ANTI-PREDATOR BEHAVIOR IN WOOD THRUSHES Ellen M. Litzenberger, Faculty advisor: Melinda S. LaBranche. Department of Biology, SUNY College at Fredonia

Predation can be a major determinant of reproductive success in bird populations, and defense of nestlings from predators is part of parental care in many species. Previous research suggests that energy spent in defense of offspring should increase as offspring approach independence; reneating birds may not rear as many nestlings as those whose first attempt was successful, and the "costs" of replacing an older nestling outweigh those of replacing a younger one. Wood Thrushes (*Hylocichla mustelina*) were observed at their nests during one of three treatments: (1) exposure to an introduced model predator (Blue Jay, *Cyanocitta cristata*), (2) exposure to an introduced neutral model (Yellow-billed Cuckoo, *Coccyzus americanus*), or (3) without a model. Behavior intensity was higher in response to the model Blue Jay than in response to the other two treatments. Unexpectedly, behavior intensity was higher in defense of young nestlings than of old nestlings. High intensity behavior was also observed much more frequently than expected for large brood sizes. We also looked at duration of behaviors in response to the different models. Wood Thrushes with old nestlings spent more time perching during experiments with the model Blue Jay than with the Cuckoo. The effects of nestling age on anti-predator behavior in Wood Thrushes were different from what we expected, while most other responses were consistent with past research.

C2

ENVIRONMENTAL INFLUENCES ON RESTING GULL ORIENTATIONS

Scott Hevner, James Lanza, David Spector

Central Connecticut State University Department of Biology

This field study's aim was to gather specific data for generating hypotheses to explain the general observation that most gulls in resting flocks face the same direction. Resting flocks were sampled from October 1997 to February 1998 in New Britain, Connecticut and on Martha's Vineyard, Massachusetts. Subjects' longitudinal body axis orientations and 11 potential environmental influences on this behavior were recorded. Preliminary results indicate that at wind speeds below 2.25 and above 6.50 mph gulls tend to face the wind rather than the sun, and at wind speeds between 2.25 and 6.50 mph the converse is indicated. The extreme variability of the gulls' orientations relative to temperature suggests the behavior is independent of this variable within the conditions observed. Hypotheses about the possible functions of orientation relative to the sun and wind for thermoregulation and aerodynamic advantage in taking flight will be presented.

C3

CONTRIBUTIONS OF INHERITANCE AND LEARNING TO MOUSE BARBERING BEHAVIOR Edward L. Carruthers, Sylvia L. Halkin & Thomas R. King, Department of Biological Sciences, Central Connecticut State University, New Britain, CT 06050

Some strains of laboratory mice exhibit "barbering" behavior, in which the barber nibbles patches of the hair of its cagemates down to the skin. Different individuals trim the hair on different parts of the head, neck, and/or back, often including the vibrissae. Studies by other researchers have revealed no relationship with diet, and no effects on health of barbering or barbered mice. A genetic component is suggested by the prevalence of the behavior in one strain in our colony and not the others. Preliminary results of our crossfostering experiments suggest that learning is not necessary in strains with a genetic predisposition to barber. We found that barbering can, however, be learned by non-barber strains raised from the age of two days by barber parents. An environment that provided additional activities for the mice (nuts to shell, cardboard tubes to chew, running wheel) may have initially reduced barbering, but had no lasting effect. Videotaping of the behavior revealed that barbering does not involve violence.

C4

FEEDING AND SOCIAL BEHAVIOR IN A GROUP OF CAPTIVE AFRICAN ELEPHANTS, LOXODONTA AFRICANA Ruth Lambert and Bruce A. Schulte

Providence College, Department of Biology

The availability of food often affects the social dynamics in group-living species. We studied the relationship between feeding behavior and social interaction of three captive African elephant (*Loxodonta africana*) females at Roger Williams Park Zoo from March through August 1997. Once each week we conducted one hour observations to examine whether consumption and thereby reduction in available hay over the hour affected the levels or types of social interaction (i.e., aggressive and nonaggressive behavior). A set amount of hay was provided at the start of observations and no further hay was supplied during the hour. We recorded all contact behaviors and categorized them as aggressive body contacts or non-aggressive trunk tip touches. For analysis we partitioned the hour into four equal intervals. The overall percent of time spent feeding on hay and vegetation in the exhibit area did not alter significantly during the eighteen weeks of the study. Over the observation hour, the percent of time spent feeding on hay per minute decreased dramatically, but non-hay consumption increased. The average number of aggressive interactions remained constant over the hour while non-aggressive interaction occurred more often after the first 15-minute interval. Elephants approached each other (< 1 body length) the most in the third time interval. This coincided with the highest incidence of non-aggressive trunk tip touching. Trunk tip touches were of two major types: investigations into the mouth probably served to inform the receiver of the food ingested; touches on the body may have acted to reduce aggression as hay became scarce and the elephants searched for alternative food sources.

C5

CHANGES IN PREY CAPTURE DURING DEVELOPMENTAL STAGES OF THE JELLYFISH *CYANEA* SP. John Higgins III and Dr. John Costello, Providence College, Dept. of Biology

The goal of this study was to describe alterations in location of prey capture during development of the jellyfish, *Cyanea* sp. Prey capture by three developmental stages ranging from ephyrae without tentacles to early tentaculate stage were examined using video methods. During initial ephyral development, prey were captured primarily on the manubrium. Capture shifted to the tentacles during later developmental stages. Changes in nematocyst density of different body surfaces as well as fluid flow around the medusae accompanied alterations in prey capture locations. Together these changes represent alterations in the way the medusae adapts to its fluid and prey environment during development.

C6

THE FEEDING METHODS OF LOBATE CTENOPHORE *MNEMIOPSIS LEIDYI* ON ADULT AND NAUPLII STAGES OF CALANOID COPEPODS *ACARTIA TONSA* Rebecca Waggett and John Costello (Dept. of Biology, Providence College, Providence, RI 02918)

The predator-prey relationship between the ctenophore, *Mnemiopsis leidyi* and its copepod prey, *Acartia tonsa*, was examined using videographic methods. Adult and early nauplius stages of copepods were separated, and feeding by ctenophores on each group was recorded. The results illustrated the differences between the capture methods used by ctenophores on adult and naupliar copepods. First, the majority of all anticipatory responses, which involve the lobe, auricle, or combination of both, exhibited by the ctenophore in the presence of adults included a lobe movement while only a small percentage of all responses involved an auricle twitch. The opposite was true for anticipatory responses to nauplii which induced auricle responses in the majority and a lower percentage of lobe responses. Second, the dominant capture location of adults on a ctenophore's body was observed to be the lobe area (66%) while nauplii captures were concentrated in the tentacular area (79 %). The capture location can be predicted by the type of movement the prey uses. Since the nauplii have a particle-like behavior, they are caught in the flow field (89 %) of the ctenophore and drawn into the tentacular area. Adults, on the other hand, swim (96%) into the surfaces they are captured on. From this, it can be determined that ctenophores have two possible mechanisms for prey capture: entraining prey in their flow field for tentacular captures, and ambush predation for encounters with swimming prey. Ctenophores alternate these mechanisms depending on the size, strength, and movement of their prey.

C7

THE FUNCTIONAL ORIENTATION FOR TOOTH MORPHOLOGY. IS IT A USEFUL APPROACH? Marc Molenat, Craig B. Wood. Biology department, Providence College

The functional orientation as an approach to tooth morphology was originally developed by P. Butler in the 1960's, but it has not been widely adopted by paleontologists and mammalogists. To date there have been only a few studies demonstrating the usefulness of the method. This study seeks to test the usefulness of one aspect of it. As a beginning 13 species within 10 genera of didelphomorph (therefore dentally plesiomorphic) marsupials have been examined. The general convention would be that the group associates a more carnivorous diet with a lengthening of the upper molar shearing blade 2, the carnassial. A ratio comparison of shearing blades on upper molars 2 and 3 has been tabulated and graphed. The results support the conventional understanding since the more carnivorous species exhibit a longer blade 2 than do frugivorous species. The most frugivorous species does not have the same ratio relation than the other species. The group appears not to demonstrate allometry related to increase in size. Next phases of the project involve extending the survey among didelphimorph as well as other marsupial and placental out-group taxa with tribosphenic molars. Statistical analysis will help determine the significant limits of variation.

C8

THE EFFECTS OF SEWAGE EFFLUENTS ON THE IN SITU GROWTH OF MYTILUS EDULIS Keir Lo Iacono, Michael L. Judge, Manhattan College/College of Mt. St. Vincent, Riverdale, NY 10471. Department of Biology.

Mytilus edulis was used as a bio-indicator to examine the effects of sewage effluents on estuarine organisms. Mussels ($<4\text{cm}$) were glued to acrylic plates ($9\times 13\text{cm}$) in a 4×5 array (19 mussels per plate). Plates were attached to metal posts and planted at four sites. Two experimental and two control sites. Experimental sites were adjacent to sewage outflow ports. Tidal height and initial shell length were controlled at all four sites. Growth was measured over a period of 6 weeks. Mussels at the control sites grew 2x faster than mussels at the experimental sites. The site at which the mussels were deployed had a significant effect on the growth rate (ANOVA, $F=9.58$, $P=0.001$). Initial length and minimum distance from the edge of a plate did not significantly effect the growth rate of *Mytilus* (ANOVA, $F=0.91$, $P=0.35$ and ANOVA, $F=0.56$, $P=0.46$, respectively). Tidal height also had no significant effect on growth rate (ANOVA, $F=0.05$, $P=0.61$). Moreover, control sites were not statistically different from one another ($F=0.91$, $P=0.35$) and experimental sites were not statistically different from each other ($F=1.49$, $P=0.23$). Therefore, the proximity of sewage treatment outflow to bivalve *Mytilus edulis* decelerated the mean growth of its shell length.

C9

REACTION OF MALE CONVICT CICHLIDS, *CICHLASOMA NIGROFASCIATUM*, TO VARIOUS BAR PATTERNS OF FEMALES Ryan Burky, and Dr. Simon Beeching. Slippery Rock University, Biology

Female convict cichlids (*Cichlasoma nigrofasciatum*) express variable color patterns which may communicate behavioral state to conspecific males. Females exhibiting different color patterns were videotaped, and played back to male fish using high-resolution video monitors. Responses of males to varying female color patterns were compared. We analyzed time spent interacting with the female videos. These times were then analyzed with the appropriate statistical test to determine if the male reactions were significant.

C10

ONTOGENY OF MELANISTIC PATTERN ELEMENTS IN THE CONVICT CICHLID, *CICHLASOMA NIGROFASCIATUM* Brent Holt, Dr. Beeching. Slippery Rock University, Biology

In many species of fish, the maturation process includes a developmental transition from juvenile-specific coloration to adult coloration patterns. Color pattern elements and their development may play a key role in intraspecific communication, such as parent/juvenile communication, within several species of fish, including the Family Cichlidae. We examined the ontogeny of melanistic pattern development in the convict cichlid, *Cichlasoma nigrofasciatum*. The pattern of melanistic development was determined to be sequential in nature for *Cichlasoma nigrofasciatum*.

D1

AN INVESTIGATION OF THE BIOGEOGRAPHY AND PHYLOGENY OF *HILLEBRANDIA SANDWICHENSIS* Jaime E. Blair with Susan Swensen. Ithaca College, Biology Department

Hillebrandia sandwichensis, a monotypic genus of the Begonia Family, is endemic to the isolated archipelago of Hawaii. With the discovery of the relative youth of the Hawaiian Islands, biologists have changed their views on the phylogenies associated with endemic species. Biogeography suggests that species endemic to Hawaii are derived from mainland progenitors, and have diverged by adapting to island life. Based on biogeography and the comparative youth of the Hawaiian Islands, evolutionary analysis should place *Hillebrandia* inside the *Begoniaceae* clade. However, morphological analysis of *Hillebrandia* has revealed the existence of many characters that appear to be ancestral among *Begoniaceae* members, such as a semi-inferior ovary that is wingless and unilocular with parietal placentation. Also, previous molecular study of *rbcL*, a highly conserved chloroplast gene inherited maternally, has placed *Hillebrandia* outside the clade. To investigate the apparent discrepancy between biogeography and the morphological and molecular data, we have chosen to analyze the ITS region of the ribosomal DNA in representative members of *Begoniaceae*. This region experiences less functional constraint and is able to accumulate mutations faster than coding regions of the genome. The faster evolving ITS region may lead to more conclusive results about 91 *Hillebrandia*'s placement among *Begoniaceae*.

D2

WETLANDS-PRESERVATION OF PAST, PRESENT AND FUTURE Barbara Davison, Dr. Barbara Nicholson. Central Connecticut State University, Department of Biological Sciences

The primary purpose of this research was to define different types of wetlands, stressing their importance to our past, present and future. The secondary purpose was to interpret core samples of Bryophytes (mosses), taken at a preserve in Salisbury, Connecticut, relating them to wetland classifications. Core samples were taken with a Macaulay corer on July 1997 at Beeslick Preserve. The preserve is a 110 acre mixed peatland with variable topography, hydrology, water chemistry and vegetation. Samples of Bryophytes have been examined down to 270 cm thus far, allowing insight to the fossil record of the site. Specimens identified were Drepanocladus, Calliergonella, Campylium, Calliergon, Rhizomnium, and Scorpidium. Bryophytes preserve well in peatlands revealing the vegetative changes of a site. Furthermore, Bryophytes serve the ecology of the peatlands.

D3

EFFECTS OF OUTCROSSING DISTANCE ON REPRODUCTIVE SUCCESS

James Simonds, Faculty Advisor: Melinda S. LaBranche. Department of Biology, SUNY College at Fredonia

The ability of a plant to reproduce successfully, in terms of fecundity and offspring, may be affected by the genetic similarity of the mates. Neighboring plants suffer inbreeding depression as a result of proximity to close relatives while distant plants suffer outbreeding depression possibly because of local adaptations. There should be some distance that represents an optimal outcrossing distance for a particular population. We examined outcrossing distances in a jack-in-the-pulpit (*Arisaema triphyllum*) population by grouping plants into blocks consisting of one male and three females. Each female was chosen based on its distance from the male (<1m, 3-5m, 7-11m). Plants were hand pollinated within each block and fruits were collected in fall. All but one measure of reproductive success was unaffected by outcrossing distance. All measures of reproductive success increased with increasing plant size. Outcrossing distance may not have an effect on reproductive success if genetic variability is very low or very high; as yet, we do not have genetic information for this population. Alternatively, the outcrossing distances we used may not have been sufficient to examine their effects on reproductive success.

D4

EFFECTS OF SEEDINESS ON GERMINATION SUCCESS Christine R. Babcock, Faculty Advisor: Melinda S. LaBranche. Department of Biology, SUNY College at Fredonia

Reproductive success is an indirect measure of fitness. It can be measured as the numbers and weights of fruits produced, or by the numbers and weights of seeds produced. But it does not usually include survival or reproduction of those seeds which would be more direct measures of fitness. The number of seeds per berry (seediness) may influence seed viability or future survival. A berry with many seeds may have less energy to allot to each seed, giving a lone seed an advantage over a seed competing with several others. Initially it might affect when a particular seed germinates. Jack-in-the-pulpit is a typical woodland perennial that produces different numbers of seeds per berry and is ideal for studying seediness. To examine the effects of seediness on germination, berries from four plants were collected and scored for numbers of seeds. Seeds were planted separately and date until germination was recorded. Preliminary results show the number of seeds per berry and the weights of the seeds have no effect on time of germination.

D5

MESOPHYLL CELL INJURIES TO NEEDLES OF RED SPRUCE Joseph Feliciano. Manhattan College/College of Mount Saint Vincent, Riverdale, NY 10471. Department of Biology

During the past several decades, red spruce (*Picea rubens*) in the northeastern United States has undergone a large decline in both number and vigor. The purpose of this study was to determine quantitative relationships of mesophyll cell death in needles of red spruce of samples taken before and after the winter of the first year of growth. Needles were procured from trees growing on two high elevation mountains (Cascade and Giant Mountains in the Adirondacks) in November 1994 and March 1995 for this research. Needles were fixed and prepared using standard histological procedures. Samples from November 1994 show a diverse amount of injuries. Samples from Cascade Mt. showed about 47% of the mesophyll cells were dead while for Giant Mt. only about 15% of the mesophyll cells from needles were dead. For March 1995 samples, the mean percentages of dead mesophyll cells were 55 and 87% for Cascade and Giant Mountains, respectively. These data indicate that a significant percentage of mesophyll cells are dead prior to winter and that over the winter time period a significant increase in mesophyll cell injury occurs. The implications of these cellular injuries on overall health of trees will be discussed.

D6

VASCULAR TISSUE AS A STRUCTURAL SUPPORT FOR ACROPETAL STEM SEGMENTS OF *OPUNTIA LAEVIS* Christopher Frenz. Dept. of Biology, Manhattan College, Riverdale, NY 10471.

Acropetal stem segments of *Opuntia laevis* cacti can be separated at their joints, from the more basal stem segments by animals, wind, etc. These transported segments can root to become separate plants. Terminal joints consist of vascular tissues (VT) composed of thick-walled xylem and phloem cells surrounded by relatively thin-walled parenchymatous cells. When acropetal stem segments are viewed as beam-compression members, it can be demonstrated that joint integrity between stem segments is related to the amount of VT present. Of all the stresses present, normal stress was the most significant. Additional evidence in support of this beam compression model is shown in comparisons between tensile joint tissue sections, compressive sections, and sections that are neither tensile nor compressive. As solid mechanical principles would predict, tensile sections are comprised of 31 % VT, while compressive sections are comprised of only 9% VT. Remaining sections are comprised of approximately 15 % VT. These results demonstrate that VT is responsible for maintaining joint integrity since for beam compressions members, a greater number of supporting rods (i.e. VT) are required in tensile regions while a lesser number of supporting rods are required in compressive regions.

D7

ROOT GROWTH STRATEGY OF AGAVE PLANTS Louis Noto. Manhattan College/ College of Mount Saint Vincent, Riverdale, NY 10471. Department of Biology.

Many plants that live in desert areas need to be able to withstand long periods without soil moisture. Roots of most plant species need a soil environment which is constantly moist. The research of this paper demonstrates that roots of the succulent plants of agaves have roots that can form protective coverings when soil moisture is limited. Mitotic index (MI) was used in this study to indicate level of root meristem activity. The average MI of actively growing roots was 1.67%. The MI of large, medium and small roots was 1.33, 2.06, and 1.51%, respectively. Actively growing roots were also subdivided into root color. Roots that were whitish, yellow, light brown, and brown in color had MI values of 1.85, 0.00, 0.36, and 0.73%, respectively. Plants in which water was withheld for 30 days, exhibited roots with a brownish colored sheath. Such roots were termed dormant roots since they had MI values of 0.0% but after several days of continuous watering, roots resumed growth and MI values similar to roots that were watered continuously. In one such experiment, normal MI values were obtained after six days of continuous watering. Experiments were performed to view the dynamics of the dormancy process. After water was withheld from potted plants, it took 10 days for plants to have MI values approach 0.0 and for roots to construct these sheaths for protection.

D8

CHLAMYDOMONAS ACIDOPHILA: HOW ACIDOPHILIC IS IT? Jamie Palladino and Ioanna Visviki. Manhattan College/College of Mt. St. Vincent, Riverdale, NY 10471. Dept. of Biology

The effects of hydrogen ion concentrations ranging from pH 1.4 to 8.4 on the growth and ultrastructure of *Chlamydomonas acidophila* (UTC #121) were investigated. Although this species is supposed to grow optimally in pH values from 2 to 4, results of the growth experiments indicate that highest growth is achieved in a nearly neutral medium. Exposure to pH 8.4, 6.4 and 5.4 decreases growth somewhat, whereas pH 4.4 and 3.4 lead to pronounced growth reduction. No growth is seen in pH 2.4 and 1.4. Transmission electron microscopy of cells exposed to pH 6.4 (control), 4.4 and 3.4 for five days, revealed several alterations for the fine structure, at pH 4.4 approximately 20% of the cells were autospores contained within the parental wall, while independent cells increased in cell volume. These trends are more pronounced at pH 3.4, where over 95% of the cells are autospores. Cell and vacuolar volume of independent cells increase dramatically, while the chloroplast volume decreases.

E1

CHILDHOOD EXPERIENCES AND INTROVERSION AS FACTORS PREDICTING EROTOPHOBIA Stephanie Posa, Gregory Staniszewski, Donald Hartel, Kera Walowender, Dr. Judith Larkin, Dr. Harvey Pines. Psychology Department, Canisius College

Fisher (1988) identified the existence of erotophobic and erotophilic tendencies and suggested that erotophobia could be linked to other personality traits and to childhood experiences. Fisher's data showed that a child whose parents were strict concerning sexual issues would more likely be erotophobic, i.e. uncomfortable with and fearing sexual issues. On the other hand, if parents were open in their orientation towards sex the child was more likely to become erotophilic, i.e. comfortable with and open to sexual issues. In this study, twenty-nine female and seventeen male undergraduate students completed: Fisher's measure of erotophobia/erotophilia, the Sexual Opinion Survey (SOS); a measure of childhood experience and parental attitudes, the Sexual Socialization Questionnaire (SSQ); and the NEO Personality Inventory. Confirming Fisher, the data showed that scores on the SSQ were significantly correlated with a number of current adult sexual attitudes. This study went beyond Fisher in examining the possibility that persons with a general trait of introversion might express this trait in their sexual attitudes and behavior as well. After controlling for introversion, we found that the relationship between the SOS and the SSQ was not significant, indicating that introversion was a confounding factor.

E2

OVERDIAGNOSING PSYCHOPATHOLOGY: COMPARING MMPI-2 AND MMPI-A PROFILES IN LATE ADOLESCENT SAMPLES Danielle Poland, Timothy Osberg, Ph.D.

Department of Psychology, Niagara University

This study attempted to replicate and extend previous research suggesting a poor fit between the MMPI-2 and MMPI-A profiles of 18-year-olds (Osberg & Bergen, 1997; Shaevel & Archer, 1996). Because either measure may be administered to this group at the clinician's discretion, 138 participants took both versions of the MMPI and profile comparisons were made. Descriptive data supported earlier findings that there is a lack of fit between the two measures. Results indicate that MMPI-2 profiles diagnosed psychopathology without support from MMPI-A profiles in 39% of the cases. Conversely, the MMPI-A diagnosed psychopathology without support from the MMPI-2 profile in only 5 % of the cases. Where both profiles indicated psychopathology, the clinical severity of the MMPI-2 was greater in 65 % of the cases. The clinical severity of the MMPI-A was greater in only 3 % of the cases. A poor fit between high 2-point codes obtained in MMPI-2 and MMPI-A profiles was also apparent. These results are interpreted as providing evidence that the MMPI-2 may over-diagnose psychopathology in 18-year-old individuals. Possible clinical implications of these results are discussed and a warning to clinicians using the MMPI-2 in late adolescent samples is offered.

E3

RELIGIOUS FAITH ON THE REACTIVITY TO A STRESSOR Kathleen Wawrzyniak.

Providence College, Department of Psychology, Providence, RI, 02918

Numerous studies have shown a relationship between religious commitment and positive health outcomes. Some examples are longevity, marital satisfaction, well-being, self-esteem, and low psychological distress. However, few studies have examined how religious faith may be used as a mechanism to buffer against negative effects of stress. The purpose of this study was to investigate how religious faith can affect reactivity to a stressor. It was hypothesized that those who are more religiously faithful will be less physiologically reactive to a laboratory stressor and will persist longer on a frustration task. Subjects were male and female undergraduate students at Providence College. The stressor manipulation was a difficult mental arithmetic task. Following the stressor, subjects were exposed to a frustration tolerance task. The results of this study contribute to the understanding of how religious faith may be a buffer against stress and thus produce positive health outcomes.

E4

INCREASED SATISFACTION AND ENDURANCE OF EXERCISE AND OTHER VARIABLES AS A FUNCTION OF RELAXATION TECHNIQUES Rachel D. Kaplan, Mary O'Keeffe, Ph. D. Department of Psychology, Providence College, Providence, Rhode Island 02918

Although studies on exercise continue to dominate the health literature, very little research has been done addressing relaxation techniques as a mediator in exercise satisfaction. The present study examines the effect relaxation techniques prior to exercise have on exercise satisfaction (ES) and perceived endurance (PE). Postulating a positive relationship, the introduction of relaxation was hypothesized to increase ES and PE. The participants (Ps) include 32 Providence College students, half of whom were regular exercisers and half of whom were not. Ps were divided into two groups, one receiving relaxation instruction prior to exercise and the other in a control condition (listening to a book on tape). All Ps have undergone 30 minutes of exercise and filled out the Factors Related to Exercise Inventory (FREI) containing questions adapted from various reliable self-report inventories. The implications of the findings could open up a whole new realm of study in health psychology.

E5

MEASURES OF FUTURE BEHAVIORAL INTENTIONS TOWARDS SUN EXPOSURE AND USE OF SUNSCREEN Tara L. Fitzgerald, Mary O'Keeffe, Ph.D. Department of Psychology, Providence College, Providence, RI 02918

Repeated long-term exposure to ultraviolet rays causes skin cancer and premature aging of the skin. Tanning behavior has proven resistant to change. Thirty Providence College students were administered a questionnaire that measured the effect that knowledge about dangers of ultraviolet rays had on subsequent exposure patterns. Participants were randomly assigned to 1 of 3 groups. Both experimental groups attended an informational session; subjects either viewed videotape or were exposed to a skin analyzer. This new tool magnified epidermal damage- the consequence of chronic sun exposure. It was predicted that behavioral intentions for future sun exposure would decrease significantly and sunscreen use would increase following exposure to the skin analyzer. Results highlight the importance of educating the public about such dangers.

E6

A DEVELOPMENTAL STUDY OF MEDIA USE AND BODY IMAGE Carolyn Roper, Shannon Youst, Darragh Foley, Kari Lehman, Tanya Lenezewski, Rachel Levi, Peter Melchiori, Lisa McCaig. Ithaca College

This study investigates the extent to which media use effects body image, the perception of people in the media, and friendship and dating preferences. The changes in these over time were investigated using a cross-sectional sample including sixth, eighth, tenth, and twelfth grade and college students. Participants were given questionnaires asking about media use and body image including questions designed to determine accuracy of perception of body sizes, the participant's own body image, and opinions about the attractiveness of particular body sizes. Participants were also asked to view overheads depicting advertisements from magazines featuring women of various body sizes. In a questionnaire they were asked to determine the body size of each overhead using a scale of nine drawings and then determine the age, attractiveness, intelligence, and friendliness of the woman and how much they would like to be friends with and date this person, all based only on appearance. The responses were analyzed by gender, grade level, body image, and media use for differences in negative body image, perception of people in the media, and friendship and dating preferences.

E7

EXTENT OF PARENTAL KNOWLEDGE OF NEW TELEVISION RATINGS AND ITS EFFECT ON CHILDREN'S TELEVISION VIEWING HABITS Kimberly Ruliffson, Stephanie DiMeglio, Rebecca Laforanara, Marnie D'Uva, Jenny Brennan, Megan Roberts, Matt Thouin, Amy Vavra. Ithaca College

"Media Literacy" is designed to promote critical thinking skills in analyzing media messages. Such skills include the ability to identify various themes, such as violence, derogatory language, and sexual innuendoes, and assess their implications on viewers. The television program ratings (Y,Y7,G,PG,14,M) were introduced on January 1, 1997 with the intent of aiding parents in identifying these themes and monitoring their children's television viewing, [additional subcodes for rating violence (V), suggestive dialogue(D), fantasy violence (FS), derogatory language (D), and sexual situations (S) were added on October 1, 1997]. The current study evaluated parents' familiarity and knowledge of these ratings through the use of questionnaires. The questionnaires asked for a brief explanation of their knowledge of the television ratings, parental awareness of media literacy, and ways in which they monitor their child's viewing. These surveys were distributed at a number of Ithaca school functions as well as other community events. The parents' responses were then analyzed to evaluate whether the ratings were helpful in determining what shows were appropriate for their children.

E8

A CONTENT ANALYSIS OF THE PORTRAYAL OF DEATH ON TELEVISION

Jennifer R. Piazza, Brian C. Coate, Shawna M. Cutting, Kate M. Knauf & Lisa M. Valentine
Ithaca College, Psychology Department.

The present study examined how death was portrayed on television in 1997. A sample of 400 hours of television content was selected from the Center for Research on the Effects of Television (CRETV) archive at Ithaca College. Of the 400 hours of television content, sports, game shows and promotional programs were eliminated, leaving 346 hours of programs for analysis. Programs were analyzed for death related content, including any portrayal or verbal discussion of death, dying, and death related issues such as euthanasia, the death penalty and wills. Of the program content analyzed, 53.6% contained death, which occurred most often in news programs. Each death related incident was then analyzed by a pair of coders to investigate the type, location and cause of death. Several variables were examined including age, race, and gender of the characters involved in death related incidents; euphemisms for death and dying and the nature of responses to death were also analyzed.

F1

LATERALIZED FUNCTIONS IN DRUG-EXPOSED INFANTS Stacy Mac Kenzie, Pamela Schuetze, and Rina Das Eiden. Department of Psychology, Buffalo State College

Measures of lateralized behaviors were obtained from 15 infants who were prenatally exposed to drugs and 7 comparison infants. Although all infants held onto a rattle significantly longer with their right hand than their left, drug-exposed infants were less likely to show a dominant hand preference than comparison infants. Drug-exposed infants also held a rattle in their left hand for significantly shorter durations than comparison infants and had a significantly longer latency to turning their head to the left. Higher numbers of obstetrical complications and lower birthweights were also related to altered patterns of behavioral asymmetries. These findings suggest that nonoptimal early experiences may affect functions on the left side of the body more than functions on the right side of the body and suggest that additional research is needed on the association between perinatal risk factors and cerebral lateralization.

F2

EXPLORATORY PLAY AS A FUNCTION OF DAYCARE IN INFANTS Audra Lewis, Pamela Schuetze. Department of Psychology, Buffalo State College

Nine-month-old infants were videotaped during a five minute free play session and during two problem solving tasks to examine the association between time spent in daycare and exploratory play behaviors. Videotapes were carefully observed for the number and type of exploratory strategies (e.g., banging, mouthing, etc.), the number of toys used during free play, and the number of successful trials completed during problem solving tasks. Linear regressions indicated that the number of hours that infants spent in daycare predicted the number of exploratory strategies used, the number of toys used, the total number of exploratory behaviors, and the number of times infants solved a problem which involved locating the opening of a clear box to retrieve a novel toy. In general, the more time infants spent in daycare the more exploratory behaviors were observed and the more likely they were to successfully complete a problem solving task. Infants who had been in daycare longer were also found to play with significantly more toys during free play.

F3

THE EFFECTS OF A GESTURAL COMPONENT ON LEXICAL ACQUISITION: AN EMPIRICAL STUDY OF INFANT LANGUAGE DEVELOPMENT

Laura J. Polvino, Nancy Rader, Ph.D., and Research Team 04. Ithaca College, Psychology Department

Lexical acquisition is influenced by a variety of factors including cultural practices like speech patterns and gestures. Caregiver use of infant-directed speech has been shown to yield a greater output by the infant. No empirical research has been conducted concerning the effect of gestures on the development of a lexicon. To look at this, 11 healthy male and female infants, ages 9 to 12 months, were shown two video scenarios. Each scenario was designed to teach infants to pair a monosyllabic nonsense word with a novel object. Half of these scenarios present the word/object pair with a gestural component; the other half presents the pair without the use of a gestural component. Supporting our hypothesis, infants paid more attention to the scenario using gestures than the scenario without gestures. After viewing these communicative scenarios, each infant was asked, via videotape, to locate one of the objects. Objects were presented, one on each table, approximately 3 feet apart. Looking time to each object was recorded; however, infants did not look more often at the requested object. A new study is currently underway with older infants and more distinctive objects.

F4

INFANT RESPONSES TO REFLECTIONS ON A VISUAL CLIFF APPARATUS

Jennifer R. Piazza, Nancy D. Rader & Research Team 04. Ithaca College, Psychology Department

Researchers studying infant avoidance on a visual cliff have reported inconsistent results. Campos has argued that avoidance develops as a result of locomotor experience. Rader, however, has argued that maturation, linked to crawling onset age, is the key to understanding differences between crossing and avoiding infants. In her studies, Rader controlled for reflections by placing lights above and below the glass surface on the shallow and deep sides of the visual cliff. Campos does not report controlling for reflections. The present study examines the influence reflections have on infant behavior on a visual cliff. Infants are being tested at 10 and 30 days of crawling experience. Results at 10 days of crawling experience show that reflections are a significant factor in predicting avoidance. Data for 30 days of crawling experience are being collected and will also be reported.

F5

VISUAL CLIFF BEHAVIOR AND LATER IMPULSIVITY AND INHIBITION

Amanda J. Piece, Karen I. Ban, Nancy D. Rader PhD and Research Team 04. Ithaca College, Psychology Department

Previous research by Kagan has defined inhibited children as reluctant and withdrawn from unfamiliar people or situations. In contrast, uninhibited children have been reported as sociable and willing to approach unfamiliar people or things. The present study examined the relationship between behavior on a visual cliff apparatus and later performance on three research instruments used to measure impulsivity: the "Matching Familiar Figures Test," the "Wisconsin Card Sorting Task" and the "Stroop Test." The participants in this study were thirty-five children ranging 7-11 years of age. All participants were tested previously on the visual cliff at ten months of age. It was hypothesized that children who readily crossed the visual cliff were more uninhibited than those who avoided. Multi analysis of variance were conducted on data from the three tests, including gender as a factor and age as a covariate. It was concluded that girls did display some significant differences with the MMFT and the Stroop test, but not with the WCST. The results of our study suggest a link between infant behavior on the visual cliff and cognitive tests designed to measure some aspects of temperament for girls.

F6

CHILDREN'S RESPONSE ON A COGNITIVE TASK TO PEER AND AUTHORITY PRAISE ACROSS GENDERS Stella Gilgur, Nancy Rader, PhD., and Research Team 04 Ithaca College, Psychology Department

This study investigates how children respond on a puzzle task to praise, in the form of positive personal statements given before the task. Participants aged 3.2 to 5.1 years old are randomly assigned to either an authority praise condition, a peer praise condition, or a no praise condition. In the authority praise condition, children are given three positive statements about themselves from the experimenter. In the peer praise condition the child hears the same three positive statements, but the child is told the statements were made by a child of the same gender, shown in a photograph. The no praise condition omits the positive statements. For the task, children are presented with six puzzles. A maximum of 15 minutes is allowed per child, but the child is told he/she can stop at any time. Amount of time spent working on the puzzles and the number of completed puzzles are recorded and used to compute an efficiency score. We hypothesize that female participants will perform better in the authority praise condition, while male participants will perform better in the peer praise condition. Testing and statistical analysis are still in progress and will be reported at the conference.

F7

LATERALIZATION OF PHONOLOGICAL PROCESSING OF LANGUAGE BY GENDER Pavitra Sundar and Nancy Rader, Ph.D. Ithaca College, Department of Psychology

The debate on sexual variation in the degree of lateralization of language processes is an ongoing one. Past research in the area of phonological processing of language has shown a significant sex-by-hemisphere interaction, men being left-lateralized, women being more bilateral. The current study uses a simple rhyme task to look at gender differences in right handers. Participants are male and female college students with varying eye dominance. High and low frequency words, and nonsense letter strings are presented in the subjects' right or left visual fields. Participants are asked to decide whether or not the stimulus word rhymes with a given word; they respond by pressing yes/ no keys. Data analyses to date on 56 subjects show no significant interactions based on gender for reaction times and accuracy of responses. The results of this behavioral study do not support the findings of greater left hemispheric lateralization in males reported by Shaywitz et al (1995).

F8

SEX AS AN INFLUENCE ON HEMISPHERIC LATERALIZATION OF VISUAL AND PHONOLOGICAL PROCESSES IN LANGUAGE April M. Smith, Pavitra Sundar, and Nancy Rader. Ithaca College, Department of Psychology

Gender differences in hemispheric lateralization of phonological processes of written language were studied. Participants were 120 Ithaca College undergraduates and recent graduates, 40 males and 80 females. Rhyme and line pattern decision tasks were used to measure accuracy and reaction times in right and left visual fields. There was a significant condition by visual field interaction for both accuracy and reaction time, which indicated that processing of the rhyme task took place largely in the left hemisphere, while no dominant hemisphere was implicated in processing of the line task. At present, no significant gender interactions have been noted, but testing of more male subjects is underway, and will be included in further analyses.

G1

HOW FUNNY IS THIS JOKE?: IT'S AS FUNNY AS WE TELL YOU IT IS.

William E. Breen, David J. Wimer, William Doiron, Brian F. Falvey, Gina Feinman, Margaret V. Grondin, Holly M. Larrabee, & Bernard C. Beins. Ithaca College, Psychology Department

The humor value of a joke depends on many factors, including the context in which the joke is encountered. We examined whether people's ratings of the humor value of a set of jokes would change if they learned that others had found the jokes more or less funny. Participants believed that they would be rating a set of jokes that others had already rated. According to the cover story, previous people had said that the jokes were either (a) horribly unfunny, (b) unfunny, (c) funny, or (d) hysterically funny. A control group received no such message. Ratings of identical jokes changed markedly depending on the message that the participants heard. A single statement of how others have perceived jokes leads to agreement by naive participants that the jokes are as funny as earlier raters had said. A simple shift in one's cognitive framework leads to a dramatic shift in the evaluation of humor.

G2

EVALUATION OF HUMOR: COGNITIVE AND SOCIAL FACTORS William Doiron, William E. Breen, David J. Wimer, Brian F. Falvey, Gina Feinman, Margaret V. Grondin, Holly M. Larrabee, & Bernard C. Beins. Ithaca College, Psychology Department

The humor value of a joke depends on many factors, including the context in which the joke is encountered. We examined whether people's ratings of the humor value of a set of jokes would change if they learned that others had found the jokes more or less funny. Participants believed that they would be rating a set of jokes that others had already rated. They rated the jokes alone, in the presence of three others, or in the presence of seven others. Ratings of identical jokes changed markedly depending on the message that the participants heard. A single statement of how others have perceived jokes leads to agreement by naive participants that the jokes are as funny as earlier raters had said. At the same time, the size of the group did not affect the evaluation of the jokes. A simple shift in one's cognitive framework leads to a dramatic shift in the evaluation of humor. Group factors may affect emotional responses.

G3

CHANGES IN MOOD DO NOT EQUAL CHANGES IN APPRECIATION OF JOKES

Tisha G. Miller, David J. Witner, Erin T. Fortier, Melissa Killeleagh, Eric J. Sambolec, & Bernard C. Beins. Ithaca College, Psychology Department

Common sense suggests that an individual in an elevated mood would be likely to rate humor more positively than would a person in a more neutral state. In this study, participants read sets of statements designed either to elevate their mood or to have no effect on mood. They subsequently rated a set of 21 jokes regarding how funny the participants thought the jokes were. The results reflect no effect of mood change on subsequent ratings of jokes. Appreciation of jokes can occur on several different levels; changes in an emotional state may not relate to a more cognitive evaluation of jokes.

G4

MOOD DOES NOT AFFECT THE FUNNINESS OF JOKES BUT JOKES AFFECT YOUR MOOD David J. Wimer, William E. Breen, William Doiron, Gina Feinman, Margaret V. Grondin, Holly M. Larrabee, & Bernard C. Beins. Ithaca College, Psychology Department

An individual's mood does not seem to affect how funny that person finds jokes, according to our previous research. On the other hand, exposure to humor might affect mood. Participants read statements that elevated or to depressed mood, rated a set of jokes, and completed a mood adjective checklist twice. The mood-inducing statements led either to positive or to negative affect, but elated participants rated jokes the same way as depressed participants. After reading and rating the jokes, the participants in the two mood groups showed no difference in their mood states. Mood may have no effect on the cognitive task of rating jokes, but exposure to humor may be instrumental in changing the mood state. Ratings of jokes may occur in a relatively stable cognitive domain; perhaps mirth or other more emotional responses would be affected by changes in emotional states.

H1

STRESS RESPONSE OF FOOD-RESTRICTED AND NON-FOOD-RESTRICTED RATS DURING SIMULATED GRAVEYARD SHIFTS Jim Evans and Jason Valent. (Drs. H.M. Murphy and C.H. Wideman). John Carroll University, Dept. of Biology.

Change in body weight, and food and water consumption of six vasopressin-containing Long-Evans (LE) control, six vasopressin-deficient Diabetes Insipidus (DI) control, six LE experimental and six DI experimental groups were collected. The control groups were maintained on a normal 12 h light: 12 h dark cycle, while the experimental group experienced a simulated "graveyard shift" by the maintenance of one week of a normal light:dark cycle followed by three non-sequential shortened light cycles. Food and water were given ad lib to all four groups. A second experiment included the above protocol with the exception of food restriction. The glucocorticoid levels of all groups were tested at the conclusion of the experiment. When comparing the food-restricted rats with the non-food-restricted rats, significantly higher glucocorticoid levels were seen in the food-restricted rats. In addition, within the food-restricted group, a significant difference in glucocorticoid levels was found between the LE and DI time shifted rats.

H2

CONDITIONED FOOD AVERSION IN THE TERRESTRIAL HERMIT CRAB, *COENOBITA CLYPEATUS* Bruno A. Sousa and Laurence J. Nolan. Department of Psychology, Wagner College

The conditioned food aversion is a particularly robust form of Pavlovian conditioning that has been demonstrated in a wide variety of species including some invertebrates. Six terrestrial hermit crabs (mean wt. 22.6 g.), an omnivorous tropical decapod, were "pretrained" to eat food from a probe over the period of 10 days. Once they regularly accepted fruit in this manner, all were given ground beef (CS) to consume. Following beef consumption, 4 subjects (Ss) in the experimental group (E) were given an injection of malaise-inducing 0.7M LiCl (US, approx. 120 mg/kg) while 2 controls (C) were given a vehicle injection. All E Ss rejected beef on trials (one trial per day) subsequent to the LiCl injection. Both C Ss continued to accept the CS following the vehicle injection. Extinction of the aversion was measured and food preference test administered.

H3

FACIAL CONTEXT EFFECTS IN PIGEONS James Lanza, Keith Johnson and Daniel Witt Central Connecticut State University, Department of Psychology

It is well established that humans recognize facial features faster and more accurately when they are embedded in facial contexts than in isolation. This phenomenon is known as the Face-Superiority effect. A hypothesis proposed to explain this effect postulates the existence of neurons specialized for the detection of facial forms. Such neurons were discovered in the visual cortex of the Chimpanzee and sheep, and it is hypothesized that humans also have these specialized neurons. Because it is unlikely that pigeons would have neurons specialized for detecting human facial forms, it is predicted that they would identify human facial target features better in isolation than embedded in human facial contexts. This hypothesis was tested in 5 pigeons using a within subjects experimental design. The pigeons were trained to discriminate, successively, between 2 target UShapes, one which appears as a smiling mouth and the other as a frown. On some trials, any of these target U-Shapes was presented in isolation or 3 dots in a triangular formation were added, and on some other trials, the target U-shapes and the 3 dots were embedded in an oval facial context. Results showed that pigeons performed better when the U-Shape targets were shown in isolation; adding the 3 dots or the 3 dots plus the oval context was detrimental to the discrimination.

H4

AUDITORY THRESHOLDS IN MUSICIANS VERSUS NON-MUSICIANS

Amanda E. Morgan, Dr. Howard C. Berthold. Psychology Department, Lycoming College

The differences in hearing thresholds of musicians as opposed to non-musicians were examined at 6 different sound frequencies (125, 500, 1000, 2000, 4000, and 6000 Hz). Musicians were expected to have higher hearing thresholds than non-musicians at all frequencies. College students, 7 with musical performance background and 7 with no musical performance background, were evaluated for hearing thresholds. An audiometer was used to determine the results, and the thresholds were determined by the method of limits. The participants were also questioned on their background in music at the beginning of the experiment.

H5

THE EFFECT OF TIME DELAYS ON DEPTH PERCEPTION Michelle Johnson, Dr. Howard C. Berthold. Psychology Department, Lycoming College

The study was conducted to determine how depth perception is affected by time delays in the visual field. A tachistoscope coupled with filters was utilized to create a stereoscopic image. Several Lycoming College students were tested to detect the amount of time portions of the image could be delayed before stereoscopic depth perception was lost.

H6

EFFECT OF AGE ON ACCURACY IN FACIAL RECOGNITION Kelly S. Spigelmeyer, Dr. Howard C. Berthold. Psychology Department, Lycoming College

The ability of third graders and college students to recall faces was measured to determine whether young children and adults would differ significantly in their accuracy of facial recognition. Participants were shown a sheet of paper with pictures on it and were told to study the pictures for 5 minutes. The participants were then shown another sheet of paper with pictures on it and were asked to recall whether the pictures were on the first sheet of paper. As predicted, the college students recalled the faces with more accuracy than the third graders. A similar result was obtained when a signal detection analysis was applied to the data.

I1

AN INVESTIGATION OF CARBONYL COUPLING PROCEDURES FOR ADAMANTYLIDENE SYNTHESIS

Heather Clarke, Katie Ferreira, Arianne Lozan, Kerry Murphy, Sheila Adamus. Department of Chemistry, Providence College, Providence, RI

Substituted adamantylidene compounds were required for investigation into the stereoselectivity of electrophilic additions to trigonal carbons. Due to the rigidity and symmetry of adamantylidene compounds, electronic effects of the substituted group are the primary factors influencing the addition. Adamantylidenes are synthesized via a carbonyl coupling on the surface of activated titanium. This research focused on the optimization of adamantylidene synthesis, attempting to find the most economical procedure with the highest yields. A novel procedure utilizing chlorosilanes in addition to titanium has been developed. Present and future research focuses on refining the procedure and improving the catalytic nature of the titanium.

I2

SYNTHESIS OF ADAMANTYLIDENE COMPOUNDS AND TETRASUBSTITUTED ALKENES: STEREOSELECTIVITY OF ELECTROPHILIC ADDITIONS

Kathryn Ferreira, Dr. Sheila Adamus. Providence College, Department of Chemistry

The goal of this research is to study the electronic effects responsible for the stereoselectivity of electrophilic addition to trigonal carbons. The compounds chosen for this study are adamantyl compounds, because they have a rigid structure and there is no difference between the two faces of the pi bond. Torsional and steric factors can, therefore, be "canceled out", and any electronic effects can be studied more accurately.

This research focused on the synthesis of some desired test compounds and tetrasubstituted alkenes to be used in determining the ideal conditions for the proposed electrophilic addition reactions. The electrophilic addition is now being performed on the test compound. When this reaction is perfected the stereoselectivity will be studied.

I3

SYNTHESIS OF SUBSTITUTED ADAMANTANONE COMPOUNDS FOR USE IN THE STUDY OF THE STEREOSELECTIVITY OF ELECTROPHILIC ADDITION TO TRIGONAL CARBONS

Arianne Lozan, Kathryn Ferreira, Heather Clarke, Kerry Murphy, Sheila Adamus, Ph.D.* Providence College, Chemistry Department

Stereoselectivity is a phenomenon that has been widely observed, but not yet fully understood. When an electrophile is added to a trigonal carbon, the electrophile will selectively attack from one side or another. There are three factors that determine facial selection: steric, torsional, and electronic effects. For this investigation, the electronic effects will be studied.

In order to exclusively manipulate the electronic effects, the steric and torsional factors are eliminated. This is done by using the adamantyl group of molecules that are both symmetrical and rigid. The electronic effects are manipulated by changing substituents on the adamantyl compound. These substituted adamantanone compounds are used to create the test molecule, substituted adamantylidene compounds. While there is limited success in the phenylation reaction, both 1,4-fluoroadamantanone and 1,4-chloroadamantanone have been synthesized and purified.

I4

A NEW METHOD OF PREPARING N-HYDROXYUREAS Brian D. Leskiw, Josef G. Krause. Niagara University, Department of Chemistry, Niagara University, NY 14109

It has been discovered that primary and secondary amines, which are readily available, react with tert-butylmesitylenesulfonoxycarbamate in the presence of strong base to produce the corresponding N-tert-butylhydroxyurea. The tertiary butyl group can then be removed with acid to give the corresponding N-hydroxyurea. We then applied this reaction to a broad spectrum of amines, and the conditions of the reaction were varied to maximize the percent yield of the conversion of the amines to the N-hydroxyurea. An existing method for the preparation of N-hydroxyureas utilizes isocyanates (RNCO) as opposed to amines. Besides being limited by the availability of isocyanates, this method is also limited to the preparation of only monosubstituted N-hydroxyureas (RNHCONHOH). Our new method of preparation provides both monosubstituted and disubstituted N-hydroxyureas (R'RNCONHOH) from more readily available starting materials.

I5

ISOLATION AND CONFORMATION OF SWINHOLIDE A FROM TWO DIFFERENT STELLETA CLAVOSA SPONGES Chris Wegerski, Dr. Leif Abrell, Dr. Yengsheng Wanggui, and Dr. Phil Crews. University of California at Santa Cruz and Niagara University

Marine natural products is a new and interesting field of research. This research focuses on finding bioactive molecules from ocean sponges. Swinholide A, along with other possible Swinholide compounds, have been isolated from two different *Stelletta clavosa* sponges. Conformation of these compounds were carried out using NMR and mass spectrometer data along with literature data.

I6

NEW TRICKS FROM OLD DOGS: THE STRUCTURE AND ELECTROCHEMISTRY OF COBALT COMPLEXES OF THE TRIS(SALICYLAIDEHYDE)TAME LIGAND Cathy A. Yelen, Derrick J. Swartz, Bruce C. Noll * and William S. Durfee. Department of Chemistry, Buffalo State College. Department of Chemistry and Biochemistry, University of Colorado at Boulder.

Cobalt III complexes of the chelating ligand *tris*(1, 1, 1-aminomethyl)ethane (tame) have been known since the 1950s. We have examined the electrochemistry and determined the x-ray crystal structures of both the Co(II) and Co(III) complexes of the Schiff base ligand *tris*(salicylaldehyde)tame. The Co(III) complex, Co(III)sal₃tame, is monomeric with the cobalt ion in an octahedral N₃O₃ coordination site. The Co(II) complex, however, is a metal trimer with the formula Co(II)₃(sal₃tame)₂.

I7

NEW SUBPHTHALOCYANINES AND SUBTRIAZAPORPHINES Kenneth S. Bousman, Cathy A. Yelen, Merced M. Molnar, Phillip J. Farris, Jr., Bruce C. Noll, " Gordon T. Yee " and William S. Duffee. Buffalo State College, Department of Chemistry, University of Colorado at Boulder, Department of Chemistry and Biochemistry

The subphthalocyanine (SubPc) macrocycle has recently attracted a great deal of attention because of its interesting nonlinear optical properties and its use in the Kobayashi ring-expansion reaction as an unsymmetrical phthalocyanine precursor. We have synthesized several new SubPcs, including the structurally characterized Methyl(subphthaocyaninato)boron(III) and Chloro(hexaethylsubtiiazaporphinato)boron(III). We have also developed an improved synthesis of Cl(SubPc)B(III) that avoids the formation of chlorinated side products.

I8

KINETICS OF FORMATION OF A TRIDENTATE CHELATE Daniel P. Jamieson, Barry L. Westcott. Department of Chemistry, Central Connecticut State University

Di-2-pyridyl ketone (dpk) undergoes a hydration reaction to form a geminal diol (dpkoh) when in the presence of a strong Lewis Acid such as a transition metal ion. The resulting geminal diol ligand can then coordinate in a tridentate fashion to the metal center. With the Cr^{3+} complex, the change in color of the reaction mixture is very slow, suggesting a gradual change in the crystal field stabilization energy. We are studying the kinetics of formation for a series of $[\text{M}(\text{dpk})_2]^{n+}$ complexes via UV- visible spectroscopy. We will present UV-vis data of the $[\text{Cr}(\text{dpkoh})_2]^{3+}$ and $\text{Cu}(\text{dpkoh})_2$ complexes and offer an explanation for the formation of the diol.

I9

MICROWAVE INDUCED ESTERIFICATION REACTIONS USING SOLID STATE SULFONIC ACID RESIN CATALYST Brian R. Chapados, Konrad G. Kabza, Ph.D. (Advisor) Department of Chemistry State University of New York, Fredonia

Esterification reactions in low dielectric media were studied. Influence of water content upon reaction kinetics was monitored. The preliminary studies indicate that higher water content slows down the reactions. The research also included comparative study of reactions heated by microwave radiation and traditional thermal methods. A variety of substrates (with varied steric properties) were analyzed in order to establish the role and function of the solid state support in the reactions kinetics.

J1

METALLOTHIONEIN AS A BIOCHEMICAL MARKER OF METAL CONTAMINATION L. M. Miller, M. M. Schreiner, and A. R. Steward. Department of Chemistry, Niagara University.

Metallothionein, a cysteine-rich protein, was assessed for its potential usefulness as a biochemical marker of metal contamination in crayfish from a hazardous waste site. It was verified that differential pulse polarography with a Brdicka electrolyte as described by Olsson and Haux (1986) could be used for determination of metallothionein concentrations at a range of 5.0 nM to 50.0 nM. Detection limits were calculated for a number of standard curves. Preliminary data indicates that the metallothionein content of crayfish not exposed to heavy metals is 150 pmol/ mg of digestive tissue. Preliminary data of exposed crayfish levels of metallothionein and future directions will be presented.

J2

CELLULAR EFFECTS OF P-7 a 20 AMINO ACID SEQUENCE THAT ALTERS p53 PHOSPHORYLATION Karen J. Quadri, Victor Adler and Ze'ev Ronai. Department of Biology, Manhattan College/College of Mt. St. Vincent, Riverdale, NY 10471 and Mt. Sinai School of Medicine, Derald H. Ruttenberg Cancer Center, NY, NY 10029.

p53 is the most commonly mutated tumor suppressor that has been discovered in human cancers. p53 has multiple cellular functions, including cell cycle control, DNA repair, apoptosis and senescence. Central for p53 ability to exert its functions is its proper phosphorylation. p53 phosphorylation is mediated by various kinases. Among regions important for p53 phosphorylation is amino acids 97-116 designated as P7. P7 increases in vitro phosphorylation by casein kinase 11 but inhibits phosphorylation by protein kinase A and kinases present in whole cell extract. To elucidate the biological effects of P7 on p53 phosphorylation, we have monitored some of characteristic p53 biological activities. Addition of a soluble-biotin tagged P7 to Balb 3T3/12.1 (p53+/+) and 10.1 (p53 -/-) mouse fibroblast cells caused morphological changes that resemble programmed cell death. Degree of apoptosis decreased upon addition of P7 to UV treated 1205 human melanoma cells, Balb 3T3/12.1 and 10.1 p53 null cells. These results point to the ability of P7 to alter apoptosis in p53 dependent (1205 Balb 3T3/12.1) and independent (10.1) manner.

J3

ALTERATIONS IN CYCLIC AMP LEVELS IN CULTURED ASTROCYTES INDUCED BY EXOGENOUSLY ADDED MYELIN MEMBRANES

Thao Doan, Francis Musyoki.
College of Mt. St. Vincent/Manhattan College, Riverdale, NY 10471/St. Lawrence University, NY.
Biology Department.

Astrocytes are perceived as the glial cells responsible for providing physical and metabolic support for central nervous system neurons. Cultured Sprague Dawley rat pup forebrain astrocytes, exposed to purified myelin membranes, have been shown through an Amersham's cyclic AMP [^3H] assay system, to have significantly increased intracellular cyclic AMP (cAMP) levels, of up to ~500 pMoles/flask. In cases where astrocytes were exposed to red blood cell membranes, axolemma membranes and a membrane free control, levels of cAMP were all less than 100 pMoles/flask. Exposure to enriched (30-70%) cultures of forebrain microglia, identified with the lectin from *Bandeiraea simplicifolia* (isolectin B₄), showed minimal cAMP changes after myelin membrane exposure. These results suggest that astrocytes may play an additional role in the cAMP dependent uptake and processing of myelin. These findings may provide significant insights into multiple sclerosis inflammatory pathology since the demyelination of axons, characteristic to the disease, could possibly be partially attributed to astrocytes as well as to microglia as previously shown.

K1

Jacques Chirac's Fall from Grace

Sandra Karkau, Dr. Wayne Northcutt. Dept. of International Studies, Niagara University

The popularity of French president Jacques Chirac has experienced phenomenal changes since his election in May of 1995. In the first six months of his term, Chirac's approval rate dropped from an astoundingly high 62% to a record low of 32%. He began his seven-year term with an 80% majority in the National Assembly; today he faces cohabitation with Socialist Prime Minister Jospin and a Left-wing government. This massive shift in popularity is unparalleled in the political history of contemporary France.

This thesis identifies five major factors responsible for Chirac's decline: a lack of significant action against unemployment combined with an overemphasis on policies geared toward European integration, divisions among the parties of the French Right, Prime Minister Juppe's lack of political savoir-faire, Chirac's style of government, and the political malaise felt by the French people.

K2

THE CHANGING ROLE OF THE UNITED NATIONS

Melissa J. Mahoney,
Advisor - Dr. Meredith Sarkees. Niagara University, Department of Political Science

The focus of my research began with the question of how the United Nations' role in the world is changing. In trying to answer this question, a focus on peacekeeping and peacemaking would provide an indication of the UN's changing role since the number of such missions is increasing. Since 1945 there have been 43 peacekeeping operations, with 17 currently underway. Thirty were created by the Security Council between 1988 and 1997. The next question is why such change is occurring. The role of the UN can change only with the support of the nations that are part of it. Therefore, it is important to assess why countries are supporting peacekeeping operations. An obvious change between nations is their ever growing interdependence, by which a change on one side of the world can effect the lives of those on the other side. Therefore, it is my contention that as interdependence develops, the ability and the desire to address issues of conflict throughout the world will increase and there would need to be changes in how states support UN peacekeeping or peacemaking. Thus, the role of the UN would be altered as a result of this increased interdependence. Therefore, it is my hypothesis that the more Nation-states become independent, the more likely they will support increasing peacekeeping efforts.

K3

DOING FEMINIST RESEARCH IN POLITICAL SCIENCE Rebecca Lyn Ryan, Dr. Meredith Sarkees. Niagara University, Department of Political Science

The history of women in academe, in general, has evolved slowly from a male society in which only one sex dominated, to a profession only slightly more inclusive of women. Though a record number of women are receiving Ph.D.s; 40% of all Ph.D.s awarded in 1991 were received by women, barriers to attainment of full equality within their respective departments remain in place. Research has shown that discrimination against women in political science academe occurs at the gateways to the profession especially at the levels of recruitment, hiring, receiving tenure, and being promoted through the ranks of the discipline. The purpose of this study is to flesh out any discernable trends in discrimination against women in political science departments at the 'Top 201 colleges and universities in the country. I have hypothesized that the most prestigious universities in the nation have been more hostile to women than men, in general, and moreover, have ignored the work of women who research women and politics and feminist theory.

K4

THE POLICY OF DEINSTITUTIONALIZATION AND ITS EFFECTS ON SOCIETY Katy Howard, Advisor - Meredith Reid Sarkees. Niagara University, Department of Political Science

The literature on the policy of deinstitutionalization of mental health patients is consistent in its discussion of the policy's impact in numerous areas: declining patient census in state mental health hospitals, decreasing costs for state budgets, and declining numbers of open state operated facilities. However, literature on the societal impacts of the deinstitutionalization policy is sporadic and scattered at its best. This paper addresses the societal impacts of the policy of deinstitutionalization. Special consideration is paid to the policy's impact since its expansion during the Reagan Administration. The data collected will be used to test the hypotheses proposed all of which indicate negative results of deinstitutionalization, including increased crime rates, violence and homelessness.

K5

READER PERCEPTIONS OF ADVERTORIALS Camilla Morgan, Faculty Advisor - Dr. James Wittebols. Niagara University, Communication Studies Department.

Advertorials combine the characteristics of advertisements and news articles to inform and persuade readers. Critics claim that this causes confusion and may deceive readers. The objective of this study was to determine how readers distinguish between articles and advertisements and how they perceive advertorials. The study began with a review of current literature to see how these topics were previously addressed. The original research included distribution of two similarly worded questionnaires to undergraduate students at Niagara University. One questionnaire featured an article while the other featured an advertorial. The survey was designed this way to determine if respondents were in fact deceived by the advertorial, and by what degree.

K6

THE EFFECTS OF ANGER CONTROL TRAINING Colleen Johnson, advisor Dr. Laverman. Niagara University, Department of Social Work

Researchers suggest that one third to one half of all referrals of children and adolescents to mental health agencies are for antisocial behavior problems. Among the intervention procedures that have shown promise for positively influencing child antisocial behavior is anger control training. A single-case-design method was used to evaluate the six week intervention involving a seven year old child whose rate of unruly behavior was especially high in the school environment. The child's progress was recorded using daily hassle logs completed by the child and using the Connors Rating Scale completed by the teacher. Analysis of the data suggest an improvement in the rate of anger outbursts concomitant with the start of anger control training. Although the results of this study must be interpreted cautiously in the context of important methodological limitations the findings of this study are consistent with the results of other investigations of anger control training.

K7

ASSESSING THE TRANSPORTATION NEEDS OF A MATURING POPULATION IN NIAGARA COUNTY Christy Gress, Kerrie Sine and Dr. Laverman Niagara University, Department of Social Work

Three hundred elderly were interviewed about their use and preferences of formal (public and privately operated modes of transportation) and informal (family, friends, neighbors, and churches) transportation services. Issues such as operating their own cars safely, and how their health and mental health conditions affect their mobility are explored. The study also reviews how the residential area places restrictions on the transportation options when older drivers are no longer able to operate their own car. The strengths, weaknesses and gaps of existing senior van and para-transit programs are assessed. The need for advocacy in regional planning of transportation for the elderly in the County will be discussed.

K8

GOD AND ETHICS Nanagyali Amin, Faculty Advisor: Dr. Waters. Niagara University, Mathematics Department

Ethics is the "philosophic science which establishes the moral order of human acts." As such, it is absolutely necessary that in order to develop an adequate ethical system for humanity a philosopher has a paramount task to deal with before anything else, this being the adequate discovery of the nature of man. However, the nature of man cannot be discovered adequately without regard to God. Hence, most of the modern philosophers did not develop a complete philosophy of Ethics. For, these philosophers generally neither considered human nature adequately or God's place in the grand design of it. There is an Ethics that denies norms, universals and essences of Man. At the end, their ethical philosophies lead to morality that is formed from exactly whatever we will and not from natural law. This is contrary to our very nature (adequately understood); hence, its result is unhappiness.

L1

SOLAR OVEN Dierdre M. Curry, Brian A. Smith, Dr. J. Ghorieshi. Wilkes University, Mechanical Engineering Department.

Abstract: Our project involves the design and construction of a solar oven. The motivational interests for our project lie in further development of third-world countries, the reduction of forest depletion, and the move towards a clean environment. A solar oven clearly has many advantages. The most prominent advantage is the economical advantage. Other than the cost of building materials, one can prepare food at no cost! With solar heat, no other means of power is needed. With the sun providing the heat, there is no need to gather wood to burn, which is proving to be a significant problem in third-world countries. Using this method to heat the food, there are no potentially harmful effects on the environment unless you are cooking something that you probably shouldn't be cooking. Our solar oven consists of reflective panels which direct sunlight into the cooking area where it is contained for maximum heat retention. The cooking area, walls painted black and covered by glass, continuously gains heat with the presence of sunlight. When not in use, the oven can be closed and carried for easy transportation. The most important aspect of a solar oven is trapping solar heat. The more efficient it is, the better the oven.

L2

AUTOMATED-FLIP CONCERT STAGE Brian A. Smith, Dr. C. Mirman. Wilkes University, Mechanical Engineering Department

Our project involved the design and analysis of an automated-flip concert stage for Mountain Productions, Inc. The production company provides set-up services to performers in the New York, Pennsylvania, and New Jersey region from their headquarters in Mountaintop, PA. The distance that they must travel forces them to disassemble the stage for transportation and reassemble the stage when they arrive on site. This is very time consuming and is not very cost effective for the company. A solution to this problem was sought after. Mountain Productions, Inc. found a company which would solve their problems. Stageline, Inc. specializes in the construction of an automated-flip stage. This stage in its transportation form resembles a tractor trailer. Every section of the stage hinges, and is pinned into the shape of a trailer which is then hooked up to a truck and transported to the location. Once it is at the location, the roof is raised to the correct height. This stage proved successful for the company, but was a bit small to suit all performers and their venues. The project we were given was to expand the size of this stage and improve some other design flaws in the first design in order to customize, and give drawings for building purposes for the second in Mountain Productions' fleet of automated-flip stages.

L3

DESIGN AND DEMONSTRATION OF AN FPGA Gregory Burda, Lanphuong Pham, Stanley Stanski, Dr. John B. Gilmer. Department of Electrical and Computer Engineering, Wilkes University

The goal of this project was to introduce Field Programmable Gate Array (FPGA) technology into the computer engineering curriculum at Wilkes University, preferably in the context of an existing class. The course selected for our focus was Computer Organization. It was desirable to combine what is learned of the principles of modern Reduced Instruction Set Computer (RISC) architecture with the new technology of FPGA's. Various FPGA software and hardware packages were evaluated, and it was eventually decided that Altera products were the best choice for the design. An eight-bit RISC has been designed for an Altera FLEX 10K FPGA. The RISC consists mainly of a Program Counter, Instruction Memory, Register File, Arithmetic Logic Unit (ALU), and Random Access Memory (RAM). Students will use this structure as the beginnings of their design, adding additional features they feel would optimize performance of the RISC. The RISC our group has designed also contains a three-stage pipeline with the following stages: Instruction Read, Execute, and Write Back. The Instruction Set for the RISC consists of an Add, Add Immediate, Subtract, Move, Load, Store, Branch Absolute, Load Immediate, and No-Operation. The project also encompasses the compilation, simulation, programming, and testing of the RISC design.

L4

LOW COST SPREAD SPECTRUM EXPERIMENTATION William Stockdell, Dr. M. Anthony Kapolka Department of Mathematics and Computer Science, Wilkes University

Spread spectrum transmission methods present opportunities for achieving high speed, interference resistant wireless voice and data communications. Taking advantage of these properties on amateur radio frequencies has been difficult due to legal issues, high cost, and unavailability of dedicated equipment. The legal issues have been temporarily cleared through a Special Temporary Authorization from the Federal Communications Commission. Resolving the issues of cost and availability are the goals of our investigation. Our research continues to develop methods of using inexpensive computer hardware and our proprietary software to control the frequencies of commercially available radios to achieve spread spectrum transmission and reception. This presentation describes our methods and current results.

L5

A SIMPLIFIED METHOD OF INTEGRATING $(\tan x)^n$ Scott Wilson,

Faculty Advisor: Osman Yurekli. Ithaca College, Department of Mathematics

My research in this is based on a paper by Ozcan Baytekin in which he presents two summation formulas that can be used to compute the integrals of $(\tan x)^{2n}$ and $(\tan x)^{2n+1}$. His formulas are not derived in the paper, they are merely presented and proven by induction. My talk will cover how these summation formulas can be derived by use of the Binomial Theorem and various methods of integration. This is a far more concrete method of computing the summation formulas which requires no proof. The result is two summation formulas which clearly reduce the amount of work required for the computations of the integrals of $(\tan x)^{2n}$ and $(\tan x)^{2n+1}$. While this will be the primary focus of my talk, I will also cover several lemmas regarding summations of combinatorial expressions that I have created, proven and used in achieving at my results.

L6

PUBLIC EXPENDITURES AND ECONOMIC GROWTH: THE FAN-TASTIC APPROACH

Delia Furtado, Yvonne Arsenault, Alyssa Nadeau, Advisor: Emmanuel Kaparakis
Department of Economics, Providence College

This paper examines the impact of public expenditure allocation on GDP growth. In our study, we adopt a production function approach to specify a model with GDP as a function of expenditures on education, defense, health care, infrastructure and safety-net policies. The data is measured as five-year averages of all the variables and covers sixty countries in different stages of development. The production function framework allows us to address issues of optimal expenditure allocation and efficiency and discuss these hotly debated issues. Our data sample will also allow us to compare and contrast the experience of developed, developing and less developed countries.

M1

EFFECT OF TRICLOSAN (5-CHLORO-2-(2,4-DICHLOROPHENOXY)PHENOL) ON GROWTH OF THE GREEN ALGA *SELENASTRUM CAPRICORNUTUM*

Paul Trippi, Joshua Prey, and David Orvos. Department of Biology, State University of New York College at Fredonia.

Triclosan (5-chloro-2-(2,4-dichlorophenoxy)phenol) is an antimicrobial product used in consumer healthcare products including hand soaps, deodorants, laundry products, and toothpaste. This investigation examined the effect of triclosan on the growth of the green alga *Selenastrum capricornutum*. *S. capricornutum* cells were grown in a commercially-available growth medium and exposed to nominal triclosan solution concentrations of 0.5, 1.0, or 10 ug/L. Biological controls were not exposed to triclosan. The concentration of algae cells was determined daily by direct counting using brightfield microscopy and a hemacytometer. After four days, cultures exposed to 1 ug/L triclosan yielded 5.0×10^6 cells/mL while cultures exposed to 10 ug/L triclosan yielded 1.5×10^6 cells/mL. Biological control cultures had algae concentrations of 4.1×10^6 cells/mL. Triclosan appeared to affect *S. capricornutum* growth at low ppb concentrations. Subsequent investigations will examine triclosan effects on other pure and mixed algae cultures as well as analytically determine triclosan solutions concentrations via HPLC.

M2

EFFECT OF TRICLOSAN (5-CHLORO-2-(2,4-DICHLOROPHENOXY)PHENOL) ON SOLUBLE PROTEIN PRODUCTION BY THE GREEN ALGA *SELENASTRUM CAPRICORNUTUM* Jeffrey Giardini, Peter McKenney, and David Orvos

Triclosan (5-chloro-2-(2,4-dichlorophenoxy)phenol) is an antimicrobial product used in consumer healthcare products including hand soaps, deodorants, laundry products, plastics, and toothpaste. This investigation examined the effect of triclosan on the production of soluble proteins by the green alga *Selenastrum capricornutum*. *S. capricornutum* cells were exposed to a nominal triclosan solution concentration of 10 ug/L for four days whereas biological controls were exposed only to the carrier solvent acetone. Algal cells were lysed via pressure and the lysate subjected to polyacrylamide gel electrophoresis to separate the proteins. Culture examination demonstrated that algal growth was inhibited at triclosan solutions concentrations of 10 ug/L. Results of the electrophoresis process will be discussed.

M3

ENVIRONMENTAL IMPACT ASSESSMENT USING GIS Jason Iaccio, Darren Gates. GES Dept., Wilkes University

Our study is to determine which land-use plan would be the most feasible environmentally and socio-economically for an abandoned railline in Whitehall Township, Pennsylvania. We obtain this conclusion by comparing various scenarios generated with Geographic Information Systems (GIS). The scenarios will include one where no changes will be made to the study area, another where parks and greenways will be maximized, and one other that will show moderate change to the area. Our data consists of data layers with an attached database for each one. Types of environmental data researched are soils, wetlands, flood plains, slope, and geology. Economic data consists of using a parcel based map and the associated database. From this database, we looked at property values and land use. An analysis was done by creating a corridor around the abandoned railline and researching each data layer inside the corridor. We compared two sets of samples, one taken from the northern part of the township, consisting of mainly forest and agricultural land, and another set of samples taken from the southern part of the township, consisting of mainly urban and suburban area. The urban area borders the city of Allentown, PA

M4

HOW ACCURATE ARE NATIONAL WETLAND INVENTORY MAPS: AN ANALYSIS FROM NORTHEASTERN PENNSYLVANIA Malika Mohseni and Dr. Kenneth Klemow Department of Biology, Wilkes University

Individuals seeking to determine whether an area is a wetland often consult the National Wetland Inventory (NWI) maps produced by the US Fish and Wildlife Service. Despite their popularity, wetland scientists often perceive NWI maps as being misleading because many areas mapped as upland prove to be wetland when examined in the field. Alternatively, wetland scientists often rely on county Soil Surveys that are more detailed and classify soils according to their drainage class to determine their degree of correlation between the NWI maps and Soils Surveys, an analysis was conducted for a 30 sq. mi. area in Luzerne County. Soils maps were digitized and mapping units were assigned to five categories based on drainage class. The locations of the NWI wetlands were superimposed on the soils maps, and the proportion of each soils class that was in and out of mapped wetlands was determined. The analysis found that 59% of all soils mapped as poorly drained was not designated as wetland by NWI. Further, 96% of soils mapped as somewhat poorly drained (and frequently wetland) was designated as upland by NWI. This analysis reveals that NWI maps can seriously underestimate the extent of wetland-prone areas.

CORRELATION OF NATIONAL WETLAND INVENTORY MAPS TO DELINEATED WETLAND BOUNDARIES: A FOLLOW-UP ASSESSMENT Jessica Azarewicz, Jane Jesse, Carrie Chipeco, Malika Mohseni, Dan Siani, and Dr. Ken Klemow. Department of Biology, Wilkes University.

During the last several years, an ongoing project has been underway to assess the validity of the National Wetland Inventory (NWI) maps for Luzerne County. Earlier work performed by Klemow and Mohseni (1995) compared NWI maps against soils maps produced by the U.S. Soils Conservation Service. That study suggested that the NWI maps significantly underestimated true wetland acreage because many areas having hydric soil were not mapped as wetland. A subsequent analysis compared in-field delineations against different soil drainage categories. That analysis found that subhydric and well drained soils are wetland far more than NWI would suggest. However, those results were preliminary. This project seeks to extend that analysis by including more area. We found that sites containing hydric soil were mapped as wetland in the field 62.3% of the time, which was higher than NWI or the preliminary studies indicated. Moreover, 46.9% of soils mapped as subhydric were wetland, which was a much larger proportion than mapped by NWI. Thus, this study confirms that National Wetland Inventory maps do underestimate wetland acreage, and should not be used for jurisdictional purposes.

POSTER SESSION ABSTRACTS

P1-HHMI Biology

A KINETIC MICROASSAY FOR GLUTATHIONE IN CELLS PLATED ON 96-WELL MICROTITER PLATES S. Allen, J. Gadra, J. Shea, & Paula F. Dehn. Biology, Canisius College, HHMI.

Glutathione (GSH) is ubiquitous in mammalian cells & serves as a first line of defense against oxidizing molecules & electrophilic xenotoxins. Depletion of intracellular levels of GSH followed by or coupled with a challenge by xenobiotics often leads to irreversible cellular damage. Numerous methods exist for measuring cellular GSH levels, however for use in routine *in vitro* screening or monitoring programs all methods suffer from low throughput due to time-consuming sample preparation & relatively large sample sizes required. We have adapted the enzymatic method described by Tietze and modified by Anderson to the microliter plate. By coupling this microassay with a simple acid extraction in the microliter plate, we can process several hundred assays daily. We have compared this microassay against the standard macroassay, and have found no significant variation between the two methods using liver cells. Also, we have used this procedure to examine cadmium toxicity in naive and pretreated HepG2 (human hepatic carcinoma) cells and in HepG2 cells exposed to pesticides.

P2-HHMI Biology

RECOVERY OF A549 CELL ADHESION TO FIBRONECTIN AFTER TREATMENT WITH INTERLEUKINS-2 AND -15 Brandon L., Sargent M., Lwebuga-Mukasa J. Dept. of Biology, Canisius College, HHMI; Dept. of Pulmonary-Critical Care and Lung Biology, SUNY at Buffalo, Buffalo, NY.

Interleukin- 15 (IL- 15) is similar in structure to interleukin-2 (IL-2), and it binds to the β and γ chains of the IL-2 receptor. A549 cells, a human lung adenocarcinoma cell line, has been shown to express IL-2 receptors. Currently, we are investigating the mechanism by which A549 cells recover adhesion to fibronectin following IL- 15 treatment. A549 cells were incubated in serum-free media containing 25 U/ml of either IL-2 or IL- 15 for one hour. The cells were detached and plated in the presence of Mn^{++} , actinomycin-D, or cycloheximide for one hour. IL-2/IL- 15 treatment of A549 cells results in profound reversible inhibition of cell adhesion to fibronectin. The cells treated with IL-2 did not recover to the same degree as the untreated controls. The cells treated with actinomycin-D or cycloheximide did not significantly differ from the cells that were pre-treated with IL-2 only. Recovery of A549 cell adhesion to fibronectin following IL-2 treatment does not involve new mRNA or protein synthesis.

P3-HHMI Biology

TARGET TISSUES INFLUENCE DENDRITIC GROWTH IN SYMPATHETIC NEURONS VIA OP-1 Danielle Dorsaneo, Hiroko Nagasawa, Ann Marie Hedges, Pamela Lein. Biology Department, supported by HHMI, Canisius College, Buffalo, NY.

OP-1 has recently been identified as a unique trophic factor that selectively induces dendrite formation in cultured sympathetic neurons. To establish the relevance of this *in vitro* observations to neuronal morphogenesis *in situ*, cell type(s) that serve as sources for OP- 1 for developing sympathetic neurons must be identified. Target tissues of the sympathetic nervous system, particularly the kidney, express high levels of OP- I mRNA in both the embryonic and adult animal, suggesting that target tissues may regulate dendritic growth in sympathetic neurons via OP-1. In support of this hypothesis, immunocytochemical analyses indicate that MDCK cells express surface and cytoplasmic OP- 1 immunoreactivity. A protein with a molecular weight consistent with that of OP- 1 can be immunoprecipitated from MDCK conditioned media and cell lysates using antiOP- I polyclonal antibodies. Furthermore, MDCK-conditioned medium induces dendritic growth in cultured sympathetic neurons; this dendritic growth can be significantly inhibited by mAB to OP- 1.

P4-HHMI Biology

TAMOXIFEN AND THROMBOPOIETIN (TPO) REVERSE THE SUPPRESSIVE EFFECT OF ESTROGEN ON BONE MARROW OF LUPUS-SUSCEPTIBLE MICE

A. Dozier and S. Aronica, Biology Department, Canisius College, HHMI.

The purpose of our studies was to examine the effects of estrogen on bone marrow colony formation in normal and lupus-susceptible mice. Bone marrow cells were isolated from normal (NZB) and lupus-susceptible (NZBWF 1) mice, and treated with GM-CSF alone (Control), or with GM-CSF in combination with estrogen, tamoxifen, TPO, estrogen and TPO, or estrogen and tamoxifen. Cells were plated in methylcellulose culture medium, and plates were scored for colony formation after 6 days at 37°C. Estrogen significantly ($p < 0.05$) decreased the number of cells that formed granulocytemacrophage colonies in both mouse strains. Treatment of NZBWF 1, but not the normal NZB marrow cells with tamoxifen or TPO in combination with estrogen prevented the suppression of colony formation observed with estrogen alone. Our results suggest that sensitivity of bone marrow cells isolated from lupus-prone mice to suppressive effects of estrogen differs from cells isolated from normal mice.

P5-HHMI Biology

ROLE OF THE BCL-2 FAMILY OF PROTEINS IN ETOH-INDUCED APOPTOSIS

Robyn A. Filipink^{*^}, Jan Oberdoerster[^], and Richard A. Rabin[^]. ^{*}Canisius College, Dept of Biol and [^]SUNY-Buffalo, Dept of Pharmacol & Toxicol, Buffalo, NY. HHMI.

Fetal alcohol syndrome, which results from *in utero* ethanol (EtOH) exposure, is associated with microencephaly and a reduction in neuronal number. The objective of this study was to elucidate the mechanisms by which EtOH causes neuronal loss. Initial studies indicated that EtOH enhanced apoptosis induced by serum withdrawal in PC12 cells. To determine the role of Bcl-2 family members in EtOH-induced death, the pro-apoptotic proteins Bax, Bad, Bcl-x_(S), and the anti-apoptotic proteins Bcl-2 and Bcl-x_(L), were evaluated. Preliminary data indicates that these proteins were not altered by EtOH in the presence of 15% serum (i.e. normal growth conditions). Serum withdrawal reduced Bad and Bcl-2 levels, while Bcl-x_(S) and Bax levels were increased. Further changes in levels were not altered by the presence of EtOH. Bcl-x_(L) was not altered by either the absence or presence of EtOH. The present study shows that EtOH increases apoptotic cell death induced by serum withdrawal and that this increased death may not be secondary to alterations in the Bcl-2 family of proteins.

P6-HHMI Biology

INOSITOL-1-PHOSPHATE PHOSPHATASE IN *NEUROSPORA CRASSA*

Barbara Hanson, Jeremy Ptak, and Maria Podebryi. Biology Department. Canisius College-HHMI, Buffalo, New York, USA.

Myo-inositol-1-phosphate phosphatase (IPase) catalyzes the hydrolysis of phosphate from inositol 1-phosphate (IP) to form inositol, a key component of the phosphatidylinositol (PI) cycle in *Neurospora* (Hanson, *Exp. Myco2.*, 15:76). The enzyme activity was assayed in soluble cell extracts by measuring the synthesis of [³H] inositol from [³H] IP under a variety of assay conditions. The enzyme was an alkaline phosphatase and similar in activity to IPases from both animal and plants. The enzyme activity was soluble, Mg⁺² dependent (3 mM), inhibited by Li⁺ (3 mM) and had a K_m of 300 μM. Growth of the fungus on inositol appeared to regulate the activity of the enzyme. The IPase activity (3.0 nmoles/mg protein/min) was higher (45%) in the wild-type strain grown on inositol than in the absence of inositol. In addition, Ca⁺² (0.06-3 mM) partially inhibited IPase activity. The kinetics of this inhibition suggested there were at least two IPases: one of which is regulated by Ca⁺².

P7-HHMI Biology

IMMUNOHISTOCHEMICAL ANALYSIS FOR THE TUMOR SUPPRESSOR PROTEIN p53, CYCLIN-DEPENDENT KINASE INHIBITORS p21/WAF1 AND p27/KIP1, AND CYCLIN E, AND CORRELATION WITH CLINICOPATHOLOGIC FEATURES, LYWH NODE METASTASIS AND SURVIVAL Heather A. Lankes, AnneMarie W. Block, Ph.D., and Bruce A. Wemess, M.D. Roswell Park Cancer Institute, Division of Pathology and Laboratory Medicine, Canisius HHMI.

Immunohistochemical expression of p53 correlates strongly with p53 mutation, and has shown prognostic relevance in some tumor systems. p21/Waf1 is one of the principal proteins induced by wild-type p53. Low p27/Kip 1 and high cyclin E expression were found to be associated with an increased relative risk of mortality from cancer when compared to patients whose tumors exhibited high p27/Kip 1 and low cyclin E levels. Immunohistochemical analysis of p53, p21/Waf1, p27/Kip 1, and cyclin E was performed using paraffin embedded tissue and the avidin-biotin method on a Ventana Automated System. The prevalence of expression of these proteins in thyroid carcinoma will be used to identify and relationship between these proteins and other pathological and clinical factors such as prognosis.

P8-HHMI Biology

APPLICATION OF FLUORESCENCE IN SITU HYBRIDIZATION (FISH) IN ANALYSIS OF HEMATOLOGIC MALIGNANCIES Michael G. Moore, Benjamin J. Schaus, Anne Marie Block, Ph.D. Roswell Park Cancer Institute, Clinical Cytogenetics Laboratory, Division of Pathology & Laboratory Medicine - Canisius College HHMI

Many human cancers progress toward increasing malignancy through accumulation of multiple genetic aberrations. These aberrations, which may be visualized by analyzing chromosomes of cells in metaphase, have been shown to be of diagnostic as well as prognostic importance to clinicians. Since the metaphase cells are only a small subset of the cells present, the qualitative and quantitative potential of current banding techniques is limited. We are utilizing fluorescence in situ hybridization (FISH) technology for visualization of specific nucleic acid sequences in samples from patients with hematologic malignancies. FISH using chromosome-specific centromeric probes and locus-specific probes is a powerful tool for the detection of numerical and structural chromosome abnormalities in both dividing and non-dividing cell populations. FISH analyses for hematologic malignancy aneuploidy (numerical chromosome gains and losses), evaluation of sex chromosome constitution post sex-mismatched bone marrow transplantation, and identification of BCR/ABL fusion resulting from t(9;22), PML/RARA fusion resulting from t(15;17) and TEL/AML1 fusion resulting from t(12;22) will be shown.

P9-HHMI Biology

DETERMINING NUCLEAR LAMIN LOCALIZATION USING GREEN FLUORESCENT PROTEIN R.J. Ramsdell*, S.A. Dean, M. Kader, C.A. Kraft, R.J. Grebenok, P.J. Lein (*HHMI Fellow) Department of Biology, Canisius College/HHMI

Our objective was to determine if green fluorescent protein (GFP) fusion technology could be used to assess the spatial expression of nuclear lamins. Lamins are intermediate filament proteins that provide structure to the nuclear envelope. The spatial relationship between lamin A and lamin B has been poorly characterized to date. cDNAs for mammalian lamins A and B were cloned and fused with the gene for GFP. These expression cassettes were then transfected into HepG2 cells and examined using fluorescence microscopy. Transfected cells exhibited a punctate GFP staining within the nucleus for both lamins A and B. Nontransfected cells were also immunostained with antibodies specific for lamins A and B. In contrast to the distribution pattern observed in transfected cells, the pattern of lamin A and B immunoreactivity was localized to the nuclear envelope. We conclude that GFP translational fusions with lamins are not a feasible method for visualizing lamin distribution in cells.

P10-HHMI Biology

METALLOTHIONEIN INDUCTION IN ZEBRA AND QUAGGA MUSSELS: USE AS IN SITU BIOMONITORS OF HEAVY METALS WITHIN AQUATIC ECOSYSTEMS

John M. Shea and Paula F. Dehn, Biology Department, Canisius College.

This study was designed to 1) confirm the existence of metallothioneins (MT) in quagga mussels, 2) determine if MT induction is a size-related phenomenon, & 3)) examine the utility of using these mussels as *in situ* biomonitors of heavy metal contamination. Mussels collected from the Black Rock Locks (BRL) and the Saint Claire River (SCR) were categorized by size & whole body MT levels were quantified by the hemoglobin-cadmium binding assay. Quaggas produce MT at relatively low levels (4.74 & 9.56 pmoles/mg protein), as compared to zebra mussels (15.31 & 34.72 pmoles/mg protein) for 6- 10 mm & 25-30 mm sizes, respectively. Size related effects do occur with larger mussels producing more MT than small mussels. Field studies comparing MT levels in zebra mussels showed significantly higher MT levels in mussels of both size groups from the BRL, as compared to the SCR sites. Preliminary results suggest that zebra mussels and levels of MT may serve as useful *in situ* biomonitors & biomarkers, respectively, of heavy metal contamination in aquatic ecosystems. (Support by Hearst & HHMI Undergraduate Grants to JS).

P11-HHMI Biology

GLIA REGULATE DENDRITIC GROWTH IN SYMPATHETIC NEURONS VIA OP-1

P.J. Gallagher*, P.J. Lein, V. Chandrasekaran[^], A.M. Hedges*, and D. Higgins[^]. Dept of Biology, Canisius College (*HHMI Fellow) and [^]Dept of Pharmacology and Toxicology, SUNY at Buffalo, NY.

Sympathetic neurons extend only a single axon when grown in the absence of serum or nonneuronal cells; in contrast, coculture with glia or exposure to OP-1 causes these neurons to form dendrites. These data suggest that glia might influence dendritic growth via OP-1. *In situ* hybridizations revealed that both neurons and glia express mRNA for OP-1. SDS-PAGE analysis of proteins immunoprecipitated from neuron-glia cocultures by a mAb (12G3) to OP-1 revealed several bands, the molecular weights of which corresponded to the cellular and secreted forms of OP-1. Immunocytochemical analyses of cocultures indicate that both neurons and glia express cytoplasmic and surface staining for OP-1. Similar patterns of immunoreactivity were observed in glia grown in the absence of neurons; however, neurons cultured in the absence of glia express cytoplasmic but not surface staining for OP-1. Dendritic growth in sympathetic neurons cultured with astrocytes or Schwann cells was inhibited by 40-60% in the presence of mAb 12G3. These data are consistent with a role for BMPs in glial-induced dendritic outgrowth.

P12-HHMI Chemistry

ACTIVATION OF CO₂ BY TRANSITION METAL-SUBSTITUTED HETEROPOLY ANIONS IN NONPOLAR SOLVENTS. MULTI-SPECTROSCOPIC INVESTIGATION

Thomas J. Van de Ven, Giuseppe A. Ippolito, Louise Fronckowiak, and M. Kozik*. Department of Chemistry, Canisius College, Buffalo, NY 14208. HIM.

Tetraheptylammonium salts of certain heteropoly anions were found to react reversibly with CO₂ in nonpolar solvents. Traces of water are necessary for the reactions to take place. An excess of water decomposes the complexes. The CO₂ adducts were characterized by UV/VIS, IR, and ¹³C NMR. The IR data could be assigned to either CO₂ complexes with an η¹ metal-carbon bond, or to bicarbonate complexes. IR spectra with isotopically enriched ¹³CO₂ and C¹⁸O₂ support the presence of a η¹ metal-carbon bond. The ¹³C NMR spectra indicate the presence of two different kinds of paramagnetic CO₂ complexes. The variable temperature experiments are consistent with the chemical exchange between these two species. UV/Vis, IR, and NMR studies in the presence of controlled amounts of water or ethanol suggest the existence of H-bonding in the CO₂ complexes.

P13-HHMI Chemistry

DESIGN AND ASSEMBLY OF A VARIABLE PRESSURE CELL FOR THE STUDY OF THE REACTION OF PYRIDINE ON A MODEL $\text{MoS}_2/\text{Al}_2\text{O}_3$ CATALYST

Anthony Dolan and Nancy R. Gleason (advisor). Canisius College, Department of Chemistry
HHMI poster

Heterocyclic nitrogen containing compounds are common contaminants of crude oil, which is the starting material for many catalytic processes, but these heterocycles are known to poison most catalysts and burning fuels with such contaminants produces NO_x emissions, which lead to smog and acid rain problems. Hydrodenitrogenation (HDN) is the hydrotreating process by which unsaturated heterocyclic molecules are hydrogenated and the heteroatom removed. MoS_2 supported on alumina is the catalyst currently used for the HDN process. This research project involved the design and construction of the experimental apparatus required to study the adsorption and reaction of pyridine on a model $\text{MoS}_2/\text{Al}_2\text{O}_3$ catalyst. The experimental apparatus consists of a chamber (cell) equipped with CaF_2 windows to permit the passage of infrared light, a gas handling system to admit reactants into the cell, gauges to monitor the pressure in the cell region (variable between 10^{-8} to approximately 1500 Torr) pumping systems to evacuate chamber, and a specially designed sample mount to which the catalyst is fixed and which permits heating, cooling, and temperature monitoring.

P14-HHMI Physics

NUMERICAL MODELING OF COULOMB DAMPING IN A DRIVEN HARMONIC OSCILLATOR Jeffrey Miecznikowski, H. David Sheets (faculty advisor)

Canisius College, Department of Physics HHMI Poster

In a Coulomb damped oscillator the friction is proportional to a constant, $v_{(k)}$ times the Normal force. In the case that the oscillator is driven by an external force with this type of friction present has a nonlinear damping. Fortunately, an analytic solution to this type of damping is known. The goal of this project was to extend this work by looking at the relationship of the phase of the oscillator to the driving force phase, and to study the resulting amplitude versus a ratio of the frequencies. These relationships were studied numerically with the aid of a computer simulating program known as Matlab. It was found that ω/ω_n , the ratio of frequencies, needs to be larger than .5 in order to avoid a stick-slip phenomenon and also that as the driving amplitude increased the phase decreased with a sharp dropoff.

P15-Math

THE ROOK POLYNOMIAL AND "DRUNKEN MATHEMATICIANS" Sean Simpson, Terrence Bisson, faculty advisor. Department of Mathematics, Canisius College

Rook polynomials are a recent discovery (probably within the last one hundred years). They handle "restricted positions" questions very efficiently (much better than the Principle of Inclusion and Exclusion (PIE) alone). These polynomials do wonders for simple problems. However, trying to find the correct rook polynomial can be difficult. In this poster, I will be discussing a specific problem, generalized from the "drunken mathematicians" problem dating back to Euler. Through this problem, we will see a new simple formula that will help us find certain rook polynomials easily.

P16-Biology

THE AVAILABILITY OF WOOD BLOCKS FOR CHEWING DOES NOT AFFECT TEETH LENGTH IN LABORATORY RATS Katherine A. Sion and Michael Noonan.

Biology, Canisius College

In an earlier study, Chmiel and Noonan (1995) found that, when given the opportunity, laboratory rats will preferentially choose to stay in the presence of wood blocks and spend some of their time gnawing on the wood. They recommended that the provision to rats of wood for chewing would furnish the double benefit of (a) allowing the rats to express a species-specific behavior, and (b) provide continuous wear on the teeth so that fewer dental problems associated with overgrown teeth would develop. In the present investigation, we put the second of these propositions to an experimental test. We housed 20 rats in the continuous presence of wood blocks for a period of twelve months and compared their teeth length to 20 control rats held for the same period without blocks. To our surprise, despite clear evidence that the experimental subjects did chew the wood throughout their lives, no differences were found between the groups on tooth length nor in the frequency of dental problems. We remain of the opinion that the provision of chewing objects to rodents is an appropriate and beneficial enrichment, but our present data suggests that it does not additionally provide a benefit to the teeth.

P17-Biology

KINSHIP AND CANNIBALISM IN TERRESTRIAL ISOPODS George Harper and Dr. Kevin A. Fox. Biology Department, State University of New York College at Fredonia

Inclusive fitness theory predicts that individuals should maximize their fitness by increasing the reproductive success of close relatives while not diminishing their own reproductive success by an equal or greater amount. Terrestrial isopods, which readily cannibalize conspecifics under laboratory conditions, can potentially increase their fitness by avoiding cannibalizing their own offspring or the offspring of close relatives when presented another suitable food option. In this preliminary test, females from two species of terrestrial isopods were starved for twenty-four hours and then given mixed litters of young (half of which were their own offspring). Identity and number of young consumed by each female were tracked and analyzed to determine if females avoided cannibalizing their own offspring. Females of *Trachelipus rathkei* appeared to avoid consuming their own young, while females of *Oniscus asellus* showed no such tendency. Sample sizes were too small to reveal significant differences. Further studies are in progress.

P18-Biology

DECLINE OF PHOTOSYNTHESIS DURING LEAF SENESCENCE Sarah Cohen, Robert Gasparino, Christy Thoma, and Doug Carter. Central Connecticut State University. Department of Biological Sciences.

Leaf senescence is the genetically controlled process by which a leaf ages and dies. The Norway maple (*Acer platanoides* L.) and the Sugar maple (*Acer saccharum* Marsh.) display differences in the way that they senesce during the approach to the autumn season. We hypothesized that the photosynthetic capacities of these two species would decline in a manner that reflected their different rates of senescence. The Hansatech Photosynthesis System was used to measure the light-saturated rates of O_2 evolution; this system consists of a temperature-controlled chamber, a gas-phase O_2 electrode, and a high intensity light source. We observed that the earlier occurrence of leaf senescence in Sugar maple coincided with an earlier decline and cessation of photosynthesis. However, we were surprised to find that the rate of decline in photosynthetic capacity was actually more rapid in Norway maple, despite an apparently slower rate of senescence.

P19-Biology

TREATMENT OF LANDFILL LEACHATE THROUGH AN AEROBIC DECOMPOSITION USING ORGANISMS FOUND ACTIVATED SLUDGE

Mairaj Ahmed and Mark Gallo. Department of Biology, Niagara University

The treatment of hazardous leachate through bioremediation was investigated. Landfill leachate was aerated and supplemented with activated sludge. This leachate contains soluble, suspended or miscible materials removed from landfill waste, and disrupts the receiving environment by competing with it for vital nutrients and oxygen. The predominant microorganisms present in the activated sludge at the Lewiston Water Pollution Control Center were identified, and their growth rates on different media were compared. A shift in the bacterial population after acclimation to the leachate treatment tank was observed, and their growth rates were measured. A module was devised which allowed us to more effectively mimic the conditions of the Lewiston WPCC. This enabled us to compare the growth rate with respect to other variables which correlate to the treatment of leachate, such as pH, temperature, and sulfate concentration. This information is useful in characterizing the changing bacterial population, and provides a better understanding of the complexity of leachate growth, control and treatment. This will lead to a more productive plant operation and the reduction of possible environmental damage.

P20-Biology

THE WET WEATHER IMPACT ON THE WATER QUALITY OF THE NAUGATUCK RIVER, CT.

Jessica E. Clark, Dr. Eid Alkhatib, Advisor. Department of Chemistry, Sacred Heart University, Fairfield, Connecticut 06432-1000.

Dry and wet weather samples were collected from the Naugatuck River in western Connecticut to evaluate the wet weather impact. Each sample was analyzed for phosphate, nitrate, BOD₅, TSS/VSS, dissolved oxygen, fecal coliform, conductivity, temperature, and pH. When the mass loads were calculated, there was a significant increase in the wet weather parameters than the dry weather parameters. BOD₅ increased from 1,360 to 3,620 kg/day; phosphate increased from 220 to 820 kg/day; nitrate from 1,350 to 3,000 kg/day; TSS from 3,000 to 10,000; and VSS increased from 1,400 to 7,500 kg/day. There were also variations in each parameter from site to site. The relationships of these values and the impact of the wet weather conditions will be presented.

P21-Biology

THE EFFECTS OF MEDIUM COMPOSITION ON DAUNORUBICIN AND DOXORUBICIN PRODUCTION IN *STREPTOMYCES PEUCETIUS* #29050

Matt Tessena and Mark Gallo. Department of Biology, Niagara University

Fatty acid beta-oxidation in *Streptomyces peucetius* ATCC 29050 and a red-pigment producing mutant was investigated. These organisms were grown on various media to determine the organisms' ability to degrade fatty acids and to produce the antibiotics daunorubicin and doxorubicin. Media containing fatty acids or glucose as sole carbon and energy source were investigated. An assay for L-3 Hydroxyacyl-CoA dehydrogenase was performed on *Streptomyces peucetius* to determine the activity of this enzyme under these various growth conditions. In addition, TLC was performed on culture extracts to semi-quantitatively determine the amount of daunorubicin and doxorubicin production in these organisms. Because the products of fatty acid degradation are utilized in the synthesis of these valuable antibiotics during polyketide synthesis, discovering links between these two pathways may prove beneficial. Manipulation of these pathways via novel growth media may yield a better understanding of the interaction between these two pathways and possibly increased antibiotic yield.

P22-Physiology

A STUDY OF THE EFFECT OF HYDROCORTISONE ON THYROID HORMONE SECRETION IN PROMETAMORPHIC BULLFROG TADPOLES *IN VITRO* AND *IN VIVO* Beata Rzasca, Mary L. Wright, SSJ. Elms College, Biology Department

Since thyroxine (T_4), a major thyroid hormone, is primarily responsible for the dramatic changes that take place during amphibian metamorphosis, it is important to determine the effect of other hormones on the thyroid gland, such as hydrocortisone (HC), a glucocorticoid secreted by the inter-renal glands. In two experiments, one *in vitro* and the other *in vivo*, 10 ug HC was administered on a 12:12 light/dark cycle. In the first experiment, thyroids and pituitaries were dissected out from bullfrog tadpoles and cultured for two days. On Day 1 the tissues were cultured in L-15 media, or L-15 with 10 ug HC. On Day 2 the pituitaries were discarded and the thyroids were cultured in pituitary-conditioned media. In the second experiment, bullfrog tadpoles were injected with either saline or 10 ug HC at 0830 hr for five days. Blood and eyes were collected at 1530, 2330, and 0730 hr. Media from the thyroid cultures, and tadpole plasma, were assayed for T_4 . The *in vitro* results showed that at prometamorphosis HC significantly increased the thyroid production of T_4 by stimulating the pituitary to secrete thyroid stimulating hormone (TSH), but HC injected *in vivo* seemed to have no significant effect on plasma levels of T_4 .

P23-Physiology

COMPARISON OF PLASMA AND OCULAR MELATONIN IN YOUNG BULLFROG TADPOLES ON 18:6 OR 12:12 LIGHT DARK CYCLES Catharine Guertin, Mary L. Wright, SSJ, and Christina Alves. Elms College, Biology Department

Melatonin is a hormone that is produced by the pineal gland and the retina in amphibians. It is believed to alter the rate of metamorphosis, and to affect the levels of other hormones which control metamorphosis. To determine the effect of different light dark cycles on the natural levels of plasma and ocular melatonin, stage XII *Rana catesbeiana* tadpoles were acclimated to 18:6 or 12:12 light/dark cycles. Blood and eyes were collected from the tadpoles at seven intervals during a 24 hour time period. Melatonin was later measured by radioimmunoassay. The findings suggest that the melatonin profiles and levels were different on the two light dark cycles. Compared to 18L: 6D, there were more frequent peaks of plasma and ocular melatonin on 12L: 12D, and the 24 hour mean of the ocular melatonin was significantly higher.

P24-Physiology

LATE TREATMENT OF AN ISOLATED AMPHIBIAN SCIATIC NERVE WITH CHOLESTEROL UNIQUELY REVERSES THE DECLINE IN THE VELOCITY OF THE COMPOUND ACTION POTENTIAL Bernadette A. McDougall and Carl S. Hoegler Marymount College, Tarrytown, NY, Department of Biology

This investigation studied the importance of cholesterol as a factor for maintaining extended viability of the sciatic nerve in *Rana pipiens*. After removal, nerves were stored at 2-4°C for two weeks. On every other day, the compound action potential (CAP) was recorded by stimulation with electrical shocks. The velocity of CAP showed a linear decrease from a mean of 27.8 m/s on day 0 to 20.2 m/s on day 6 to 15.9 m/s on day 14 ($n=25$). After approximately ten days, some nerves were soaked in 2-3g of cholesterol for 3 hours at 23°C. Cholesterol caused a significant increase ($p=.011$, $n=4$) compared with a control group of nerves ($p=.081$, $n=6$). Alternatively, other nerves were soaked earlier on day two and then placed in Ringer's for the remainder of the time. The velocity of the CAP did not differ from the control, suggesting that the time of the cholesterol soak is important. To test whether other lipids could substitute for cholesterol during the late soak, olive oil was used and found to be ineffective. Based on microscopic analysis of isolated nerves, the myelin sheath gradually thins over time. The premature application of cholesterol does not have the same effect on function as later application after thinning has taken place.

P25-Physiology

THE EFFECTS OF TETRACYCLINE ON CIRCADIAN RHYTHMS Wendy Keitz, Melanie Henderson and Dr. Lewis Lutton. Mercyhurst College, Department of Biology

Circadian rhythms are defined as the daily endogenous rhythm that reflects an organism's sense of and ability to adjust to the time of day. Tetracycline is a common antibiotic that is prescribed for many experimental animals. The effect that tetracycline has on circadian rhythms, however, has not been tested. In this study we examined the effects of tetracycline on the circadian rhythms of male Syrian hamsters, *Mesocricetus auratus*. Specifically, this experiment investigated the possible effect that tetracycline may have upon tau, the length of the animal's internal rhythm. The dosage of tetracycline was taken orally and ad libidum in water at 0.400 mg/L. Normal tau was determined by the running wheel activity of the hamsters. Changes in tau, detected by changes in the linear regression of the onsets of running wheel activity, were studied to determine the effects, if any. Preliminary data suggests that tetracycline has no effect on tau or running activity.

P26-Physiology

PROGRESSION OF AORTIC STENOSIS IS RELATED TO AN ECHOCARDIOGRAPHIC INDEX OF AORTIC LEAFLET PATHOLOGY

Dana R. Desser. (Drs. H. M. Murphy and C. H. Wideman, advisors). John Carroll University, Department of Biology.

The rate of progression of aortic stenosis (AS) is variable and it is unclear if any clinical or echo factors predict a more rapid progression. An echo database, identified 98 patients with AS, who had two or more technically adequate studies separated by > 6 months. The first study measured standard M-mode, 2-D and Doppler variables. An index of aortic leaflet pathology (ALP) was determined from review blinded to AS severity (ALP calcification + mobility with each rated on a numerical scale). Clinical and ECG variables were extracted from records closest in time to the first echo. The mean age was 68 years. During the first study the median severity of AS was 26.4 mmHg and median aortic valve area (AVA) 1.3 cm². Mean follow-up was 1.8 years. Change in severity of AS (Δ AS) was expressed as tertiles of Δ peak gradient/year. The mean Δ AS was 4.4 mmHg/year. More rapid Δ AS occurred in males, patients with elevated serum creatinine, greater left ventricular (LV) mass, and higher ALP scores. In multivariable regression analysis only ALP score remained significant. Δ AS is independent of initial AVA or clinical parameters, but associated with an echocardiographic index of aortic leaflet pathology.

P27-Physiology

EFFECT OF UV-IRRADIATION AND ASCORBATE ON GROWTH OF IMR-90 HUMAN FIBROBLASTS David Ferrand, Gillian Voight and Dr. Joseph Berger (faculty advisor)

Springfield College, Department of Biology/Chemistry

Ultraviolet light (UV) has been implicated in cellular damage through multiple mechanisms, including the creation of highly reactive free radical species. Free radicals have single unpaired electrons that scavenge electrons from double bonded molecules, oxidizing them. Other molecules, known collectively as antioxidants, have been identified as being able to neutralize free radicals. Vitamin C (ascorbate) is one of these molecules.

One of the main functions of fibroblasts (connective tissue cells) is the production and maintenance of collagen, a connective tissue protein. Ascorbate is a necessary cofactor for collagen production, making fibroblasts an ideal subject for testing with ascorbate. Human fetal lung fibroblasts (IMR-90) were cultured with and without sodium ascorbate and exposed to UV. The growth rates of these cells were followed to determine if ascorbate has a protective effect against UV-induced cellular damage. Both ascorbate and non-ascorbate controls were also followed. Cells cultured with ascorbate had an increased growth rate. We also found that damage due to UV exposure inhibits the growth of IMR-90 fibroblasts. Furthermore, it was found that treatment with ascorbate partially reduced this effect.

P28- Physiology

LOCALIZATION OF PLANARIAN CONNEXINS USING IMMUNOFLOUORESCENCE

Jody Mead, Edlira Alushi and Susan Maskel. Department of Biological and Environmental Sciences, Western Connecticut State University

Within an organism, some cells communicate with each other through structures called gap junctions. Connexins, the proteins that make up gap junctions, are highly conserved in evolution. The number and type of connexins making up gap junctions is different in normal tissue and healing wounds. As wound healing should be biochemically and physiologically similar to tissue regeneration, planarian regeneration might serve as a model for wound healing in vertebrates. To begin to study this, planarian connexins were isolated, their molecular weight was determined using polyacrylamide gel electrophoresis, and antiserum to planarian connexins was produced. An enzyme linked immunosorbant assay was used to confirm the production of antibodies and to determine whether or not commercially available antibodies to mammalian connexins react with planarian connexins. Immunofluorescence was then used to localize planarian connexins. Results will be discussed.

P29-Physiology

VENTILATORY RESPONSES OF THE FRESHWATER BIVALVE, LAMPSILIS RADIATA, TO NORMOXIA AND HYPOXIA

Jacob C. Heiner and Roger A. Byrne
Biology Department, SUNY College at Fredonia

Benthic freshwater bivalves experience periods of hypoxia e.g. during summer/ winter stratification. Under moderate hypoxia ventilation increases to maintain oxygen uptake efficiency. However, under severe hypoxia (< 5 mmHg pO_2) ventilation is inhibited. But, accumulation of CO_2 , and/or anaerobic end-products continues, and mantle cavity ventilation may be necessary. We examined the valve movement behaviors of the bivalve, *Lampsilis radiata*, under conditions of normoxia, severe hypoxia (~ 0 mmHg Po_2) and on return to normoxia after hypoxia. We examined patterns of valve movement behavior, and bivalve sensitivity to changes in environmental Po_2 . Valve movements were recorded using a monofilament line attached to a force transducer/computer data collection system. Clams remained open for approximately 90% of the time in normoxia, and 9% under hypoxia. The mean time to valve closure on exposure to hypoxia was 1h50min, whereas the time to valve opening on return to normoxia after 48h hypoxia was only 7.3 min. We recognized 5 specific valve movement behaviors ranging from prolonged valve opening to short duration valve clapping behaviors. Under hypoxia the short duration valve opening episodes seemed to incorporate mantle cavity flushing. We speculate that under severe hypoxia freshwater bivalves maintain some contact with the external environment as a means of excretion of accumulated wastes and/or CO_2 .

P30-Mol. Biology

ROLE OF ParA ATPase ACTIVITY IN P1 PLASMID PARTITIONING DURING *E. coli* CELL DIVISION

Sharla Strole, Matthew Balanda, Carrie Carpinteri, Laurie Papacs, Christina Smilnak and Kathy Martin-Troy. Central Connecticut State University, New Britain, CT.

ParA protein contributes an essential component to P1 plasmid partitioning during bacterial cell division. ParA is known to have ATPase activity. Sequence homology studies have isolated the putative ATPase domain to a cluster of 8 amino acids in the Nterminal domain. Our present model suggests that the ATPase activity of ParA may provide the energy necessary to drive plasmid copies to their proper locations during bacterial cell division. In order to correlate this activity to the essential role of ParA protein in P1 partition, we have generated a set of oligos that will produce a single amino acid change in the predicted ATPase domain. It is our goal to determine whether the ATPase activity of ParA effects the positioning of the chromosomes during cell division.

P31-Molecular Biology

APOPTOTIC NUCLEOSOMAL FRAGMENTATION AND CYTOTOXICITY INDUCED IN RIF CELLS BY *STREPTOMYCES* EXTRACTS Rachel Flack, Jeffrey Moll, Mark Gallo, and Robert Greene. Department of Biology, Niagara University

Various anthracycline antibiotics derived from *Streptomyces* species have shown great promise as inducers of programmed cell death (apoptosis) in tumor cells. Apoptosis-induced DNA degradation is one of the hallmarks of this process. We have used a bioassay for screening natural products that induce apoptosis in radiation-induced fibrosarcoma cells in culture. A number of *Streptomyces* isolates from Niagara County were screened for their ability to produce apoptotic compounds when grown under various conditions. Results indicate that one isolate is able to produce a compound with a very strong apoptotic response.

P32-Mol. Biology

DIRECTION OF TRANSCRIPTION OF *STAR* AND *ASTEROID* TO DETERMINE THE EFFECTS OF REGIONAL MUTATIONS Marissa Shrader, Deborah A. Leonard, Michael A. Kotarski. Niagara University, Biology

Star and *asteroid* are two genes which are very close together. Mutations of either gene interrupt signal transduction pathways and produce a similar phenotype -disarranged ommatidia of the compound eye. The proximity of the genes posed a problem in determining which gene was affected by mutations in the region. To help solve this problem, the direction of transcription of *Star* was determined with respect to *asteroid*. A DNA fragment from the second exon of *Star* was sequenced using a US Biochemical Corp. Sequenase kit (Amersham, Inc.) and the DNA sequence was compared to the published sequence of *Star*. The two genes lie in a head-to-head arrangement separated by 186 base pairs of DNA.

P33-Mol. Biology

TECHNIQUES FOR INVESTIGATING THE MOLECULAR PHYLOGENY OF HYDROMEDUSANS (PHYLUM CNIDARIA) Kenneth G. Campellone, Adam M. Lambert, Anthony Martinez, and Michael S. Zavada. Providence College, Department of Biology.

A Cnidarian fossil record is virtually absent due to the soft body structure of these organisms. Determining the evolutionary relationships of the Cnidarians relies heavily on systematic techniques applied to extant Cnidarians. The application of starch gel electrophoresis and isoelectric focusing has been successful for determining the evolutionary relationships among other organisms; e.g., agarose gel isoelectric focusing has been widely used in the identification of fish species. However, molecular systematic methods have not been extensively used for Cnidarians. The purpose of this study is to determine if agarose gel isoelectric focusing and agarose gel electrophoresis are valuable methods for evaluating the evolutionary relationships among Cnidarians. Agarose gel isoelectric focusing has been used in investigating the molecular phylogeny of Scyphomedusans and Hydromedusans, but we have not found the results to be reproducible. Analyzing the molecular phylogeny of Hydromedusans by agarose gel isoelectric focusing and agarose gel electrophoresis has not yielded consistent data. The difficulties of using molecular systematic techniques in investigating the evolutionary relationships among Cnidarians seem to lie in the extraction and concentration of the proteins. The analysis of protein content through the variation of sample extraction and preparation was examined.

P34-Molecular Biology

ISOLATION AND CHARACTERIZATION OF AN ARABIDOPSIS THALIANA C-8,7 STEROL ISOMERASE: FUNCTIONAL AND STRUCTURAL SIMILARITIES TO MAMMALIAN C-8,7 STEROL ISOMERASE / EMOPAMIL BINDING PROTEIN

Edward D. Huntley, Thomas E. Ohmneiss, Robert J. Grebenok. Department of Biology, Canisius College, Buffalo, NY 14208, USA

We report the isolation of an *Arabidopsis thaliana* C-8,7 sterol isomerase by functional complementation of the corresponding sterol mutant in yeast (*erg2*) and its characterization by exposure to sigma ligands. The complemented *erg2* yeast sterol mutant produces ergosterol (as determined by GC/MS), and is resistant to cycloheximide. The full length *A. thaliana* CDNA (A.t.SI 1) used to complement the *erg2* mutant possesses an open reading frame that encodes a 21 kDa protein. This CDNA shares little identity to previously isolated fungal C-8,7 sterol isomerases, but has 68% similarity and 35% amino acid identity to the mouse C-8,7 sterol isomerase. Furthermore, the sigma ligands haloperidol, ifenprodil, and verapamil, which inhibit mammalian sigma receptors, also inhibit ergosterol accumulation in both the wild type and in the *erg2* yeast sterol mutant expressing the A.t. SI 1. The structural and biochemical similarities between *A. thaliana* C-8,7 sterol isomerase and the mammalian emopamil binding protein (EBP) are addressed.

P35-Molecular Biology

PHENOTYPE CHARACTERIZATION OF MUTANT RHIZOBIUM ETLI

Crystal R. Weatherill, presenter; Dr. Jack Deihl, faculty advisor. Biology Department, Lycoming College

The purpose of this study was to confirm the presence of an induced mutation in the *YJII* gene on the chromosome of *Rhizobium elti* and to phenotypically characterize the mutant. Methodology for confirming the mutation included electrophoretic analysis of PCR product generated within a defined primer region on genomic extract. Phenotype analysis included anabolic and catabolic study of carbohydrates and amino acids in minimal media. Other test media included: citrate, indole, methyl red, Voges-Proskauer, urea and milk and lipid agar plates. Results indicate that the mutation was present on the chromosome in single copy. Urea hydrolysis was the only metabolic difference between the mutant and wild-type. Further study of transport mechanism suggest the *YJII* gene may be involved in transport of urea or urease for generating nitrogen for purine synthesis.

P36-Biochemistry

DO NUTRIENT LEVELS AFFECT METHYL JASMONATE-INDUCED CHANGES IN PROTEIN LEVELS OF TOBACCO SHOOT CULTURES? Anthony Messina, Chris Morley, David S. Koetje. Department of Biology, SUNY College at Fredonia, Fredonia, NY 14063

Methyl jasmonate is regulator of plant stress responses. These stress responses may be modulated by the metabolic states of key nutrients such as carbon and nitrogen. We hypothesize that low nutrient levels moderate methyl jasmonate-induced changes in protein content. This study consisted of varying the availability of nutrients in tobacco shoot cultures while exposing them to atmospheric methyl jasmonate over a time period of 96 hours. The nutrients were supplied to the plants ranging from a high of 1x MS medium to a low of 0.25x MS medium. We collected samples between 0-96 hours and determined protein content with a Bradford protein assay. Our current results indicate that the plants exposed to methyl jasmonate experienced a significant decrease in their protein content at 24 and 96 hours at all treatment levels. Methyl jasmonate exposure causes an average 72.1 % decline in protein content regardless of nutrient levels. This decline could be due to the down regulation of specific cellular proteins when exposed to methyl jasmonate. We are currently studying this in more detail by performing SDS-PAGE.

P37-Biochemistry

METHYL JASMONATE INDUCED PROTEIN RESPONSE IN NICOTIANA

TABACUM Anthony M. Sokol, Peter Arena, and David S. Koetje. Department of Biology, SUNY College at Fredonia, Fredonia, NY 14063

Abstract: Methyl Jasmonate down regulates photosynthetic proteins and induces the production of defense products such as proteinase inhibitors and vegetative storage proteins. Methyl Jasmonate is synthesized from linolenic acid via the octadecanoid intracellular pathway. Tobacco (*Nicotiana tabacum* cv Wisconsin 38) shoot cultures were treated with $10^{-1}X$, $10^{-3}X$, and $10^{-5}X$ concentrations of atmospheric methyl jasmonate over a period of 96 hours. Proteins were isolated from these plants collected at 24 hour intervals and their protein content was determined via the Bradford protein assay. The protein content of these plants had decreased 68.7% and 58.1% relative to controls in a 48 hour period at $10^{-1}X$ and $10^{-3}X$ concentrations respectively. Exposure to $10^{-5}X$ methyl jasmonate did not produce any significant changes in protein content at 48 hrs. Visualization of these proteins via SDS-PAGE revealed the most significant protein decreases approximately at 56kDa and 72kDa. However, variability of these controls was high which is probably due to fungal contamination acquired during subculturing. Previous studies indicated that nutrient-deprived plants are not as sensitive to methyl jasmonate. To further test the effect of nitrogen on jasmonate-induced protein changes, we are adjusting the molar ratios of ammonia and nitrate in MS media and testing the sensitivity of these plants to methyl jasmonate. We hypothesize that exposure of these plants to methyl jasmonate will reveal different protein responses indicative of methyl jasmonate's role in regulating nitrogen metabolism.

P38-Biochemistry

THE EFFECTS OF DILUTE METHYL JASMONATE ON PROTEIN LEVELS IN

SOYBEAN SEEDLINGS Peter J. Arena, Ryann M. Birmingham, and David S. Koetje
Department of Biology, SUNY College at Fredonia, NY 14063

Methyl jasmonate, a plant stress regulator, induces the production of vegetative storage proteins in soybean cultures (Plant Cell 2: 569-579). In this investigation we addressed the effects of diluted methyl jasmonate on soluble protein levels, including vegetative storage proteins, in various tissue samples of young soybean seedlings. Soybean plants were grown in normal potting soil and then treated with $10^{-1}X$, $10^{-3}X$, $10^{-5}X$, and $10^{-7}X$ concentrations of atmospheric methyl jasmonate for 48 hours. After assessing the soluble protein content of various parts of the control plants via Bradford protein assays, we determined that the primary leaves/shoot tips and cotyledons contained the highest protein content, 18.87 and 9.61mg/gFW respectively. The stems and roots, 3.81 and 1.21mg/gFW respectively, contained the lowest protein content. Exposure to methyl jasmonate did not have a significant effect on the protein content of the plants after the 48 hour exposure. We are currently analyzing the proteins using SDS-PAGE to measure jasmonate induced changes in the intensity of the various bands, including vegetative storage proteins.

P39-Biochemistry

EFFECTS OF MICROWAVE RADIATION AND SONICATION ON ENZYME CATALYZED HYDROLYSIS OF CERTAIN PHOSPHOESTERS

Megan McLean,
Konrad G. Kabza, Ph.D. Department of Chemistry SUNY at Fredonia

The effects of microwave radiation (2.45GHz) on the enzyme catalyzed hydrolysis of bis-p-nitrophenyl-phosphodiester and o-nitrophenyl-butyrate were studied. A thermostatted flow-through UV-vis cell equipped experimental setup allowed for continuous kinetic data acquisition and reaction progress monitoring. Sonication was used as another energy source. Comparative studies of microwaved and non-microwaved reactions were conducted. A variety of substrates, including ATP, were tested for the microwave radiation influence. Due to the biotic nature of the enzyme all of the reactions were performed in aqueous solutions. Thermal heating influence was compensated for the non-microwaved runs.

P40-Biochemistry

SEPARATION OF LAMBDA-DNA DIGEST USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY Kristina Knepler, Scott Cybart, Heidi Mortenson, Holly Lawson (advisor), W.N. Yungmans (advisor). Departments of Chemistry and Biology, SUNY Fredonia.

Our research group has been trying to determine the best method to separate DNA fragments. A lambda-DNA digest standard has been used to develop our initial conditions. Parameters affecting the separation include the solvents used, the solvent gradient, and the flow rate. The best separation results, to date, were achieved using a 25mM Tris 1mM EDTA solution at a pH of 8 (solvent A) and a 25mM Tris 1mM EDTA + 1M NaCl solution at a pH of 8 (solvent B). The flow rate of the solvents was 0.75mL/min, and starting with a A/B ratio of 60/40 changed over 30 minutes to a ratio of 38/62. The 38/62 ratio was ramped to change to a final A/B ratio of 30/70 in 15 minutes. The ratio was kept constant until a time of 70 minutes(total), ending the run.

P41-Chemistry

SYNTHESIS OF NOVEL PYRIDINE BASED LIGANDS Letitia Vega, Debra Peterson, Linda Farber. Department of Chemistry and Physics, Sacred Heart University, Fairfield, CT 06432

We are investigating the synthesis and self-assembly of 1, 3-Bis[4-(methylthio)-2-(phenyl)pyridin-6-yl]phenylene and related ligands with first row transition metals. Several known ligands that contain nitrogen donor sites self-assemble around transition metals to form double and triple helicies. Self-assembly of these ligand strands is metal-ion induced. The synthesis of novel pyridine based ligands will be described. The ligands' self-assembly with several other appropriate transition metals will also be explored. This fundamental study examines first, the synthesis of 1, 3-Bis-[4-(methylthio)-2-(phenyl)pyridin-6-yl]phenylene and second, its self assembly with suitable transition metals. These complexes may have potential electroactive and bioactive properties.

P42-Chemistry

SYNTHESIS OF SEVERAL POTENTIAL ANTI-HYPOXIA AGENTS Kendra Heriot, Linda Farber. Department of Chemistry and Physics, Sacred Heart University, Fairfield, CT 06432

3-[1-(2-Hydroxyethylamino)ethylidene]-4, 5-dihydro-2(3H)furanone has exhibited antihypoxia activity in rats. Previous studies concluded that at 10mg/kg the EEG of a test rat was not altered until pO_2 was 18mm whereas the EEG of a control rat recorded a flat line at 45mm. Analogs of this compound were synthesized by condensing 2-acetylbutyrolactone with a variety of primary and secondary amines such as aniline, ethanolamine, acetanilide, and 2,4-dichloroaniline to name a few. The furanone derivatives were isolated either as neutral compounds or as the amine salts. The synthesis and spectral characterization of these compounds will be described. Testing of these potential anti-hypoxia agents is currently being explored.

P43-Chemistry

SUBSTITUENT EFFECTS IN THE RADICAL CONJUGATE ADDITION REACTIONS OF ARYL TRIAZENES Peter Korakas, Brian Raudenbush, Dr. James P. Louey
Department of Chemistry/Physics, Sacred Heart University, Fairfield, CT 06432.

We have observed that aryl triazenes will react with α , β -unsaturated ketones in the presence of titanium (III) chloride. A series of p-substituted aryl triazenes have been prepared and coupled with methyl vinyl ketone and 4-hexene-3-one. Additionally, positional isomers (o, m, p) of the chloro triazene have been prepared and reacted with methyl vinyl ketone. The steric and electronic impact of these substituents on the reaction yield will be presented.

P44-Chemistry

MOLYBDENUM THIAPORPHYRIN COMPLEXES Ryan J. Howard, Dawn Cox, Jennifer A. Ropp, Edward P. Zovinka. Saint Francis College, Loretto PA 15940. Dept. of Chem., Math., & Phys. Sci.

Molybdenum-Sulfur chemistry has been of interest due to recent studies involving Mo containing enzymes*. The binding characteristics of Mo to a thiaporphyrin ligand are being examined to determine if the metal complex will exhibit catalytic properties. While early transition metal porphyrins are unstable in air, possibly due to the relatively large porphyrin central core compared to the atomic radii of the metals, it is hoped that the smaller central core of the thiaporphyrin will support the early transition metals. The insertion of Mo into the thiaporphyrin complex has been attempted and showed a large "soret" type shift, further confirmation is being conducted. Since the synthesis of thiaporphyrin has only been achieved in low yields, an alternative thiaporphyrin synthesis is being examined.

*Stiefel, E.I. Science. June 14, 1996, 272, 1599.

P45-Chemistry

PREPARATION OF POLYPHOSPHINATED FERROCENE AND RUTHENOCENE AS A STARTING POINT FOR CATALYTIC ACTIVITY Rebecca C. Espenlaub, Ryan J. Howard, and Edward P. Zovinka*. Dept. of Chem., Math., & Phys. Sci., Saint Francis College, Loretto, PA 15940

In order to broaden metallocene use in catalysis, the expansion of the number of ligands (phosphines) attached to the metallocene core beyond the commonly found two to three groups is being studied. It is hoped that these multi-functionalized metallocenes will provide enhanced catalytic activity. Ferrocene and mercuric acetate were reacted in 1,2-dichloroethane to produce decakis(acetoxymercuro)ferrocene, (DAMF). 1 DAMF was then reacted with Ph_2PCl in THF in hopes of producing the polyphosphinated ferrocene. NMR and UV-vis data was inconclusive. In order to simplify spectral interpretation, it was decided to use Cp^*CpRu rather than Cp_2Fe . Cp^*CpRu only requires the replacement of 5 hydrogens rather than the replacement of 10 hydrogens.

1. Young-Hee Han, Mary Jane Heeg, and Charles H. Winter*, Organometallics, 1994, 13, 3009.

P46-Chemistry

THE SYNTHESIS AND ELECTROCHEMISTRY OF METAL COMPLEXES WITH QUINONE-FUNCTIONALIZED LIGANDS Derrick J. Swartz, Cathy A. Yelen, Jayne M. Tritnin and William S. Durfee. Department of Chemistry, Buffalo State College

We have synthesized a series of chelating ligands that contain either two or three redox-active quinone groups. Metal complexes of these ligands show a wide range of electrochemical behavior. The reversibility of the quinone/semiquinone radical anion couple is highly dependent on the of metal ion present and the exact structure of the ligand.

P47-Chemistry

A PUTATIVE CELL-DEATH CHEMISTRY ASSOCIATED WITH THE PATHOGENESIS OF MULTIPLE SCLEROSIS

Zachary Donhauser, Anthony Tucker, James Belliveau, Kathleen Cornely, Peter Calabresi. Providence College and Rhode Island Hospital Brown University, Providence, RI.

An initial research effort in France indicated the presence of a stable 17 kD gliotoxin in the cerebrospinal fluid (CSF) of multiple sclerosis (MS) patients. A pooled CSF sample from MS patients was purified using PAGE electrophoresis. The band containing the gliotoxin was cut from the gel and underwent trypsin digestion and extraction. The resulting solution was analyzed using MALDI-TOF mass spectrometry. A novel procedure for evolution of MALDI-TOF data was developed to examine a small set of "candidate" proteins using probability statistics. This methodology showed a correlation between the mass spectrometry data and the sequence of a known cytokine, Apo-2L. Attempts to duplicate/confirm the previous results have presented problems in the elution of the 17 kD protein from the electrophoresis gel. MALDI-TOF analysis of extraction solutions yielded no peaks above detection limit. It is believed that a significant amount of protein is not being removed from the gel. Currently we are evaluating the gel-extraction method of electroelution in order to obtain greater protein throughput. The background information along with the problems encountered to duplicate/confirm the initial MALDI-TOF results will be presented.

P48-Chemistry

OXIDATIVE REDUCTIVE POTENTIALS USING CYCLIC VOLTAMMETRY

Harry Shoemaker, Dr. John Freeman. Chemistry, S.U.N.Y. Fredonia

In Barry *et al.*, the synthesis of 2-aminophenoxazinone from 2-aminophenol is a 3-step condensation reaction with two electron oxidations occurring at each step. The reaction is catalyzed by the enzyme phenoxazinone synthase. 2-aminophenoxazinone is a chromophore of actinomycin, a potent anti-neoplastic agent. We are interested in examining reaction midpoint potentials, via cyclic voltammetry, of the reaction in order to gain a better understanding of the reaction mechanism. Currently we are utilizing lanthanide catalyzed nitration of phenols in order to make the appropriate nitro-phenol which is then reduced to yield the desired amino-phenol. Since each of the first two steps is followed by an addition reaction that makes the oxidation irreversible we plan to utilize aminocresols in place of aminophenol. It is hoped that the methyl group present in the cresols will physically block further addition reactions making the reaction reversible so that the mid-point potentials might be determined for each step. For this analysis a methyl group in the fourth, fifth, and both the fourth and fifth positions will be utilized for the purposes of comparing values from the different steps in the reaction utilizing cyclic voltammetry.

P49-Chemistry

REDUCTIVE ACYLATION OF BENZIL TO STILBENE DIOLDIACETATE

Sarah Stahl, Advisor: Dr. Freeman. Chemistry Department at SUNY Fredonia College

In the presence of zinc and hydrochloric acid, benzil and acetic anhydride react to produce stilbene dioldiacetate. Two isomers of the product exist. Thermodynamics suggests that the trans product is favored over the cis product with a calculated ΔG s of -84 and -80 kilocalories, respectively. The trans product is the more prevalent of the two isomers, which is what the equilibrium constant indicates. The amount of cis product produced is larger than what is expected from the thermodynamic calculation. The ratio of trans to cis product is found using Nuclear Magnetic Resonance. The cis product peak appears around 2.0 ppm, and the trans product peak appears around 2.2 ppm. The ratio is determined by the height of the peaks. By synthesizing stilbene dioldiacetate at several different temperatures, the temperature to isomer ratio relationship should be found, thus aiding in the determination of the activation energies of the two product isomers. This project explores how temperature affects the ratio of trans to cis product with the final goal being to determine the activation energy for each isomer.

P50-Chemistry

FTIR EXAMINATION OF FLEXOGRAPHIC INKS John O'Kain Osborne and Philip L. Kumler. Chemistry Dept., SUNY College at Fredonia

Increasing use is being made of water-based (rather than solvent-based), flexographic inks in the printing industry, primarily due to safety concerns. A typical flexographic ink is a complex mixture of components, including the pigment, water, and a number of polymeric components. This study, in conjunction with a local ink manufacturer, explores the possibility of using FTIR to analyze various inks. This use of disposable IR cards, both microporous polyethylene (PE) and polytetrafluoroethylene (PTFE) simplifies the sampling. A spectral library of common ink components is being assembled and will hopefully provide a rapid method for the qualitative and quantitative analysis of flexographic inks.

P51-Chemistry

KINETICS OF FORMATION OF A TRIDENTATE CHELATE Daniel P. Jamieson, Barry L. Westcott, Department of Chemistry, Central Connecticut State University

Di-2-pyridyl ketone (dpk) undergoes a hydration reaction to form a geminal diol (dpkoh) when in the presence of a strong Lewis Acid such as a transition metal ion. The resulting geminal diol ligand can then coordinate in a tridentate fashion to the metal center. With the Cr^{3+} complex, the change in color of the reaction mixture is very slow, suggesting a gradual change in the crystal field stabilization energy. We are studying the kinetics of formation for a series of $[\text{M}(\text{dpk})_2]^{n+}$ complexes via UV- visible spectroscopy. We will present UV-vis data of the $[\text{Cr}(\text{dpkoh})_2]^+$ and $\text{Cu}(\text{dpkoh})_2$ complexes and offer an explanation for the formation of the diol.

P52-Psychology

DIFFERENCES IN COLLEGE STUDENTS' PERCEPTION OF DATE RAPE

Jennifer Barnes, Tanya Calabrese, Cathy Heimback, Melissa Page, Jennifer Schneegold, Susan Zilgme, Kathryn Wirth, Dr. J. Larkin, Dr. H. Pines. Canisius College, Psychology Department

Holcomb, *et al.* (1993) reported that men were more likely to condone date rape than women. Therefore the present study investigated differences in college students' perception of date rape. Ninety-six undergraduate psychology students participated. Participants were randomly assigned to one of three sexual encounter scenarios between a college male and female. Pretesting of these scenarios verified that one scenario was perceived as consensual sexual intercourse, the second as ambiguous with respect to consent, and the third as an instance of date rape. Participants in the actual experiment were asked to judge whether the scenario would be perceived as date rape from five different perspectives: Fred, the male in the encounter, Mary, the female in the encounter, their own personal point of view, "men in general" and "women in general". Results were analyzed using a between-within subjects ANOVA and showed that date rape judgments were affected by scenario, rater perspective, and the interactions between scenario and rater perspective. Also examined were differences in ratings associated with subjects' gender. Discussion focused on the observed contrast between judgments made from Fred's perspective with those of it men in general" and with those made by the male subjects from their own personal perspective.

P53-Psychology

SURVEY OF PSYCHOTHERAPY EFFECTIVENESS: A REPLICATION OF THE CONSUMER REPORTS SURVEY WITH A MEDICAID SAMPLE

Julie Skladanowski, Greg Staniszewski, Amy Stanton, Dr. Stephen Roll. Faculty Advisors- Dr. Judith Larkin and Dr. Harvey Pines. Psychology Department at Canisius College.

Consumer Reports recently (November, 1995) conducted a study of the effectiveness of psychotherapy. However, the population sample in the study raises questions of external validity. The Consumer Reports sample consisted of people who were highly educated, predominantly middle class, with an average age of 46. This study was conducted from September through October of 1997 using patients from a public clinic in Buffalo, NY. The purpose of this study was to assess the effectiveness of psychotherapy in a sample of patients in a clinical setting who were receiving Medicaid and who tended to be less educated and predominantly lower class. Patients reported improvement in such areas as self-esteem, confidence, their ability to relate to others, and their ability to cope with everyday stress. The results supported the hypothesis that patients benefited substantially from psychotherapy.

P54-Psychology

ORAL ASYMMETRIES OF EMOTIONAL EXPRESSIONS AMONG ADULTS

Abbie Kirkendall, Pamela Schuetze, and Howard Reid. Department of Psychology, Buffalo State College

Recent research indicates that negative emotions linked to processes which are lateralized to the right hemisphere whereas positive emotions are more lateralized to the left hemisphere. In the present study, the facial expressions of right-handed college students were videotaped as they read lists of positive, negative, and neutral words. Using a graphics software program the areas of the left and right sides of the mouth of each student during emotional expressions will be measured and the relative size of the left and right sides of the mouth during positive and negative emotions compared. Preliminary results suggest that, as hypothesized, the right side of the mouth opens wider during positive emotional expressions and the left side of the mouth opens wider during negative emotional expressions.

P55-Psychology

ORAL ASYMMETRIES OF EMOTIONAL EXPRESSIONS AMONG INFANTS

Angela Battiato, Pamela Schuetze, and Howard Reid. Department of Psychology, Buffalo State College

Oral asymmetries, as a possible indicator of cerebral lateralization, are being studied in an ongoing study of spontaneous expressions of basic emotions; including happiness, sadness, fear and surprise, in 30, 12 month old infants. The facial expressions of these infants were videotaped during several scenarios designed to elicit basic emotions. The areas of the left and right sides of the mouth of each infant during positive and negative emotional expressions will be measured using a graphics software program. This program has the capability of outlining the two sides of an open mouth and providing information about the relative size of the left and right sides. Studies with adults and pilot data with children indicate the left side of the mouth opens wider in cases of spontaneous smiling and that the right side of the mouth may open wider during the expression of negative emotions. The purpose of this study is to determine if these oral asymmetries, originally observed in adults, are present among infants and young toddlers.

P56-Psychology

DO INFANTS EXHIBIT NOVELTY PREFERENCES? LOOKING-TIME DATA VS. INFANT ATTENTION Kelly Coleman, Kelly Such, Tiffany Poullos, and Donna Fisher-Thompson
Niagara University, Department of Psychology

We are concerned with examining the dynamics of infant perception via a habituation task. Previous studies have suggested that infants display a novelty response by preferring newly presented items over those previously presented. We conducted a standard infant control habituation task to measure novelty responses in 2- and 4-month-old infants. Adult faces were presented as stimuli. Looking time is typically the sole measure used to determine novelty preferences. The purpose of our present study was to explore differences in attention, affect and arousal that occurred during the task in order to better understand the looking time data. Five-point rating scales were developed to assess the attention, affect, and arousal of the infants every 10 seconds. The attention scale ranged from no visual orientation (1) to focused attention (5). Affect was scored by judging the infant to be crying (1), fussy, content, happy, or excited (5). Arousal scores ranged from asleep (1) to very active (5). Our data suggest that looking-time may be an insufficient measure of novelty preferences for some infants.

P57-Psychology

INDIVIDUAL DIFFERENCES IN NOVELTY PREFERENCE AMONG INFANTS
Alicia Doerflinger, Sarah Drasgow, Patti Lynch, Kalyani Santher, and Donna Fisher-Thompson
Niagara University, Department of Psychology

The present study examined preferences for familiar and novel stimuli in 4- to 6-month-old infants. Stimuli consisted of 12 men and 13 women photographed from high-school formal yearbook pictures. One woman's face was chosen as the familiar stimulus. Her face was presented to the infant on both the left and right side of a television screen for the first trial. In each of the following 48 trials, the familiar face was presented with one novel face. Two presentation formats were used. For the fixed-format, each trial lasted 10 seconds. For the infant-control format, trials did not begin until the baby looked at the monitor. The data reflect individual differences in attention, measured using looking times, and in distribution patterns, measured using direction of looks. Graphic displays of preferences for the novel face and directional shifts between the novel and familiar stimuli will be presented for each infant.

P58-Psychology

SELF-IDENTITY AND SELF-ESTEEM: A LITERATURE REVIEW OF TWIN STUDIES Janice L. Harvey, Timothy M. Osberg. Department of Psychology, Niagara University

Self-identity and self-esteem in twins was examined through a literature review. Twenty-six studies published from 1977 through 1995 provided the data allowing a comparison of monozygotic and dizygotic twins' self-identity development using various measures of personality. Past research included controlled studies as well as case reports providing an in-depth analysis of twin pairs' development of self-identity and self-esteem. The results from these studies suggest that sharing mother's attention, the constant presence of a twin the same age, and treatment as a unit (as opposed to being treated as an individual), were major factors in development of self-identity and self-esteem. The present review is timely in that instances of multiple births have increased significantly over the last several years. The collective conclusions drawn from the past research included in this review suggests that we have much to learn in understanding the effects of twinship on the development of self-concept.
poster: Clinical Psychology-Poster

P59-Psychology

THE EFFECTS OF MOOD ON CHILDREN'S PERFORMANCE ON PROBLEM-SOLVING TASKS

Amy Cariseo, Jenna Cotten & Nancy Rader, PhD & Research Team 4
Ithaca College, Psychology Department

This study was designed to investigate whether children's mood influences their performance on a task. Previous research has suggested that inducing a certain mood in adults influences their performance on cognitive tasks. It is hypothesized that children in a negative mood will have lower performance on the task than children in a more positive mood. Subjects in this study are being asked to listen to a story on an audio tape and to read along. The story being used contains both happy and sad components, used to induce the desired mood. Half the subjects will hear the book's happy ending before completing a block task, therefore doing so in a positive mood. The other subjects will complete the block task without having heard the happy ending of the story, therefore completing the block task in a more negative mood. The task being used is the block design subtest of the WISC. Mood is being measured by a facial affective scale. All children being tested are between the ages of 5 and 7 years of age. In addition to mood, we will also be looking at age and gender variables on task performance.

P60-Psychology THE INFLUENCE OF PRINT SIZE ON THE STROOP

EFFECT Beth Robinson, Dr. Howard C. Berthold. Psychology Department, Lycoming College.

The influence of print size on the Stroop effect was examined. Participants were 15 psychology students from a Sensory Experimental Psychology class. Each person was presented with two lists of color words, with one list being small print size, and the other large print. Each list contained 25 words. The words were the same on both lists, but in a different order. Results are discussed in relation to other recent studies on print size.

P61-Psychology PERSPECTIVE SHIFTING AND NARRATIVE READING

Laurie Hower, Dr. Howard C. Berthold. Psychology Department, Lycoming College.

The ability of readers to switch perspectives was examined by comparing the reading times of consistent and inconsistent information in narrative passages. Subjects were 20 introductory and educational psychology students who were given extra credit for their involvement. A total of twenty consistent and inconsistent passages were presented in a predetermined order, by lines, on a computer screen. Times for each line were recorded.

As predicted, participants read the inconsistent information slower than the consistent information. These results add support to the claim that readers naturally take an omniscient point of view while reading narrative text and that readers are able to easily switch perspectives while reading the text.

P62-Psychology

AN INITIAL INVESTIGATION INTO THE EFFECTS OF FLEETING, PERIPHERAL EYE CONTACT

Michael Holmes, Adrienne Hill, Deanna Weidenhammer, & Michelle Johnson,
Dr. Howard C. Berthold. Psychology Department, Lycoming College

Have you ever had the feeling that someone has just glanced at you, and, upon reorienting your attention, confirmed your perception? Humans seem to be especially sensitive to eye contact, perhaps due to a heightened sensitivity to eyes as compared to other facial features. The researchers set out to find experimental support for this phenomenon and offer some explanations of the mechanisms involved. We hypothesized that eye contact would be detected more often and with greater accuracy than the presence or absence of two other facial features when displayed rapidly and parafoveally. Participants were shown 6 photographs, each depicting one varied facial feature. The photographs were presented in the periphery of the left visual field at subthreshold durations by means of a tachistoscope. Possible explanations for the phenomenon are offered.

P63-Teaching

LESSONS IN MOLECULAR BIOLOGY (L.I.M.B.) FOR SECONDARY EDUCATION

Cynthia Degan, Robert Gibb, Steve Luke, Kim Reimels, Mark Gallo. Department of Biology,
Niagara University

We have developed a mobile biotechnology laboratory unit (molecular biology in a box). These exercises include hands-on, group-based activities. The value of this project includes the following:

- 1.To create a traveling biotechnology laboratory.
- 2.Increase student knowledge of biotechnology.
- 3.Facilitate New York State Regents performance assessment for biology and chemistry.
- 4.Increase student awareness of science.
- 5.Increase student awareness of career options.
- 6.Provide service learning opportunities for the Niagara University participants.
- 7.Provide a forum for education majors to practice teaching and hone their skills.
- 8.Provide continuing education to current teachers in the field.
- 9.Increase Niagara University's involvement with the community.
- 10.Provide High School teachers and students with a pro-active experiential learning medium.

1998 ECSC Conference Participants

Buffalo State College		*faculty	Sion	Katy	P16
Battiato	Angie	P55	Skaldanowski	Julie	P53
Bousman	Kenneth	I7	Staniszewski	Greg	E1,P53
Kirkendall	Abbie	P54	Stanton	Amy	P53
Lewis	Audra	F2	VandeVen	Tom	P12
MacKenzie	Stacy	F1	Walawender	Kara	E1
Schuetze*	Pamela	F1, F2,P54,P55	Wirth	Katie	P52
Swartz	Derrick	P46	Zilgme	Susan	P52
Yelen	Cathy	I6, I7,P46	Central Connecticut State University		
Canisius College			Balanda	Matt	A3,P30
Allen	Sara	P1	Bentley	Simone	
Aronica*	Susan	P4	Carruthers	Edward	C3
Barnes	Jennifer	P52	Carter*	Douglas	P18
Block*	AnneMarie	P7, P8	Castillo	Alex	A2
Brandon	Latanya	P2	Clarke	Lesa	
Calabrese	Tanya	P52	Clarke	Cindy	
Dean	Sarah	P9	Cohen	Sarah	P18
Dehn*	Paula	P1,P10	Davison	Barbara	D2
Dolan	Anthony	P13	DiMaio	Francis	
Dorsaneo	Danielle	P3	Dinieilli	Jayson	
Dozier	Askia	P4	Ellis	Megan	A4
Filipink	Robyn	P4	Florian	Heidi	
Gallagher	Patrick	P11	Ford	Chiffon	
Grebenok*	Robert	P9,P34	Foss	Andrew	A4
Hanson	Barbara	P6	Gazzillo	Rachael	
Hartel	Donald	E1	Halkin*	Sylvia	C3
Heimback	Cathy	P52	Hancock	Jim	A3
Huntley	Edward	P34	Hevner	Scott	C2
Kader	Michael	P9	Higgins	Amy	
Kraft	Casey	P9	Jamieson	Daniel	I8,P51
Lankes	Heather	P7	Johnson	Keith	H3
Larkin*	Judy	P52,P53	Kapper*	Martin	
Lein*	Pamela	P3,P9,P11	Keppler	Chris	
Miecznikowski	Jeffrey	P14	King*	Thomas	A1, A2, A3, A4, C3
Moore	Michael	P8	Krakowiat	Izabela	
Nagasawa	Hiroko	P3	Lanza	James	C2, H3
Ohnmeiss*	Tom	P34	Lauza	James	
Page	Melissa		Logosz	Mario	
Pines*	Harvey	P52,P53	Loman	Jeannette	
Podebryi	Maria	P6	Martin-Troy*	Kathy	P30
Posa	Stephanie	E1	Moore	Pat	
Ptak	Jeremy	P6	Murcko	Susan	A4
Ramsdell	Robert	P9	Mutcherson	Raye	A2
Schauss	Benjamin	P8	Nelson	Brenna	
Schneegold	Jennifer	P52	Okraska	Susan	
Shea	John	P10	Papacs	Laurie	P30
Sheets*	Dave	P14	Paternostro	Antonio	
Simpson	Sean	P15	Pawlak	Gerald	
Pevac	Sanja				

Pillar	Stacie		Scheibe*	Cyndy	
Prior	Amy		Shoenfeld	Linda	B8
Rescigno	April		Smith	April	F8
Rosado	Daisy		Sundar	Pavitra	F7,F8
Rule	Michael	A4	Valentine	Lisa	E8
Sledel	Heather		Wilson	Scott	L5
Smilnak	Christina	P30	Wimer	Dave	G1, G2, G4
St Pierre	Amy		Youst	Shannon	E6
Strole	Sharla	A3,P30	Yurekli*	Osman	L5
Thoma	Christy	P18	Yurekli	Fuat	
Traber	Justina		John Carroll University		
Troy*	Robert		Arnold	Thomas	B1
Valdes-Brito	Xavier		Damico	Nicole	
Vieira	Tammy		Desser	Dana	P26
Wagner	Brian		Evans	James	H1
Watson*	Cheryl		Murphy*	Helen	B1, B2, H1,P26
Webber	Amy	A1	Tarantina	Carrie	B2
Witt	Daniel	H3	Valent	Jason	H1
College of Our Lady of the Elms			Wideman*	Cyrilla	B1, B2, H1,P26
Alves	Christina	B4,P23	Lycoming College		
Duffy	Julie		Berthold*	Howard	H4, H5, H6,P60,P61,P62
Guertin	Catharine	P23	Eisner	Rebecca	
Proctor	Krista	B3	Hill	Adrianne	P62
Rzasa	Beata	P22	Holmes	Michael	P62
Wright*	Sr. Mary	B3, B4,P22,P23	Hower	Laurie	P61
Ithaca College			Johnson	Michelle	H5,P62
Blair	Jaime	D1	Morgan	Amanda	H4
Breen	Bill	G1, G2, G4	Robinson	Beth	P60
Cariseo	Amy	P59	Spigelmeyer	Kelly	H6
Carvell	Ariana		Weatherill	Crystal	A9,P35
Coate	Brian	E8	Manhattan College		
Cotten	Jenna	P59	Campodonico	Luis	A8
Cutting	Shawna	E8	Doan	Thao	J3
DeVilliers	Alyssa		Evans*	Lance	
Dimeglio	Stephanie	E7	Feliciano	Joseph	D5
Doiron	Bill	G1, G2, G4	Frenz	Christopher	D6
Gilgur	Stella	F6	Haley*	James	
Hardwick*	Jean	B8	Lolanaco	Keir	C8
Knauf	Kate	E8	Miravite	Robert	B11
Kristoff	Tina	A12	Mortimer	Kerryn	A7
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