1947 – 1999

53rd Annual

Eastern Colleges Science Conference

Sacred Heart University
Fairfield, Connecticut
April 23 & 24, 1999

SACRED HEART UNIVERSITY

Welcome, participants of the 1999 ECSC!

It is with great pleasure that we welcome you to our University. Our thanks to the ECSC committee for selecting SHU as the host site of this 53rd celebration of undergraduate research.

To the student presenters: we wish you every success! More importantly, we encourage you to relax and enjoy this day, as it represents the culmination of all of your hard work and an opportunity to appreciate your achievements and those of your colleagues. We are available to help you in any way during your visit.

To the faculty mentors: thank you for the support and encouragement you have provided to these talented undergraduates. We share your commitment to this essential component of the learning experience.

Best wishes and congratulations on your accomplishments,

Babu George, Ph.D.

Shannon E. Brightman, Ph.D.

ECSC 1999
Schedule of Activities

Friday, April 23

Registration and Social — 6:00 – 9:00 pm
Academic Center, Old Gymnasium

Saturday, April 24

Late Registration and Continental Breakfast — 7:45 – 8:50 am
Academic Center, Old Gymnasium

Welcome and Orientation — 8:20 – 8:40 am
Academic Center, Old Gymnasium

Student Presentations — 9:00 – 12:00 pm
Academic Center

Lunch — 12:15 – 1:30 pm
Academic Center, Old Gymnasium

Speaker: *Mary Virginia Ornu, OSU*
Professor of Chemistry, College of New Rochelle
"Case Histories in Drug Discovery: Defeating and Controlling Disease"

Poster Session I — 1:40 – 2:30 pm
Academic Center, Old Gymnasium

Poster Session II — 2:30 – 3:20 pm
Academic Center, Old Gymnasium

Faculty Meeting — 2:15 – 2:45 pm
Academic Center, Mahogany Room

Student Presentations — 3:20 – 5:20 pm
Academic Center

Banquet and Awards Presentation — 7:00 – 11:00 pm
Sante's Manor, Milford CT

Presentation Schedule Overview

Platform Presentations

Session A	Physical and Analytical Chemistry	Rm. HC106	9:00 am – 12:00 pm 3:20 pm – 4:20 pm
Session B	Biochemistry	Rm. HC106	4:20 pm – 5:20 pm
Session C	Science Education, Sociology and Economics	Rm. HC107	9:00 am – 10:20 am
Session D	Organic Chemistry	Rm. HC107	10:40 am – 12:00 pm 3:20 pm – 5:20 pm
Session E	Environmental Science, Ecology and Animal Behavior	Rm. HC217	9:00 am – 11:40 am
Session F	Geoscience, Physics and Computer Science	Rm. HC217	3:20 – 5:20 pm
Session G	Cell Biology	Rm. SC203	9:00 am – 11:40 am
Session H	Molecular Biology and Genetics	Rm. SC203	3:20 – 5:00 pm
Session I	Physiology	Rm. SC202	9:00 am – 11:40 am
Session J	Organismal Biology	Rm. SC202	3:20 – 5:20 pm
Session K	Neuropsychology and Learning	Rm. SC105	9:00 am – 11:20 am
Session L	Social and Developmental Psychology	Rm. SC105	3:20 pm – 5:20 pm

Poster Sessions

Session I	Odd Numbered Posters Only	Old Gymnasium	1:40 pm – 2:30 pm
Session II	Even Numbered Posters Only	Old Gymnasium	2:30 pm – 3:20 pm

Poster Categories/Abstract Numbers

Psychology	P1 – P6	Biology	P23 – P38
Mathematics	P7	Physiology	P39 – P42
Computer Science	P8	Molecular/Genetics	P43 – P59
Geoscience	P9 – P11	Biochemistry	P60 – P62
Environmental Science	P12 – P17	Chemistry	P63 – P70
Ecology	P18 – P22		

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 for the conference was "Science, Philosophy and Society."

The constitution of 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 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 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 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 this 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

1948 **Union College**
Schenectady, NY

1949 **Adelphi College**
Garden City, MY

1950 **Bernard College**
New York, NY

1951 **Yale University**
New Haven, CT

1952 **Penn. College for Women**
Pittsburgh, PA

1953 **N.Y. State College for Teachers**
Albany, NY

1954 **Brooklyn College**
Brooklyn, NY

1955 **Seton Hall University**
South Orange, NJ

1956 **Temple University**
Philadelphia, PA

1957 **Georgetown University**
Washington, DC

1958 **Wilkes College**
Wilkes-Barre, PA

1959 **Suffolk University**
Boston, MA

1960 **Hunter College**
New York, NY

1961 **SUNY College of Forestry**
Syracuse, NY

1962 **North Carolina State College**
Raleigh, NC

1963 **Boston University**
Chestnut Hill, MA

1964 **Jersey City State College**
Jersey City, NJ

1965 **Danbury State College**
Danbury, CT

1966 **D.C. Teachers College**
Washington, DC

1967 **Fordham University**
New York, NY

1968 **Yale University**
New Haven, CT

1969 **Yale University**
New Haven, CT

1970 **Wilkes College**
Wilkes-Barre, PA

1971 **Rosary Hill College**
Buffalo, NY

1972 **U.S. Military Academy**
West Point, NY

1973 **Penn. State University**
University Park, PA

1974 **Worcester Polytechnic Institute**
Worcester, MA

1975 **Widener College**
Chester, PA

1976 **Rhode Island College**
Providence, RI

1977 **Fairicigh Dickenson University**
Rutherford, NJ

1978 **Union College**
Schenectady, MY

1979 **Wilson College**
Chambersburg, PA

1980 **SUNY at Cortland**
Cortland, NY

1981 **Jersey City State College**
Jersey City, NJ

1982 **Lycoming College**
Williamsport, PA

1983 **Wilkes College**
Wilkes-Barre, PA

1984 **Providence College**
Providence, RI

1985 **SUNY at Fredonia**
Fredonia, NY

1986 **Duquesne University**
Pittsburgh, PA

1997 **Lycoming College**
Williamsport, PA

1988 **Ithaca College**
Ithaca, NY

1989 **United States Military Academy**
West Point, NY

1990 **Manhattan College**
New York, NY

1991 **SUNY at Fredonia**
Fredonia, NY

1992 **United States Naval Academy**
Annapolis, MD

1993 **Central Connecticut State University**
New Britain, CT

1994 **Duquesne University**
Pittsburgh, PA

1995 **Ithaca College**
Ithaca, NY

1996 **Lycoming College**
Williamsport, PA

1997 **Central Connecticut State University**
New Britain, CT

1998 **Niagara University**
Niagara University, NY

Papers Submitted for Review

Joseph L. Carino John Carroll University	"Role of Vasopressin in Long Term Preferences of Splenda and Sucrose during Food Restricted and *Ad-Libitum* Conditions"
Thao Doan College of Mount Saint Vincent	"Alterations in Cyclic AMP Levels in Cultured Astrocytes Induced By Exogenously Added Myelin Membranes"
Colleen Doherty Providence College	"A Study of Mass Allocation in Lepidoptera and its Implications for a Load Index"
Jill D. Fadia Ithaca College	"The Effect of Gestures on the Acquisition of a Second Language"
Christopher M. Frenz Manhattan College	"Lignified Xylem Cells and Stress Resistance in *Opuntia Laevis* Cladode Joints."
Adam Hantman Providence College	"Binding Partners of the α-Dystrobrevin Carboxy Terminal Domain"
Mike Hasman John Carroll University	"Examination of Calcium Handling Proteins in Left Ventricular Remodeling Patients"
Rebecca Hoover Lycoming College	"Academic Achievement: A Study of Gender and Seating Position in the College Classroom"
Jared Kostka Rhode Island College	"The Effects of CTAX and SDS Micelles on the Acid Ionization Constants of 1 and 2-Naphthoic Acid"
Marigrace D. Lim Manhattan College	"Injuries to Tall, Long-Lived Columnar Cacti: Implications of UV-B Exposure"
April M. Smith Ithaca College	"Early Behavior on the Visual Cliff as a Predictor of Later Spontaneity and Shyness in Social Environments"

SCHEDULE OF PLATFORM PRESENTATIONS

PHYSICAL AND ANALYTICAL CHEMISTRY

Session A	Room HC106	School/Abstract #:
9:00 am	**DETERMINATION OF CHARGE TRANSFER RATE CONSTANTS FOR RUTHENIUM CLUSTERS** Melissa Hooper, Dr. Mary Schreiner	Niagara University A1
9:20 am	**THE EFFECT OF PRIMARY AND SECONDARY AMINE COMPOUNDS ON COPPER IN A HIGHLY CORROSIVE MEDIA** Kingsley Gwei and M.O. Iwunze	Morgan State University A2
9:40 am	**METHODOLOGY FOR VOLATILE ORGANIC COMPOUND DETERMINATION IN WATER** David Wolford, Mary M. Schreiner	Niagara University A3
10:00 am	**GC/MS ANALYSIS OF UV ABSORBERS IN SUNSCREEN PRODUCTS.** Shawn Kennedy, J. Booney, J. Asoka	Monmouth University A4
10:20 am	**Break**	
10:40 am	**ROTATIONAL DYNAMICS OF CETYLBENEZETHONIUM CHLORIDE** Jerainne M. Johnson and M.O. Iwunze	Morgan State University A5
11:00 am	**QUANTITATIVE ANALYSIS OF ACTIVE INGREDIENTS IN COMMERCIAL SUNSCREEN PRODUCTS BY UV-VIS AND HPLC.** Paulo Borges, J. Booney, J. Asoka	Monmouth University A6
11:20 am	**A COMPARISON OF THE SOLUBILITY OF PYRENE IN AQUEOUS MICELLAR SOLUTIONS.** Rachel Mohammed, M.O. Iwunze	Morgan State University A7
11:40 am	**SOLID PHASE MICRO EXTRACTIONS (SPME)AND GC/MS ANALYSIS OF VOLATILE COMPONENTS IN GASOLINE, ARSON SAMPLE, AND SOIL.** M. Principe, J. Asoka	Monmouth University A8
3:20 pm	**THE FLUOROMETRIC ANALYSIS OF BERBERINE HYDROCHLORIDE IMMOBILIZED IN SOL-GEL GLASS** Bolanle Sosanya and M.O. Iwunze	Morgan State University A9
3:40 pm	**LOW-SYMMETRY SUBPHTHALOCYANINES: SYNTHESIS, STRUCTURE, SPECTROSCOPY AND ELECTROCHEMISTRY.** Richard J. Potucek, Jay R. Stork, Philip J. Farris, Jr., Bruce C. Noll*, and William S. Durfee	Buffalo State College A10
4:00 pm	**ELECTROCHEMISTRY OF SULFANILAMIDE AT CARBON GLASSY ELECTRODE.** Tyan Frazier and M.O. Iwunze	Morgan State University A11

BIOCHEMISTRY

Session B	Room HC106	School/Abstract #:
4:20 pm	**ANALYSIS OF CRAYFISH METALLOTHIONEIN BY REVERSE PHASE HIGH PRESSURE LIQUID CHROMATOGRAPHY** Bryan Gargano, Ruth Steward, Mary M. Schreiner	Niagara University B1
4:40 pm	**ANALYSIS OF HEAVY METALS IN CRAYFISH BY DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRY** Todd Janicki, A. Ruth Steward, Mary Schreiner	Niagara University B2
5:00 pm	**DETERMINATION OF ARSENIC LEVELS IN CRAYFISH USING DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRY.** Corey Romesser, A. Ruth Steward, Mary Shreiner	Niagara University B3

SCIENCE EDUCATION, SOCIOLOGY AND ECONOMICS

Session C	Room HC107	School/Abstract #:
9:00 am	**BIOTECHNOLOGY EDUCATION IN THE ADVANCED PLACEMENT CLASSROOM** Kerry Fein and Mark Gallo	Niagara University C1
9:20 am	**MULTIMEDIA TUTORIALS IN PHYSICS INSTRUCTION** Michelle Fura	Ithaca College C2
9:40 am	**CAPITAL PUNISHMENT AND THE FACTORS THAT AFFECT MEN AND WOMEN HOMICIDE OFFENDERS: CAPITAL SENTENCING AND EXECUTION** Christine E. Gerke and Dr. John Esser	Wagner College C3
10:00 am	**WALKING ZOMBIES: THE CASE OF JAPANESE BANKS** Yvonne Arsenault, Meghan Murray, Alyssa Nadeau Advisor: Manolis Kaparakis	Providence College C4
10:20 am	**Break**	

ORGANIC CHEMISTRY

Session D	Room HC107	School/Abstract #:
10:40 am	**MACROCYCLIC COMPLEXES OF BORON: SUBTRIAZAPORPHYRINS** Jay R. Stork, Richard J. Potucek, Bruce C. Noll*, and William S. Durfee	Buffalo State College D1
11:00 am	**METALATION REACTION OF 3,5-DICHLORO-N-ETHYLBENZAMIDE** Patricia Fitzgerald, Dr. Lynn Bradley, and Dr. David Hunt	The College of New Jersey D2

11:20 am	**SYNTHESIS AND REACTIONS OF 1-HALO-1,4-DIHYDRO-1,4-EPOXYNAPHTHALENES** Michael Wodjenski, Ronald Chriss and Frederick Wassmundt	Western Connecticut State University D3
11:40 am	**SYNTHESIS OF NEW THIAZOLYL AZO COMPOUNDS** David R Santamaria, M. Rietmann, J. Simonelli, M. Pantini, J. Asoka	Monmouth University D4
3:20 pm	**THE SYNTHESIS AND DECOMPOSITION OF 4-CHLOROPHENYL BORANE AMINE ADDUCTS** Andrea Applegreen and Ronald Chriss	Western Connecticut State University D5
3:40 pm	**SYNTHESIS AND STRUCTURE OF NEW TRIS(5-METHYL-3-PHENYL-PYRAZOLYL)BORATE TRANSITION METAL COMPLEXES.** Brian S. Zelakiewicz, M. Scott Goodman, William S. Durfee	Buffalo State College D6
4:00 pm	**SYNTHESIS AND ANALYSIS OF A NOVEL PLATINATED DNA BINDING AGENT** Brian V. Falcone and Dr. Georgia Arvanitis	The College of New Jersey D7
4:20 pm	**SUBSTITUENT STUDIES IN ARYL TRIAZENE CONJUGATE ADDITION REACTIONS** Brian Raudenbush, Peter Korakas, Anthony Tedesco, Dr. James Louey	Sacred Heart University D8
4:40 pm	**STUDIES AND APPLICATIONS OF THE REARRANGEMENT REACTIONS OF SILYL KETONES** Homar S. Barcena, Dr. Lynn Bradley, Dr. David Hunt	The College of New Jersey D9
5:00 pm	**INTERACTION OF POLYAROMATIC HYDROCARBONS WITH VITAMIN E.** Andrea E. Young and Dr. M. Iwunze	Morgan State University D10

ENVIRONMENTAL SCIENCE, ECOLOGY AND ANIMAL BEHAVIOR

Session E	**Room HC217**	**School/Abstract #:**
9:00 am	**BACTERIAL AIR POLLUTION FROM AERATION TANKS AT A WASTEWATER TREATMENT PLANT** Renee Brennan, Ann Smyntek, and Mark Gallo	Niagara University E1
9:20 am	**EFFECT OF TIDAL HEIGHT ON RECRUITMENT ONTO C. VIRGINICA** James Dauterman	College of Mount Saint Vincent E2
9:40 am	**ESTRUS, DOMINANCE, AND SOCIAL BEHAVIOR IN CAPTIVE FEMALE AFRICAN ELEPHANTS** Ruth Lambert and Bruce A. Schulte	Providence College E3
10:00 am	**THE RELATIVE SIGNIFICANCE OF CHEMORECEPTORS AND THE EVIDENCE FOR A "MYSTERY MECHANISM" USED FOR PREY DETECTION IN ASTEROIDS** Richard Ali	Wilkes University E4

10:20 am	**Break**	
10:40 am	**DEVELOPMENTAL CHARACTERISTICS IN THE EPHYRAL STAGES OF *CYANEA SP.* WITH RESPECT TO MORPHOLOGY AND PREY CAPTURE.** John E. Higgins III and Dr. J.H. Costello.	Providence College E5
11:00 am	**HYDROCRYPTIC FORAGING: THE PREDATOR-PREY RELATIONSHIP BETWEEN THE CTENOPHORE, MENMIOPSIS LEIDYI AND THE COPEPOD, ACARTIA TONSA** Rebecca Waggett	Providence College E6
11:20 am	**REMNANT FOREST CONSERVATION HAS A SIGNIFICANT IMPACT UPON FOREST RESTORATION** Ignudo, Sara and Jennifer Mattei	Sacred Heart University E7

GEOSCIENCES, PHYSICS AND COMPUTER SCIENCE

Session F	**Room HC217**	**School/Abstract #:**
3:20 pm	**THE EFFECTS OF EL NIÑO ON EAST COAST STORM TRACKS** Alexandra Estrella, Tim Eichler and John Knox	Marymount College F1
3:40 pm	**EBIC IMAGING OF NEAR-CONTACT ELECTRIC FIELDS IN HIGH RESISTIVITY SEMICONDUCTORS** D. R. Palmieri, J. E. Jacobs and N. M. Haegel	Fairfield University F2
4:00 pm	**IMAGING NEAR-CONTACT TRANSPORT IN SEMICONDUCTORS USING CATHODOLUMINESCENCE** K. A. Record and N. M. Haegel	Fairfield University F3
4:20 pm	**DEVELOPMENT OF A SENSITIVE SPECTOSCOPIC METHOD FOR THE STUDIES OF EXTREME WEAK ABSORPTION OF CHEMICAL SPECIES IN GAS PHASE** Daniel J. Nielsen, Sean M. McCarthy, Bert Sleicher and Biman Das.	SUNY Potsdam F4
4:40 pm	**FROBOT VS. THE MAN: AN ANIMATION IN OPENGL** Matthew Himlin and Stephen Morrissey	Wilkes University F5
5:00 pm	**SOFTWARE IMPLEMENTATION OF TELESCOPE TRACKING** Keith Jordan and Dan Briotta	Ithaca College F6

CELL BIOLOGY

Session G	**Room SC203**	**School/Abstract #:**
9:00 am	**THE ROLE OF RETINOIC ACID RECEPTORα(RARα) AND RARγ IN OTIC CAPSULE CHONDROGENESIS** Thao Doan and Dorothy A. Frenz, Ph.D.	College of Mount Saint Vincent/Manhattan College G1
9:20 am	**EVIDENCE FOR THE CHAPERONE FUNCTION OF HSP70** Kateri Fischer and Mike Adams	Eastern Connecticut State University G2

9:40 am	**ACQUIRED STRESS TOLERANCE IN *D. DISCOIDEUM*: THE POTENTIAL ROLE OF HEAT SHOCK PROTEINS IN CYTOSKELETAL STABILIZATION** Darcie Britner, John Campolettano and Nathan Petersen.	Sacred Heart University G3
10:00 am	**ULTRASTRUCTURAL DYNAMICS ASSOCIATED WITH APOPTOTIC DEATH IN THE RWLeu4 CHRONIC MYELOGENOUS LEUKEMIA CELL LINE** Douglas Matthews and Kathleen Cornely	Providence College G4
10:20 am	**Break**	
10:40 am	**APOPTOTIC INDUCING EFFECTS OF N' AND N'N' SUBSTITUTED-N-HYDROXYUREAS** Shawn Vainio, Josef Krause, and Robert Greene	Niagara University G5
11:00 am	**PEA ROOT MERISTEM *(PISUM SATIVUM)* REPRESSION VIA HISTONE DEACETYLASE INHIBITION** Anthony D. Uglialoro, Jody P. McAleer, James J. Murphy & William A. Tramontano.	Manhattan College G6
11:20 am	**DOWNREGULATION OF PKC AND PKA ALONG WITH UPREGULATION OF DNA FRAGMENTATION ARE INDUCED BY PHOTODYNAMIC THERAPY** Robert F. Parry; Robert S. Greene	Niagara University G7

MOLECULAR BIOLOGY AND GENETICS

Session H	**Room SC203**	**School/Abstract #:**
3:20 pm	**MOLECULAR ANALYSIS OF BUTYRATE TREATED PEA ROOT MERISTEMS *(PISUM SATIVUM)*** Jody P. McAleer, Anthony D. Uglialoro, James J. Murphy and William A. Tramontano	Manhattan College H1
3:40 pm	**EVIDENCE FOR HOMOLOGOUS *M. TUBERCULOSIS* INVASIN GENE IN MYCOBACTERIA AND NOCARDIA** Balubayan, A.E., Brett, I.C., Campodonico, L.X., Maxson, M.E., Brown, S.T.	Manhattan College/College of Mt. St. Vincent H2
4:00 pm	**PCR MUTAGENESIS OF THE PI PARTITION PROTEIN PAR A I.** Higgins, Amy, Puskarsz, Isabella, Serrano,Katerina and Martin-Troy, K.	Central Connecticut State University H3
4:20 pm	**IDENTIFICATION AND CONGENIC MAPPING OF THE *Hxa* GENE COMPLEX IN MICE** Raye J. Mutcherson II, Arbella M. Baba, and Thomas R. King	Central Connecticut State University H4
4:40 pm	**GENETICS OF THE SHORN *(shn)* MUTATION IN THE RAT 1: LINKAGE TESTING ON RAT CHROMOSOMES 10 AND 15.** Emily Hall, Jessica Lathrop, and Thomas R. King.	Central Connecticut State University H5

PHYSIOLOGY

Session I	Room SC202	School/Abstract #:
9:00 am	**INFLUENCE OF IMMUNE SYSTEM ON CARDIAC REGULATION** Seth D. DePuy	Ithaca College I1
9:20 am	**EXAMINATION OF CALCIUM HANDLING PROTEINS IN LEFT VENTRICULAR REMODELING PATIENTS** Mike Hasman	John Carroll University I2
9:40 am	**THE CARDIAC ACTION POTENTLAL IS MODULATED BY TYROSINE KINASE** I.O. Krakowiak, B. L. Nelson and C.L. Watson	Central Connecticut State University I3
10:00 am	**TYROSINE KINASE ACTIVATION INCREASES HEARTBEAT VARIABILITY** B.L. Nelson, I.O. Krakowiak, C.L. Watson	Central Connecticut State University I4
10:20 am	**Break**	
10:40 am	**THE EFFECTS OF DIURNAL OR NOCTURNAL FEEDING ON LONG-EVANS RATS** Andrew Young	John Carroll University I5
11:00 am	**ACUTE INFLAMMATORY RESPONSE FOLLOWING SPINAL CORD IMPACT INJURY** Sina Shah and Sonia L. Carlson, Ph.D.	Providence College I6
11:20 am	**ROLE OF VASOPRESSIN IN LONG-TERM PREFERENCES OF SUCROSE AND SPLENDA DURING FOOD-RESTRICTED AND *AD-LIBITUM* CONDITIONS.** Joseph L. Carino	John Carroll University I7

ORGANISMAL BIOLOGY

Session J	Room SC202	School/Abstract #:
3:20 pm	**RELATIONSHIP BETWEEN PLASMA THYROXINE (T4) AND MELATONIN DURING DEVELOPMENT OF BULLFROG TADPOLES ON A 12:12 LIGHT:DARK CYCLE.** Catharine Guertin, Julie Duffy, and Mary L. Wright	Elms College J1
3:40 pm	**COMPARISON OF METAMORPHIC HORMONES IN *RANA CATESBEIANA* TADPOLES ON A 6:18 LIGHT:DARK CYCLE** Julie Duffy, Catharine Guertin, and Mary L. Wright	Elms College J2
4:00 pm	**DOES THE RISE IN T4, AT CLIMAX, CAUSE THE DECREASE IN MELATONIN?** Christina Alves, Mary L. Wright	Elms College J3

4:20 pm	**RELATIONSHIPS BETWEEN MASS OF STEM SEGMENTS AND CHARACTERISTICS OF THICK-WALLED XYLEM CELLS IN JOINTS BETWEEN STEM SEGMENTS OF *OPUNTIA BIGOLOVII AND OPUNTIA VERSICOLOR*** Elvira Liclican	Manhattan College J4
4:40 pm	**ANTIBIOTIC PROPERTIES OF PLANTS** Diana Rodriguez & Erica Kipp	Manhattan College/College of Mount Saint Vincent J5
5:00 pm	**A STUDY OF MASS ALLOCATION IN *LEPIDOPTERA* AND ITS IMPLICATION FOR A LOAD INDEX** Colleen Doherty and Rob Stevenson, PhD	Providence College J6

NEUROPSYCHOLOGY AND LEARNING

Session K	**Room SC105**	**School/Abstract #:**
9:00 am	**THE EFFECT OF EMOTION ON TASK PERFORMANCE IN 6-7 YEAR OLDS** Erin Hughes, Amy Parker, Nancy Rader and Research Team 4	Ithaca College K1
9:20 am	**A FACIAL DISCRIMINATION TASK ON THE INVERSION EFFECT** Traci L. Lutz	Lycoming College K2
9:40 am	**THE EFFECTS OF CAFFEINE ON DEPTH PERCEPTION** Michael A. Mateo, Bruno A. Sousa, Justine LaBatch and Mark Wagner	Wagner College K3
10:00 am	**LATERALIZATION OF PHONOLOGICAL WORD TASKS: GENDER AND HANDEDNESS DIFFERENCES** Heather Porter, Pavitra Sundar, Nancy Rader and the Cognition Lab	Ithaca College K4
10:20 am	**Break**	
10:40 am	**BRAIN LATERALIZATION ON RHYME AND LINE TASKS** By Jennifer Joy, Pavitra Sundar, Dr. Nancy Rader, and Cognition Lab	Ithaca College K5
11:00 am	**GROUP SIZE, EXPECTATIONS ABOUT HUMOR, AND HUMOR RESPONSES** Erin T. Fortier	Ithaca College K6

SOCIAL AND DEVELOPMENTAL PSYCHOLOGY

Session L	**Room SC105**	**School/Abstract:**
3:20 pm	**MISLEADING CLAIMS IN TV COMMERCIALS: LET THE VIEWER BEWARE** Jenny Brennan, Marnie D'Uva, Johanna Hising, Jennifer Joy, Rachel Levy, Megan Roberts, Matthew Thouin, and Amy Vavra	Ithaca College L1

3:40 pm	**INFLUENCE OF TELEVISION ON BELIEFS ABOUT DEATH AND DYING** Kate Knauf, Cynthia Smith, Emily Patrick, Debra Millstein, and Brian Coate	Ithaca College L2
4:00 pm	**A DEVELOPMENTAL STUDY OF MEDIA USE AND BODY IMAGE** Darragh Foley, Tanya Lenczewski, Kari Luehman, Carly Roper, Shannon Youst and Melissa Zappan	Ithaca College L3
4:20 pm	**A COMBINED ABA AND TEACCH APPROACH TO TEACHING COMPLEX SKILLS TO YOUNG CHILDREN WITH AUTISTIC-SPECTRUM DISABILITIES** Willoughby, Amanda R.	Marymount College L4
4:40 pm	**EARLY VISUAL CLIFF BEHAVIOR AS A PREDICTOR OF LATER SPONTANEITY** April Smith, Nancy Rader, and Research Team 4	Ithaca College L5
5:00 pm	**THE EFFECT OF GESTURES ON THE ACQUISITION OF A SECOND LANGUAGE** Jill Fadia, Nancy Rader, and Research Team 4	Ithaca College L6

Platform Presentation Abstracts

A1

DETERMINATION OF CHARGE TRANSFER RATE CONSTANTS FOR RUTHENIUM CLUSTERS

Melissa Hooper, Dr. Mary Schreiner
Niagara University

In many instances the rate of electron transfer for oxidation-reduction systems is not instantaneous but is controlled kinetically. This paper describes the implementation of a computer program to determine charge transfer rate constants for such systems. This procedure will be used to determine the charge transfer rate constants for the oxidation of interesting ruthenium cluster compounds.

A2

THE EFFECT OF PRIMARY AND SECONDARY AMINE COMPOUNDS ON COPPER IN A HIGHLY CORROSIVE MEDIA

Kingsley Gwei and M.O. Iwunze, Department of Chemistry Morgan State University, Baltimore, Maryland 21251

Copper foils were exposed to aqueous primary and secondary amines ranging in chain length with varying head group sizes. These foils were subsequently allowed to oxidize by two techniques, electrooxidation and natural oxidation both in highly corrosive media made up of KCl/HCl and K2SO4/H2SO4. Cyclic voltammetric and weight loss techniques were then used to determine the rate of oxidation of the copper foils in order to determine the protective efficacy of the amines adsorbed on the copper surface. Results so far obtained indicate that these amines have a passivating effect on the corrosive tendencies of copper and this effect is size and chain length dependent. The rates obtained by both techniques appear to be consistent within experimental error. Influence of chain length and molecular size on the protective nature of these amines will be discussed.

A3

METHODOLOGY FOR VOLATILE ORGANIC COMPOUND DETERMINATION IN WATER

David Wolford, Mary M. Schreiner
Department of Chemistry at Niagara University, NY 14109

This presentation shall discuss the fabrication of an inexpensive, relatively simple apparatus for the extraction of volatile organic compounds (VOCs). A procedure was developed based on various approved methods that were evaluated and adapted to available equipment. Efficiency of the extraction technique/apparatus was optimized for water samples through the use of prepared samples. Determination was preformed by GC-MS, using a Perkin-Elmer model 8420 GC coupled with an ion-trap detector.

A4

GC/MS ANALYSIS OF UV ABSORBERS IN SUNSCREEN PRODUCTS.

Shawn Kennedy, J. Booney, J. Asoka, Monmouth University.

Active ingredients in commercial sunscreen products were separated and identified by GC/MS. GC conditions were studied. Concentration of active ingredients were measured in SIM mode and standard curves were obtained. 2-ethylhexyl p-methoxycinnamate, oxybenzone, 2-ethylhexyl salicilate and homosalate were identified and quantified by this method. We will present a review of our methodology and usefulness of our applications.

A5

ROTATIONAL DYNAMICS OF CETYLBENEZETHONIUM CHLORIDE

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Morgan State University, Baltimore, MD 21251.

N-Cetylbenzethonium Chloride (CBC) is a double-tailed quaternary amine surfactant. It has been found to be fluorescent. However, in order, to fully characterize this surfactant its rotational dynamics is studied. The data obtained in the steady state studies enabled the determination of CBC's molecular volume and its rotational relaxation time at different viscosities. The values are 181.07 cm^3/mole and 3.20 x 10^{-10} - 6.28 x 10^{-8} s, respectively. The limiting polarization, P_o, was observed to be 0. 1747 with a partial specific volume, ν, value of 0.34 $cm^{-1}g^{-1}$.

A6

QUANTITATIVE ANALYSIS OF ACTIVE INGREDIENTS IN COMMERCIAL SUNSCREEN PRODUCTS BY UV-VIS AND HPLC.

Paulo Borges, J. Booney, J. Asoka, Monmouth University.

UV-VIS spectra of active ingredients were measured. Concentrations of active ingredients were calculated using standard curves. Active ingredients in sunscreen products were separated and quantified by reverse phase HPLC. Mobile phase and flow rate for HPLC analysis were investigated. We will present a review of our methodology and usefulness of our applications.

A7

A COMPARISON OF THE SOLUBILITY OF PYRENE IN AQUEOUS MICELLAR SOLUTIONS.

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Pyrene is one of the most widely used probe molecules for the investigation of the microenvironments of aqueous micelles, thus its solubility is of great interest. The solubility of pyrene varies for different surfactants, and its true solubility has been observed to commence at the critical micelle concentration (CMC) of the surfactant that it is being dissolved in. Both fluorometric and absorptiometric techniques have been used to show that the solubility of pyrene in neutral surfactant is less than that of its solubility in a cationic surfactant, and its solubility in a cationic surfactant is less than that of its solubility in anionic surfactant. The ratios of the third vibronic (I_3) and first vibronic (I_1) states of pyrene are used to determine its partition coefficient in micelle and water, and from this its solubility in different surfactants can be compared. The observed partition coefficient of pyrene in Brig72, CTAB, and SDS have been determined to be 0.64, 0.83, and 0.91 respectively.

A8

SOLID PHASE MICRO EXTRACTIONS (SPME)AND GC/MS ANALYSIS OF VOLATILE COMPONENTS IN GASOLINE, ARSON SAMPLE AND SOIL.

M. Principe and J. Asoka
Monmouth University

Volatile components in gasoline, Diesel, arson samples, and soil samples were analyzed using 100 micro meter polydimethylsiloxane (PDMS) coated fiber. Absorption and desorption conditions were studied. GC conditions were developed. Components were identified by their mass spectra. We will present a review of our methodology and usefulness of our applications.

A9

THE FLUOROMETRIC ANALYSIS OF BERBERINE HYDROCHLORIDE IMMOBILIZED IN SOL-GEL GLASS

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Berberine is an alkaloid derived from the plant *Beberis aristata Linn.* It has been used in the treatment of both cholera and malarial maladies. Because of its importance in therapeutic applications, a rapid means of determination and analysis is vital. However it has been observed that its potent form, the Hydrochloride form, is non fluorescent in aqueous solutions. Because fluorescence is an analytical tool that is sensitive at very low analyte concentrations, it was decided to survey its use in berberine analysis. Sol-gel glass was prepared in which berberine hydrochloride was immobilized. In this matrix, this compound exhibits very intense fluorescence spectra when excited at 382nm. Its emission spectra were observed at 521nm. The fluorescence intensity obeys the Beer-Lambert law quite well with very low detection limit and high sensitivity. Data obtained by steady state fluorescence quenching experiments defied the Stern-Volmer relationship but suggests a complexation reaction mechanism. This fact will be discussed with respect to the matrix effect.

A10

LOW-SYMMETRY SUBPHTHALOCYANINES: SYNTHESIS, STRUCTURE, SPECTROSCOPY AND ELECTROCHEMISTRY.

Richard J. Potucek, Jay R. Stork, Philip J. Farris, Jr., Bruce C. Noll*, and William S. Durfee
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*Department of Chemistry and Biochemistry, University of Colorado at Boulder,

The boron-containing subphthalocyanine (SubPc) macrocycles have recently attracted a great deal of attention because of their interesting nonlinear optical properties and their use as an unsymmetrical phthalocyanine precursors in the Kobayashi ring-expansion reaction. We have synthesized several low-symmetry SubPcs by the mixed condensation of two different orthodinitrile precursors and have examined their electronic spectroscopy and electrochemistry.

A11

ELECTROCHEMISTRY OF SULFANILAMIDE AT CARBON GLASSY ELECTRODE.

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A combination of cyclic voltammmetry (CV) and differential pulse voltammetry (DPV) was used in the electrooxidation of sulfanilamide at glassy carbon electrode at pH values ranging from 3 to 9. Square wave voltammetry was also used in the electrooxidation of this compound in a highly acidic medium. At pH values 3 to 9, this compound was observed to undergo a $2e^-/H^+$ irreversible process. In the highly acidic medium, perchloric acid, it was observed to undergo a $2e^-/2H^+$ irreversible, EC, electrochemical-chemical process. The observed charge transfer rate constant was 3.10×10^{-5} cm/s with a diffusion coefficient of 8.08×10^{-6} cm^2/s . Both the electron transfer coefficient, α, (.33) and current function, $I_p/v^{1/2}$, were pH independent. These factors together with other diagnostic criteria were used to determine the kinetics and mechanism of the electrode process.

B1

ANALYSIS OF CRAYFISH METALLOTHIONEIN BY REVERSE PHASE HIGH PRESSURE LIQUID CHROMATOGRAPHY

Bryan Gargano, Ruth Steward, Mary M. Schreiner
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Metallothioneins are ubiquitous, cystein rich, low molecular weight proteins. They have been extensively studied for their roles in detoxification and metal biochemistry, with some recent interest in their potential as bio-markers. *Orconectus immunis* crayfish were exposed to differing concentrations of Cd, As, Ni, Cu, Fe, and Pb to elucidate the potential for the usage of this organism's metallothionein levels as a bio-marker. Analysis was done by reverse phase high pressure liquid chromatography on a C18 column, with a detector at 254 nm. The samples used were heat treated cytosol from the digestive track of the crayfish.

B2

ANALYSIS OF HEAVY METALS IN CRAYFISH BY DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRY

Todd Janicki, A. Ruth Steward, Mary Schreiner
Department of Chemistry - Niagara University

Toxic heavy metals are widely found in sediments at hazardous waste sites and in the biota that live in those sediments. As part of a larger project to explore the use of metallothionein, a protein induced by metals, as a biomarker of environmental contamination, techniques were developed to use differential pulse anodic stripping voltammetry to determine the concentrations of cadmium, lead, and copper in the muscle and digestive tissues of the crayfish *Orconectus Immunis.* Determined were the proper conditions for the deposition and maintenance of a thin film of metallic mercury on the surface of the electrode as well as proper analysis procedures. These were necessarily adapted for the analysis of digested crayfish tissues. These tissues are complex systems containing many compounds which complicate the analysis and requires different conditions than the analysis of metals in water systems.

B3

DETERMINATION OF ARSENIC LEVELS IN CRAYFISH USING DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRY.

Corey Romesser, A. Ruth Steward, Mary Shreiner
Department of Chemistry, Niagara University.

Arsenic is a toxic heavy metal that is often found in many contaminated environmental systems, including the sediments of lakes, ponds, and rivers where crayfish are often present. *Orconectus immunis* were dosed over a five day period with 50, 100, and 200 ppb of arsenic. The midgut and muscle tissue of the tail were removed, digested and analyzed to determine the concentrations of As within these tissues and compare them to the concentrations in control samples. The analysis of the metal was done using differential pulse anodic stripping voltammetry with a gold working electrode. Optimum conditions for the analysis of trace arsenic levels in digested crayfish samples were determined.. Results of tissue analyses will be presented.

C1

BIOTECHNOLOGY EDUCATION IN THE ADVANCED PLACEMENT CLASSROOM

Kerry Fein and Mark Gallo
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Niagara University

The L.I.M.B. (Lessons In Molecular Biology) project has been expanded with the addition of new modules involving the green flourescent protein, GFP, and the assessment of the knowledge of the high school students concerning biotechnology both before and after participating in the project. This project involves integrating biotechnology laboratories into the high school Advanced Placement Biology classroom. The techniques used in the classrooms have also become part of a website developed for the interactive discovery and learning of biotechnology techniques.

C2

MULTIMEDIA TUTORIALS IN PHYSICS INSTRUCTION

Michelle Fura
Ithaca College Physics Department

Courses in physics are generally looked upon as difficult, and many people find the study of physics intimidating. The project I intend to discuss involves the design and development of computer-based animations intended to illustrate basic, introductory physics principles to students. These multimedia physics tutorials focus on two particular courses, physics of sound and non-calculus introductory physics. They create an interactive environment which engages the user. My presentation will involve a general discussion of the tutorials, a demonstration of several tutorials, and a discussion of student feedback regarding these tutorials and their usefulness.

C3

CAPITAL PUNISHMENT AND THE FACTORS THAT AFFECT MEN AND WOMEN HOMICIDE OFFENDERS: CAPITAL SENTENCING AND EXECUTION

Christine E. Gerke and Dr. John Esser (Department of Sociology), Wagner College

Men and women being treated differently has always been an issue, but what about when it comes to the men and women on death row? There are many concerns about women being treated unfairly when it comes to capital sentencing, but more leniently when it comes to execution. Since 1976, when the U.S. Supreme Court reinstated the death penalty, there have only been three women executed compared to more than 500 men that have been executed. The main question that needs to be addressed is how can one explain why there have been so few women executed and does gender discrimination play a role in not executing women? There are many other factors such as race, geography, and class, which have lead people to believe that capital punishment is discriminating to certain people. In order to address such sensitive issues as discrimination and capital punishment all three factors race, geography, and class must be evaluated. Then one must ask if these factors can help explain why so few women are on death row and even fewer women are executed?

C4

WALKING ZOMBIES: THE CASE OF JAPANESE BANKS

Yvonne Arsenault, Meghan Murray, Alyssa Nadeau Advisor: Manolis Kaparakis
Providence College

In recent years, the health of Japanese banks has been a source of concern not only in Japan, but throughout the world. Japan is the second largest economy in the world and the Japanese banking system is a major and integral player in the international financial system. The downturn of Japanese banks began with the burst of the "bubble" economy of the 1980s and the subsequent fall of stock and real estate prices. The downturn reached a "crisis" status in 1995 with the bankruptcy of several major Japanese financial institutions. The lack of early action by government officials and the recent collapse of real estate markets in Indonesia, Thailand and other Asian economies, exacerbated the problem. Major Japanese banks would have gone out of business if it were not for the government assuring depositors that their "money was safe". In this paper we explore the causes behind the problem and analyze and evaluate proposed corrective measures.

D1

MACROCYCLIC COMPLEXES OF BORON: SUBTRIAZAPORPHYRINS.

Jay R. Stork, Richard J. Potucek, Bruce C. Noll*, and William S. Durfee
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The boron-containing subphthalocyanine (SubPc) macrocycles have recently attracted attention as nonlinear optical materials. Only a few of the related subtriazaporphyrin macrocycles, derived from the template cyclization of cis-dicyanoalkenes, have been reported. We have synthesized a number of new subtriazaporphyrins and in several cases determined their crystal structures. Preliminary studies indicate that some of these new compounds show very efficient fluorescence following two-photon excitation.

D2

METALATION REACTION OF 3,5-DICHLORO-N-ETHYLBENZAMIDE

Patricia Fitzgerald, Dr. Lynn Bradley, and Dr. David Hunt
The College of New Jersey

The metalation reaction of 3,5-dichloro-N-ethylbenzamide was compared with that of 3,5-dichloro-N,N-diethylbenzamide in order to study the regioselectivity and steric effects of the functional groups. The substituted 3,5-dichlorobenzamides were synthesized by reacting the appropriate benzamide with a base, such as sec-butyllithium, followed by the electrophile, benzyl bromide. Solvent effects, reaction times, and reaction temperatures were also evaluated. All the products were characterized by thin-layer chromatography (TLC), Varian Gemini 30OMHz Proton Nuclear Magnetic Resonance (1H-NMR), and Perkin Elmer 2000 Fourier Transform Infrared Spectrometer (IR).

D3

SYNTHESIS AND REACTIONS OF 1-HALO-1,4-DIHYDRO-1,4-EPOXYNAPHTHALENES

Michael Wodjenski, Ronald Chriss and Frederick Wassmundt
Western Connecticut State University

Previous studies of bicyclic α-haloethers (1-bromo-7-oxabicyclo[2.2.1] heptane and derivatives) have shown that they exhibit an unusual lack of reactivity to nucleophilic substitution at the bridgehead site due to their restrictive geometry. Reactions of the SN1 type were not observed because planar carbocations could not be formed due to the angular requirements of the bicyclic system. Reactions of the SN2 type were not observed because the backside attack associated with an SN2 reaction was precluded by the steric hindrance provided by the bridgehead system.

The present study involved the synthesis and reactions of 1-bromo-1,4-dihyro-1,4-epoxynaphthalene and 1-iodo-1,4-dihydrodo-1,4-epoxynaphthalene. The present research involving naphthalene derivatives was significant because it extended the study to include compounds containing a halogen atom at a benzylic position. This new factor was expected to add a measure of reactivity to the bicyclic system.

D4

SYNTHESIS OF NEW THIAZOLYL AZO COMPOUNDS.

David R. Santamaria, M. Rietmann, J. Simonelli, M. Pantini and J. Asoka
Monmouth University

Thiazolylazo compounds have attracted much attention as analytical reagents owing to the high sensitivity and selectivity. Five new thiozolylazo compounds were synthesized by diazotization and azo coupling reactions. The dissociation constants were calculated by a spectrophotometric method. Nitrite was analyzed by UV/Vis spectroscopy. The detection limit of N in water is below 1ppm.

D5

THE SYNTHESIS AND DECOMPOSITION OF 4-CHLOROPHENYL BORANE AMINE ADDUCTS Andrea Applegreen and Ronald Chriss
Western Connecticut State University

Previous studies have suggested that aromatic boranes may be useful as reagents for the quantitative determination of toxic amines. These boranes form stable 1:1 addition products with amines. Reaction of these addition products with methanolic hydrochloric acid generates a stoichiometric quantity of hydrogen gas which can be easily measured. This study examined the feasibility of using 4-chlorophenyl borane as the trapping agent for the toxic amines and complemented previous studies which employed furyl borane, thienyl borane and phenyl borane. This study differed from the previous efforts in the fact that the aromatic ring was deactivated by the presence of an electron withdrawing group (Cl) and contrasted with earlier studies which employed activated aromatic rings.

D6

SYNTHESIS AND STRUCTURE OF NEW TRIS(5-METHYL-3-PHENYL-PYRAZOLYL)BORATE TRANSITION METAL COMPLEXES.

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The tridentate ligand, potassium tris(5-methyl-3-phenylpyrazolyl)borate (L), was synthesized from 3(5)-methyl-5(3)-phenylpyrazole (3-Me-5-Phpyz) and potassium borohydride. Purification by precipitation of the Cu(I) complex from acetonitrile resulted in pure samples of the ligand. Single crystal structure determination of the Cu(I) complex showed this to be a tetrahedral LCu•CH3CN complex with the coordinated acetonitrile filling the cleft formed by the three phenyl groups of L. Attempts to produce the Co(11) complex resulted in crystallization of an unusual 5-coordinate Co complex of the pyrazolylborate ligand and a pair of 5-methyl-3-phenylpyrazole ligands [LCo(3-Me-5-Phpyz)2]. Similarly, attempts to form the Ni(II) complex resulted in coordination by a single tris(pyrazolyl)borate ligand, a 5-methyl-3-phenylpyrazole, and a chloride [LNi(3-Me-5-Phpyz)Cl]. Electrochemical and NMR studies were also performed.

D7

SYNTHESIS AND ANALYSIS OF A NOVEL PLATINATED DNA BINDING AGENT

Brian V. Falcone and Dr. Georgia Arvanitis
The College of New Jersey

The active moieties of cisplatin [cis-diamminedichloroplatinum(li)] ana pentamidine [1,5-bis(4'-diamidinophenoxy)pentane] have been combined in a stoichometric compound as a representative of a new class of DNA binding agents. The DNA binding ability of this molecule was analyzed using UV thermal melt studies and was compared to that of the parent compounds. All intermediates and products were characterized using a combination of GC-MS, 1H-NMR, 13C-NMR, and 195Pt-NMR.

D8

SUBSTITUENT STUDIES IN ARYL TRIAZENE CONJUGATE ADDITION REACTIONS

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A series of substituted aryl triazenes (ortho, meta, and para) have been prepared and reacted with methyl vinyl ketone (MVK) and 4-hexen-3-one in the presence of titanium (III) chloride. The observed impact of both electronic and steric effects will be presented. This reaction may have potential use in the synthesis of natural products.

D9

STUDIES AND APPLICATIONS OF THE REARRANGEMENT REACTIONS OF SILYL KETONES

Homar S. Barcena, Dr. Lynn Bradley, Dr. David Hunt

The Brook rearrangement involves the silicon to oxygen migration of acylsilanes in the presence of a Lewis base. It is possible to use the carbanion intermediate in this mechanism as a nucleophile, and a model study was performed using acetyltrimethylsilane and 1-lithium-(2-bromoethyl)benzene. Two isomeric products were isolated from this reaction; one was determined to be a cyclic ether, formed without the desired silicon to oxygen migration. The other isomer appears to be a trimethylsilyl ether, a result of the anticipated silane migration. Distillation, TLC, and GC were employed for separation of the two isomeric products, but a more efficient method is yet to be determined. Elongating the time of the reaction afforded a greater amount of product mixture. The products were classified using 1H and 13C NMR, and MS. Studies are being conducted in order to promote the desired silicon to oxygen rearrangement by using carbanion-stabilizing substituents in the starting acylsilane.

D10

INTERACTION OF POLYAROMATIC HYDROCARBONS WITH VITAMIN E.

Andrea E. Young and Dr. M. Iwunze
Morgan State University

Steady state fluorescence technique was used to characterize the interaction of chrysene, a known polyaromatic hydrocarbon (PAH), with Vitamin E. It is know that in some PAH contaminated waters, the Vitamin A of life in such waters are reduced. This work therefore, is aimed at the understanding of such interactions using Vitamin E as a model. **When** Vitamin E is solubilized in ethyl acetate containing chrysene, a complexation is observed from the shape of the fluorescence spectra. The observed reduced intensity of the chrysene fluorescence in the presence of PAH, was used to obtain the interaction and equilibrium constants of the complex. Temperature studies were made to determine the **energy** of activation of such interaction and to relate it to the kinetic parameters observed during the kinetic run of the complexation reaction.

E1

BACTERIAL AIR POLLUTION FROM AERATION TANKS AT A WASTEWATER TREATMENT PLANT

Renee Brennan, Ann Smyntek, and Mark Gallo
Department of Biology, Niagara University

An investigation of bacterial aerosols emitted from aeration tanks at an activated sludge wastewater treatment plant was conducted to determine the numbers and types of bacteria emitted. The results revealed that both total and enteric bacteria counts were greater downwind of the tanks as compared to upwind of the tanks and all upwind and downwind counts were greater than background control counts. Among the genera identified downwind of the tanks were *Klebsiella, Serrada, and Acinetobacter,* all potentially pathogenic. These pathogens have been sampled to a distance of at least 100 feet downwind of the tanks. The occupational health and public health concerns regarding the aerosolization of bacteria in the plant is discussed.

E2

EFFECT OF TIDAL HEIGHT ON RECRUITMENT ONTO C. VIRGINICA

James Dauterman
College of Mount Saint Vincent

Fouling communities inhabiting intertidal populations of C. virginica were quantified in Pelham Bay Park (Bronx, NY) to address the role of tidal height on cumulative successful arrival of new individuals. Data was analyzed from 737 recruits on 92 host C. virginica from three intertidal heights: +0.15m, 0.0m, and -0.15m. The barnacle Balanus eburneus composed 94% of all recruits. Only 2 of the 737 recruits were oysters. On average, C. virginica located at -0.15m had significantly less surface area(38cm^2) available for settlement than those at 0m(57cm^2) and at +0.15m(51cm^2). Average recruits per host oyster and percent of substrate covered was significantly greater at 0m(22.2, 17.5% respectively) than at -0.15m(4.5, 4.8%) and at +0.15m(2.2, 1.1%). Overall, the recruitment process was density-independent for the 0m height, but negatively density-dependent at lower recruitment intensities.

E3

ESTRUS, DOMINANCE, AND SOCIAL BEHAVIOR IN CAPTIVE FEMALE AFRICAN ELEPHANTS

Ruth Lambert and Bruce A. Schulte
Providence College

Reproductive capability and dominance are two factors that effect the relationship between individuals in a group-living species. Previous studies indicate that female Asian elephants *(Elephas maximum)* displayed higher rates of social contact during their reproductively receptive phase of estrus compared to their reproductively inactive phase. We studied the relationship between estrus and social interaction of captive African elephant *(Loxodonta africana)* females at Roger Williams Park Zoo from May 1997 to October 1997 (24 weeks) to see if a similar pattern existed. Blood was drawn weekly by the elephant keepers and serum progesterone levels were measured to determine estrous cycles. Once each week we conducted 1-h observations to examine the number and type of social interaction (i.e. we recorded all aggressive behaviors and non-aggressive, trunk tip contacts) between individuals. When comparing estrus to social interaction we found no significant pattern. Our second objective was to examine how dominance is reflected in social behavior. We analyzed the types of interactions (trunk tip and aggressive contacts) that occurred between the individual females in 1997 and in 1998 (May through August 1998; 16 weeks). There was no significant change in social interactions between years. Based on dominance previously assessed by the keepers, the most dominant female exhibited the greatest number of aggressive contacts while the least dominant female received the greatest number of trunk tip contacts.

E4

THE RELATIVE SIGNIFICANCE OF CHEMORECEPTORS AND THE EVIDENCE FOR A "MYSTERY MECHANISM" USED FOR PREY DETECTION IN ASTEROIDS

Richard Ali
Wilkes University

It is still unclear if asteroids rely solely on chemoreceptors to detect prey. Recent research has reaped non-supportive results of the 'strong chemosensory' hypothesis. Data indicates a weak orientation by asteroids toward stimuli, showing only 20% of the sample size successful in finding chemical sources using chemosensory. The results of this research has shown asteroids (brittle stars) to be unproductive predators using chemoreceptors, with the ability to locate buried open mussels only 24% of the trials. It is evident that a mechanism other than chemoreceptors is present, since the asteroids were able to differentiate between open mussels and closed mussels, showing an orientation towards the opened mussels 75.87% of the trials (it was designed so that the closed mussel emitted more chemical stimuli than the open one). Another experiment testing for this "mystery mechanism" showed that asteroids were not distracted by chemical stimuli coming up from the sediment; instead they aggressively moved toward the visual stimuli at the other end of the tank. More research is necessary to determine the nature of this "mystery mechanism' and its significance in prey detection.

E5

DEVELOPMENTAL CHARACTERISTICS IN THE EPHYRAL STAGES OF *CYANEA SP.* WITH RESPECT TO MORPHOLOGY AND PREY CAPTURE.

John E. Higgins III and Dr. J.H. Costello.
Biology Department of Providence College

The metagenic life-cycle of Cnidarians accounts for many morphological changes in pulsation, body form and prey capture. The ephyral stages show coordination of these functional areas as the animals develop into mature medusae. Flow field maps and video demonstrate water flow and entrainment around the developing bell towards the lappet tips, manubrium and tentacles once present. Capture maps using artemia nauplii as prey show the greatest number of captures in these same areas. Studies have been done showing that nematocysts are responsible for prey capture. Nematocysts are the organelles of the stinging cells called cnidocytes that discharge upon stimulation. The density of nematocysts and the distinct types vary through the ephyral stages but show a definite increase in the primary capture areas. We hypothesize that as *Cyanea sp.* ephyrae develop the swimming mechanism and particle flow direct prey into highest nematocyst density. Therefore the flow, pulsation and nematocyst density all change to complement each other and to maximize prey capture and growth.

E6

HYDROCRYPTIC FORAGING: THE PREDATOR-PREY RELATIONSHIP BETWEEN THE CTENOPHORE, MENMIOPSIS LEIDYI AND THE COPEPOD, ACARTIA TONSA

Rebecca Waggett
Providence College

Ctenophores naturally co-occur with copepods in both coastal and deep waters, and act as predators on the copepod community. Adult copepods are active swimmers and often swim directly into the open lobes of the ctenophore where capture usually occurs. Previous experiments have shown that copepods, namely Acartia tonsa, are equipped with mechanosensory abilities to detect and avoid solid objects and predator. However, despite this evolution of a complex sensory system, ctenophores are capable of evading copepod detection. This leads to the conclusion that ctenophores must utilize some adaptive technique to remain mechanically invisible to the copepods. The hypothesis explored here involves the possibility that ctenophores display a hydrocryptic foraging pattern, which would minimize water disturbance. With this pattern, the swimming ctenophore would create a forward bow wave, which is effectively nullified by a cilia generated flow filed which pulls water into the lobe capture area. The counter current movement of water may be the force responsible for disrupting the mechanosensory abilities of the copepods, and thus, offer an explanation for their high capture rates by ctenophores.

E7

REMNANT FOREST CONSERVATION HAS A SIGNIFICANT IMPACT UPON FOREST RESTORATION

Ignudo, Sara and Jennifer Mattei
Department of Biology; Sacred Heart University

The objective of this ongoing, restoration experiment was to test the various methods for promoting succession of a degraded site to a forest ecosystem. Twenty experimental plots were installed consisting of 7 native woody species on one section of the Fresh Kills Landfill in New York City. During this past year, we were examining the difference between seed deposition on the restored site and a control site, a woodland area with high species diversity, located at the Southern tip of Staten Island. Seeds were collected from 10 individual traps biweekly from both the Fresh Kills and control site. From the months of August to December, a total of 101 seeds were collected and identified from Fresh Kills and 2317 from the control site. The control site, which has a closed canopy, yielded approximately 20 times the number of seeds collected at the experimental site due to the difference in the volume of seeds dispersed by birds and simple seed rain.
In the past, seed rain totals were much greater at the Fresh Kills site, but declined over a 3 year period. Of the 65 traps set out between 1994 and 1996, 14,516 seeds were collected in 1994, 5507 in 1995, and 4829 in 1996. This decline is correlated with the loss of an adjacent remnant forest. Therefore, the source of seed rain was lost. This loss is a contributor to the slow establishment of a forest ecosystem to the Fresh Kills landfill.

F1

THE EFFECTS OF EL NIÑO ON EAST COAST STORM TRACKS

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For residents along the East Coast of the United States, coastal storms often bring hardship through their combination of wind, rain, snow, and tides. Therefore, it would be useful to understand why coastal storms frequently batter the coastline one winter, while leaving it alone in another. This paper investigates whether El Niño, a large scale warming of the Eastern and Central Tropical Pacific Ocean, affects storm tracks. This is accomplished by comparing the frequency of winter storms as produced by the Storm Tracks program developed by the Storm Tracks project at the Goddard Institute for Space Studies (GISS), with the Niño3 index, which represents the sea surface temperature anomaly in the Tropical Pacific measured in an area where the effects of El Niño are most apparent. If a relationship is found, this will represent a step forward in understanding what affects East Coast storm tracks.

F2

EBIC IMAGING OF NEAR-CONTACT ELECTRIC FIELDS IN HIGH RESISTIVITY SEMICONDUCTORS

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Electrical transport near contacts on high resistivity semiconductor materials can be characterized by large, highly non-uniform fields and rapidly varying carrier distributions. We have used EBIC (electron beam induced current) in a scanning electron microscope to image the spatial carrier collection near both implanted and Schottky contacts on semi-insulating and high purity GaAs. For implanted contacts on semi-insulating GaAs, one obtains high field regions that extend ~20 μm into the material. Near Schottky contacts on high purity material under bias, carrier injection causes the formation of space charge dipoles which can be imaged in two dimensions. Although space charge dipoles have been observed indirectly (through capacitance and IV measurements), this work represents a direct spatial picture of the near contact transport. Dipole formation as a function of injection bias and sample temperature will be presented. This work was supported by a Cottrell College Science Award of Research Corporation.

F3

IMAGING NEAR-CONTACT TRANSPORT IN SEMICONDUCTORS USING CATHODOLUMINESCENCE

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In bulk materials, cathodoluminescence (CL) is used to determine spatially resolved optical emission from semiconducting and other luminescent materials. When applied to the region of a semiconductor/contact interface, however, CL can offer a means of measuring the spatial variations in electron and hole concentrations. This approach has been applied to Schottky contacts on high purity epitaxial GaAs. In the absence of external bias, a near-contact depletion region of ~5 μm is seen in the CL as a depletion region of luminescence. With increasing reverse bias, this depletion regions grows, extending to –9 μm at a bias of 670 V/cm. Line scans provide quantitative CL profiles, reflecting the np product. Results for Schottky contacts on both GaAs and CVD diamond will be presented. This approach represents a significant step toward the direct optical imaging of near-contact transport phenomena. This work was supported by National Science Foundation grant DMR-9720485.

F4

DEVELOPMENT OF A SENSITIVE SPECTOSCOPIC METHOD FOR THE STUDIES OF EXTREME WEAK ABSORPTION OF CHEMICAL SPECIES IN GAS PHASE

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A sensitive spectroscopic method, following the technique of Gudeman and Saykally at the University of California at Berkley, is being developed at the State University of New York College at Potsdam. The method has been proven to detect extreme weak absorption (of amount much less than a part per million) of neutrals and of molecular ions, whose concentrations are typically very low in an electric discharge, where they are usually created. In the technique, the ions and neutrals are created in an audio frequency plasma discharge. An external cavity tunable diode laser and the lock-in detection technique will be used to study their high-resolution spectra. The construction and the development of the experimental project, potential results from the project and previous results using this technique will be presented. Our result will provide structural information of molecular ions, some of which are important in astrophysics and in industry. To our knowledge, we are the first institution to develop the research project in an undergraduate institution.

F5

FROBOT VS. THE MAN: AN ANIMATION IN OPENGL

Matthew Himlin and Stephen Morrissey
Wilkes University

We implement a program using the OpenGL graphic libraries in C. Our animated scene depicts three Frobots engaged in their endless struggle against The Man. Each model was rendered with polygons and lit by both a single overhead point source and ambient lighting. The three Frobots walk towards The Man at different speeds while moving their legs and swinging their arms. The Man bobs his head and swings his arms, laughing as he waits for the Frobots to arrive. Animation is accomplished by rotating and translating the objects in 3D space and then redrawing the scene.

F6

SOFTWARE IMPLEMENTATION OF TELESCOPE TRACKING

Keith Jordan and Dan Briotta
Ithaca College

Long exposures with a CCD camera result in image blurring due to telescope drift. To correct for this error, we developed software which uses an SBIG ST-8E dual CCD camera to adjust the tracking of a DFM CCT-16 telescope. While the imaging CCD takes the long exposure, the tracking CCD takes a series of short exposures on a reference star and adjusts the tracking of the telescope to keep the star's position fixed.

G1

THE ROLE OF RETINOIC ACID RECEPTORα(RARα) AND RARγ IN OTIC CAPSULE CHONDROGENESIS

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RA acts as a putative morphogen in vertebrates and has been shown to inhibit cell proliferation and induce differentiation in many epithelial and mesenchymal tissues, including those of the inner ear. It is therefore hypothesized that control of otic capsule chondrogenesis during inner ear development is accomplished through regulation of RA receptors (RAR). We examined the distribution of retinoid receptors in the developing mouse inner ear, and demonstrated distinct distribution patterns of RARα, RARγ and RXRβ in otic epithelium and periotic mesenchyme between embryonic ages E10.5 - E13 days. To ascertain if these receptors function in the signaling of epithelial-mesenchymal interactions by endogenous RA, we added antisense oligonucleotide complementary to the mouse RARα and RARγ genes to cultured periotic mesenchyme + otic epithelium. In cultures treated with RARα or RARγ antisense oligos, chondrogenesis was significantly suppressed in comparison to control cultures. Furthermore, we demonstrate decreased expression of endogenous fibroblast growth factor 2 (FGF2) following treatment of cultures with RAR antisense oligos and show that supplementation of these cultures with an excess of FGF2 or a combination of FGF2 and transforming growth factor (TGF) beta can rescue the cultured cells from chondrogenic inhibition. Our findings suggest that RARα and RARγ participate in the control of otic capsule chondrogenesis and that this control may be associated with endogenous growth factor expression.

G2

EVIDENCE FOR THE CHAPERONE FUNCTION OF HSP70

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Chaperonins are proteins that mediate protein folding and assembly. These processes are essential for the proteins to function properly. One group, the heat shock proteins (HSPS), are thought to perform this function. One way to investigate whether these proteins are acting as chaperones is to isolate a complex of the heat shock proteins and the proteins they are chaperoning. We studied this phenomenon in *Chlamydomonas reinhardti*, a biflagellated, unicellular algae. When the flagella of *Chlamydomonas* are removed, new flagella are regenerated within one hour. Regeneration occurs by addition to the distal end of the flagella tip. It is thought that HSP70 (a heat shock protein with a molecular weight of 70 kilodaltons), is chaperoning the flagella proteins from the cytoplasm to the tips of the flagella. Using immunoprecipitation and S^{35} as a radioactive tracer, a complex of the anti-HSP70, the HSP70, S^{35}, and the flagella proteins was formed. SDS-PAGE gel electrophoresis and autoradiography were then used to identify this complex. Presence of HSP70 would indicate that not only do the heat shock proteins aid in thermoregulation, but they also function as chaperone proteins.

G3

ACQUIRED STRESS TOLERANCE IN *D. DISCOIDEUM*: THE POTENTIAL ROLE OF HEAT SHOCK PROTEINS IN CYTOSKELETAL STABILIZATION

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In addition to their well-characterized functions as molecular chaperones, some heat shock proteins (hsps) may protect cells from stressful environmental conditions by interacting with and stabilizing the actin cytoskeleton. Using a modified tetrazolium salt reduction assay, the cytotoxic effects of three different cytochalasins (fungal compounds that depolymerize actin filaments) were compared, and the ability of Dd amoebae to acquire tolerance to the drug by prior sub-lethal heat shock was tested. We found that Dd strains AX3 and HL122 (a thermotolerance mutant) are sensitive to cytochalasin A, but not to cytochalasins B or D, as assessed by viability assay and also by microscopic examination of the actin cytoskeleton in treated cells. Although amoebae were not made more tolerant to cytochalasin by the prior expression of hsps, preliminary data suggests that expression of hsps may protect cells from the cytotoxic effects of dimethylsulfoxide, which is also known to disrupt the actin cytoskeleton.

G4

ULTRASTRUCTURAL DYNAMICS ASSOCIATED WITH APOPTOTIC DEATH IN THE RWLeu4 CHRONIC MYELOGENOUS LEUKEMIA CELL LINE

Douglas Matthews and Kathleen Cornely
Providence College

Apoptosis, or programmed cell death, is a vital cellular mechanism which plays an important role in early development, healthy homeostasis, and disease. Characteristic changes of the apoptotic process at the cellular level include blebbing of the plasma membrane, overall cytoplasmic condensation, condensation of chromatin against the peripheral nuclear membrane, and the formation of apoptotic bodies. In this study, a unique cell line of CML was grown in tissue culture and processed for transmission electron microscopy using a rapid, mixed glutaraldehyde and OsO4 fixation in order to assess the ultrastructural changes that take place during etoposide- (VP-16) induced apoptosis. A time course series of micrographs depict all of the typical morphological changes in sequence in addition to demonstrating possible new cytoskeletal roles. Apoptotic cells were easily distinguished from necrotic and comparisons are shown.

G5

APOPTOTIC INDUCING EFFECTS OF N' AND N'N' SUBSTITUTED-N-HYDROXYUREAS

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Hydroxyurea has been clinically utilized as a chemotherapeutic agent in the treatment of cancer due to its ability to induce apoptosis, or programmed cell death. Due to synthetic limitations, the study of the apoptotic inducing effects of N' and N'N' substituted-N-hydroxyureas had not been performed. With recent success in the synthesis of these compounds, the present study investigated their ability to induce apoptosis in Radiation-Induced-Fibrosarcoma cells. Apoptosis was confirmed by the observation of DNA fragmentation using agarose gel electrophoresis and fluorescence microscopy using an acridine orange-Ethidium Bromide stain. Results indicate that N'N'-dibenzyl-N-hydroxyurea and (x-N'-napthyl-N-hydroxyurea induce apoptosis in FIF cells in a more efficacious manner than the parent compound, hydroxyurea. Further study in specific cancer cell lines is warranted in order to determine if these substituted hydroxyureas will be useful in the treatment of cancer.

G6

PEA ROOT MERISTEM *(PISUM SATIVUM)* REPRESSION VIA HISTONE DEACETYLASE INHIBITION.

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Prior results have shown that the histone deacetylase inhibitor butyrate halts mitotic progression in the pea root meristem. Levels of histone acetylation positively correlate with transcriptional repression in eukaryotes cells. Experiments were designed to test whether other histone deacetylase inhibitors, Tricostatin (TSA) and HC-Toxin, halt mitotic progression in pea root meristems in a manner similar to butyrate. After 24 hr exposure to 0.01 mM TSA, the mitotic index was 0.6.%, far below normal values (4-5%). With 0.01 mM HC-Toxin at 24 hr the value was 0.9%. However, root-meristems were able to return to normal mitotic indices and recover from exposure to both histone deacetylase inhibitors after 24 hr in fresh growth medium. Silver-stained two-dimensional PAGE from control, TSA and HC-toxin root extracts were analyzed and shown to be similar with several changes. With TSA, two basic peptides at MW 20-27KD disappeared when compared with controls. These results suggest that TSA and HC-toxin have similar cytological effects as butyrate, which are perhaps achieved via different mechanisms.

G7

DOWNREGULATION OF PKC AND PKA ALONG WITH UPREGULATION OF DNA FRAGMENTATION ARE INDUCED BY PHOTODYNAMIC THERAPY.

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We have investigated the effects of photodynamic therapy on the induction of programmed cell death (apoptosis) on cancer cells. Apoptically induced cells show characteristics of DNA fragmentation that correlate with inactivation of PKA and PKC pathways. Radiation-induced fibrosarcoma (RIF) cells were treated with Photofrin H (PII) and incubated for 24 hours before irradiation with UV light source. The cells were then collected at different time intervals and tested for apoptosis. The morphological changes induced by apoptosis, could be determined by DNA fragmentation isolation and PKA and PKC assays. Apoptotic DNA fragmentation was observed 60 min after radiation using PII. Results indicate that PII activation triggers a rapid downregulation of PKA and PKC that occurs coincident with upregulation of DNA fragmentation and apoptotic cell death.

H1

MOLECULAR ANALYSIS OF BUTYRATE TREATED PEA ROOT MERISTEMS *(PISUM SATIVUM)*

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Transcriptional control in eukaryotic cells is achieved through several mechanisms, including the acetylation of histones. Increased acetylation levels often result in decreased transcriptional activity. Butyrate, a four-carbon short-chain fatty acid, is a known histone deacetylase inhibitor. Past results have shown that pea root meristems cells stop dividing in the presence of 0.01 mM butyrate. In addition, exposure to butyrate results in the appearance of slightly basic proteins in the 27-33 KD range. Experiments reported herein using [14C]-leucine confirm the appearance of the aforementioned basic proteins, through 2-D fluorographic protocols. Northern analysis of butyrate treated root meristems indicates that non-proliferating cells are expressing transcripts of the known cell cycle associated genes histone H_2A, MAP kinase, cycA2;1 and cdc2. These results suggest that histone deacetylase inhibitors halt mitosis without down-regulating the complete cohort of genes required for cell division.

H2

EVIDENCE FOR HOMOLOGOUS *M. TUBERCULOSIS* INVASIN GENE IN MYCOBACTERIA AND NOCARDIA

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Facultative intracellular parasites have the fundamental pathogenic capacity to invade the host cell. A gene product, MCE, which actively directs uptake of pathogenic mycobacteria has been described by *Arruda et al.* We looked for homologous sequences to the mycobacterial MCE gene from other intracellular pathogens in the family, *Actinomycetalis.* Unique primers were developed from published sequences of the MCE genes. Low annealing temperature PCR was performed on laboratory isolates of *Rhodococcus and Nocardia.* Homology to the *M. tuberculosis* MCE amplicon was confirmed by Southern blotting of genomic DNA and subsequent PCR products with a *M. tuberculosis* MCE obliqonucleotide probe. As a result, sequence homology associated with MCE gene were identified in *M. tuberculosis, Rhodococcus and Nocardia,* but not in *S. aureus and E. Coli.* Heterogeneity in the size of the amplified product was also observed.

H3

PCR MUTAGENESIS OF THE PI PARTITION PROTEIN PAR A I.

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ParA is an essential protein for accurate distribution of the P1 plasmid at the time of bacterial cell division. Its direct role in the process is not understood and yet many functions have been ascribed to the protein. We have begun a study to isolate mutations in defined regions of the protein using PCR fragments and a recloning protocol. This should allow identification of the domains of the protein that are responsible for each of the functions and better tools to dissect the activity of the protein in the partition process.

H4

IDENTIFICATION AND CONGENIC MAPPING OF THE *Hxa* GENE COMPLEX IN MICE

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We have identified a minor histocompatibility antigen controlled by a gene or genes on the X chromosome in mouse (named *Hxa* by analogy with similar Y-linked genes). Our research goal is to locate, clone, and characterize the gene or set of genes. The location of *Hxa* will be determined with the development of a congenic inbred strain of mouse. This approach yields a genomic background that is "recipient-derived" at all loci outside of the "donated" locus of interest. The congenic line will be developed by repeated backcrossing in order to move the locus of interest, Hxd, from BALB/c to a C57BL/6 background. We will employ skin graft exchange to distinguish recombinant animals that have retained the *Hxd* locus. Progress with this approach should ultimately allow us to make an assignment for each gene responsible for the X-mediated graft rejection.

H5

GENETICS OF THE SHORN *(shn)* MUTATION IN THE RAT 1: LINKAGE TESTING ON RAT CHROMOSOMES 10 AND 15.

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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 has revealed that this variant phenotype is heritable and is transmitted as a recessive, autosomal allele (designated shorn, *shn).* In addition, complementation analysis has shown *shn* to be distinct from 3 other available hypotrichotic mutants: *fz, mu,* and *hr. Thus, shn* appears to be a new mutation that might identify a novel gene.
A series of dihybrid testcrosses has indicated that *shn* is not linked with either fz or *hr.* Linkage tests with *mu,* however, indicated possible linkage at about 30% recombination. To test this tentative linkage assignment on Chr IO, and to verify independent assortment with *hr* on Chr 15, 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 suggests that *shn* is not located on either of these chromosomes.

I1

INFLUENCE OF IMMUNE SYSTEM ON CARDIAC REGULATION

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It is known that the largest controlling factor of cardiac function is the autonomic nervous system, which is composed of two distinct branches: the sympathetic and parasympathetic nervous system. The immune system also plays a crucial role in cardiac regulation through its interaction with the autonomic nervous system. For example, cardiac anaphylaxis, a severe allergic response, can result in symptoms that include tachycardia, arrhythmia and decreased coronary blood flow. In this study, parasympathetic postganglionic neurons located within guinea pig cardiac tissue were shown to be in close proximity to immune mast cells through the use of histochemical and immunohistochemical staining techniques. Histamine, one bioactive mediator released from mast cells during stimulation by an antigen or neuropeptide, was shown to alter the membrane properties of some parasympathetic neurons. Using intracellular voltage recording, it was discovered that histamine's effects produce a variety of responses within these neurons. This would suggest that mast cell-derived mediators could influence cardiac function through interaction with parasympathetic neurons located within cardiac tissue.

I2

EXAMINATION OF CALCIUM HANDLING PROTEINS IN LEFT VENTRICULAR REMODELING PATIENTS

Mike Hasman
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Left ventricular remodeling (LVR) has recently provided a unique alternative to transplantation for the treatment of heart failure. However, patients undergoing this operation have met with mixed outcomes. One explanation for this variable success is that, despite appearing clinically similar, patients may differ in their degree of heart failure with respect to changes in the expression of regulatory proteins or cellular physiology. Therefore, the calcium handling proteins of the sarcoplasmic reticulum, proteins shown to be altered in both animal models and in human heart failure, were quantified using standard western blotting techniques in order to see if expression of these proteins could account for differing outcomes in patients undergoing LVR. Preliminary results have shown no statistically significant differences between the patients that fared well from the LVR procedure and those who fared poorly with respect to any of the individual sarcoplasmic reticulum calcium cycling proteins. This implies that none of these proteins (actin, phospholamban. sarco[endo]plasmic reticulum calcium ATPase, or calseqestrin) can be used as predictors of whether or not a given candidate will respond with a favorable or an unfavorable outcome to the LVR procedure.

I3

THE CARDIAC ACTION POTENTLAL IS MODULATED BY TYROSINE KINASE

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Central Connecticut State University

Cardiac hypertrophy is compensation for an added and sustained workload on the heart. There is also risk of cardiac death due to dysrhythmias. During cardiac hypertrophy there is an increase in intracellular tyrosine which phosphorylates ion channels and may affect the cardiac action potential.
The hypothesis of the project is that tyrosine kinase modulates the cardiac action potential on a beat to beat basis, even in normal hearts. We used Sprague-Dawley rats, which were anesthetized with pentobarbital, shaved, fitted with electrodes. Their ECG's were continuously measured. The Q-T interval on an electrocardiogram is a measure of the cardiac action potential. Each rat acted as its own control. Rats exposed to Tyrophostin B44 (a tyrosine kinase inhibitor) exhibited longer Q-T intervals. The Q-T intervals of rats exposed to sodium orthovanadate (a tyrosine kinase activator) were shortened. Both substances cross cell walls and act intracellularly. We hope to better understand the role of tyrosine kinase in cardiac hypertrophy and dysrhythmias.

I4

TYROSINE KINASE ACTIVATION INCREASES HEARTBEAT VARIABILITY

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Central Connecticut State University

On an electrocardiogram (ECG), the R-R interval is a representation of the heart rate. Inconsistencies in the R-R interval are permissive of dysrhythmias, a major source of cardiac related human fatality. Relatively little is currently known about what can cause a heart to become dysrhythmic. We seek to determine if tyrosine kinase affects the R-R intervals of pentobarbital anesthetized Sprague-Dawley rats. The ECG recordings were taken of controls and after injection of tyrphostin B44 (TB44, a tyrosine kinase inhibitor), or sodium orthovanadate (Na_3VO_4, a tyrosine kinase activator), allowing each animal to serve as its own control. Compared to control ECG recordings, injection of Na_3VO_4 caused an increase in the R-R interval variability (standard deviation of 0.008 vs 0.03). In another animal, TB44 decreased the variability in the interval relative to control (0.022 vs 0.009). These results indicate that tyrosine kinase activation makes the beat to beat interval more irregular, thus, predisposing the heart to dysrhythmia.

I5

THE EFFECTS OF DIURNAL OR NOCTURNAL FEEDING ON LONG-EVANS RATS

Andrew Young
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Three groups of Long-Evans rats were utilized to determine the effects of 12-hour diurnal (DF), 12-hour nocturnal (NF), and 24-hour ad-libitum (control) feeding upon body weight and food and water consumption. Results indicate that the DF rats were lighter in weight and ate less food than the other two groups. Both experimental groups consumed similar quantities of water with a greater intake during the 12-hour period in which food was present. Post-mortem examination revealed the presence of stomach pathology in the DF animals. Data indicate that feeding only during a normally inactive period in the circadian cycle results in a more stressful condition than feeding only during a normally active period of the circadian cycle. These findings are congruent with those reported in humans who are forced to work and eat during normally inactive periods of the circadian cycle (e.g., night-shift).

I6

ACUTE INFLAMMATORY RESPONSE FOLLOWING SPINAL CORD IMPACT INJURY

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Providence College and The University of Kentucky

Secondary damage of nerve cells following traumatic injury to the spinal cord involves numerous factors, including ischemia, edema, increased excitatory amino acids, and oxidative damage due to reactive oxygen species. Neutrophils can produce reactive oxygen species when activated and may contribute to the lipid peroxidation known to occur following spinal cord injury. Excessive damage to particular tissue may stimulate the release of myeloperoxidase (MPO), a reactive oxidative species which degrades both damaged and viable nerve cells. Treatments to decrease the inflammatory response would be beneficial to recovery of function following traumatic spinal cord injury. A rostral-caudal distribution of neutrophils was examined at 4, 6, 24, and 48 h periods following impact injury of rat spinal cord (10 g weight, 25 mm drop). The neutrophils were located predominantly in necrotic regions, where maximum levels peaked at 24 h. Neutrophil levels were determined by MPO activity assays. The application of a platelet activating factor (PAF) antagonist, WEB 2170, and a leukotriene antagonist, SC 41930, on the injury site produced lower MPO levels, indicating a reduced influx of neutrophils to the lesion area. Behavioral studies may provide insight into the effectiveness of the antagonist treatments to restore behavioral and physical disabilities resulting from spinal cord injury.

I7

ROLE OF VASOPRESSIN IN LONG-TERM PREFERENCES OF SUCROSE AND SPLENDA DURING FOOD-RESTRICTED AND *AD-LIBITUM* CONDITIONS.

Joseph L. Carino
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Previous studies have shown that vasopressin-deficient DI rats, unlike vasopressin-producing LE rats, are unable to cope with the stress of food-restriction (FR). Thus, the ability of DI rats to utilize exogenous nutritive solutions as a means of curbing the negative effects of FR was observed over a long-term preference test. The study also examined the preferences of food-restricted DI and LE rats for two nutritive sweetener solutions and water. The rats were given continuous access to an 8% sucrose solution, an 8% Splenda solution, and water under either FR or *ad-libitum* (AL) conditions. The study clearly demonstrated that DI rats were capable of reversing the deleterious effects of FR by consuming the sweetener solutions. Furthermore, DI and LE rats both significantly preferred sucrose under the AL condition. In the FR condition, however, LE rats maintained only a slight preference for sucrose while DI rats shifted their preference to Splenda. These findings indicate that the rats consumed enough sucrose to compensate for the stress of FR but then consumed Splenda. Because Splenda is not metabolized, the solution provided the rats with a sweet water source once they had been satiated by the sucrose solution. This evidence may be of particular interest to diet conscious Americans who like to eat sweet foods but are trying to reduce their caloric intake.

J1

RELATIONSHIP BETWEEN PLASMA THYROXINE (T4) AND MELATONIN DURING DEVELOPMENT OF BULLFROG TADPOLES ON A 12:12 LIGHT:DARK CYCLE.

Catharine Guertin, Julie Duffy, and Mary L. Wright
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Melatonin is a hormone that is produced by the pineal gland and the eye in amphibians. It is believed to alter the rate of metamorphosis, and to affect the levels of other hormones which control metomorphosis including thyroid hormone, T4. Recent studies on an 18:6 light/dark (L:D) cycle showed that at climax of metamorphosis T4 increased, but retained the same rhythm, while plasma melatonin decreased and its rhythm was altered. Prometamorphic and climax *Rana catesbeiana* tadpoles were used to determine if an inverse relationship exists between melatonin and T4 on a 12L:12D cycle. Blood and eyes were collected from the tadpoles at 7 intervals during a 24 hour time period. The melatonin and T4 levels in the samples were later measured by radioimmunoassay. The findings show that during prometamorphosis and climax the T4 rhythms were the same, however at climax, the metatonin rhythm changed. As metamorphosis progressed, T4 increased while plasma melatonin decreased. This shows that the change in plasma melatonin at climax is independent of the light cycle, and occurs on 12L:12D as well as on 18L:6D.

J2

COMPARISON OF METAMORPHIC HORMONES IN *RANA CATESBEIANA* TADPOLES ON A 6:18 LIGHT:DARK CYCLE

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The thyroid hormone thyroxine (T4) has been shown to induce metamorphosis in tadpoles. It has also been shown that melatonin directly inhibits the thyroid secretion of T4 *in vitro.* This work was undertaken to study the relationship between plasma T4 and melatonin in the progress of prometamorphic to climax tadpoles on a 6:18 light:dark (LD) cycle. *Rana catesbeiana* tadpoles were acclimated to the LD cycle for at least 9 days prior to the experiment. The tadpoles were sacrificed at 7 time intervals throughout a 24 hour period, 0900, 1300, 1700, 2100, 0100, 0300,and 0600. The blood was collected and centrifuged and the plasma was frozen. The eyes of the tadpoles were dissected out at each interval. These were also frozen until homogenization occurred. T4 and melatonin radioimmunoassays were then used to obtain the hormone levels in the plasma. On the 6L:18D cycle, as on other LD cycles studied, the T4 levels rose as the tadpoles progressed into climax. At the same time plasma melatonin levels were lowered. Since it has been shown that melatonin antagonizes T4, the lower levels of melatonin during climax may be an example of how the tadpole regulates metamorphosis.

J3

DOES THE RISE IN T4, AT CLIMAX, CAUSE THE DECREASE IN MELATONIN?

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Thyroxine (T4) is a hormone produced by the thyroid gland responsible for promoting metamorphosis of the tadpole into the frog. Melatonin is a hormone secreted by both the pineal gland and retina. It is known to antagonize the secretion and action of thyroxine in tadpoles. Correlating with melatonin's antagonism of metamorphic changes, we have shown that the plasma melatonin level declines at climax of metamorphosis, when T4 is highest. We questioned whether T4 induces the decline in melatonin or if melatonin decrease controls the level of T4. Prometamorphic *Rana catesbeiana* tadpoles on an 18:6 light/dark cycle were divided into three groups. They were immersed in either 50 µg/l of T4, 50 mg/l of melatonin, or controls in 10% Holtfreter's for 5 days. On the sixth day, blood and eyes were collected at 0900, 1300, 1700, 2100, 0100, 0300, and 0600 hr from each group. The plasma was later assayed for plasma T4 and plasma and ocular melatonin. T4 immersion significantly increased plasma T4 and decreased plasma melatonin. Melatonin immersion did not affect plasma T4 but also decreased plasma melatonin. Since T4 inhibited plasma melatonin but erogenous melatonin did not affect T4 we conclude that T4 is responsible for the decrease in plasma melatonin that occurs at metamorphic climax.

J4

RELATIONSHIPS BETWEEN MASS OF STEM SEGMENTS AND CHARACTERISTICS OF THICK-WALLED XYLEM CELLS IN JOINTS BETWEEN STEM SEGMENTS OF *OPUNTIA BIGOLOVII AND OPUNTIA VERSICOLOR*

Elvira Liclican
Manhattan College

Many species of *Opuntia* have segmented stems in which terminal cladodes may be separated from main stem cladodes with varying amounts of resistance. The purpose of this research was to determine relationships between mass of stem segments and the characteristics of thick-walled xylem cells in joints between stem segments. In this study, stem segments of two species of cacti *(Opuntia bigolovii and Opuntia versicolor) were* treated as beam compression members. As a result, it was hypothesized that as the mass of terminal stem segments increased, the percentage of joint cross-sectional area of lignified xylem cells would increase for both species. Experimental data show that mass of terminal stem segments of *0. bigolovii* was highly correlated with percentage area of lignified xylem cells, in which the slope of this relationship was 25.9 ($P<0.001$; regression coefficient= 0.748). The same relationship for *0. versicolor* had a slope of 7.8 ($P<0.001$; regression coefficient= 0.930). Moreover, it was hypothesized that for both species, the amount of lignified xylem cells in tensile tissues would be greater than for compressive tissues. The percentage area of lignified xylem cells in tensile tissues for joints of *0. bigolovii* was 8.6%. In contrast, the percentage for compressive tissues was 4.2%. A t-test between tensile and compressive tissues demonstrated a probability value of 0.005. A similar analysis for *0. versicolor* demonstrated percentages of 9.2 and 5.8% for tensile and compressive tissues, respectively. The t-test probability value for this latter comparison was 0.034. In this manner, tensile tissues had almost twice as much lignified xylem cells than compressive tissues. These results show that lignified xylem cells act as reinforcing rods in concrete structures. It is clear that lignified xylem cells are the major tissues that provide for joint integrity. The differences in amounts of lignified xylem cells between the two cactus species will be discussed with regard to their ability to retain terminal stem segments.

J5

ANTIBIOTIC PROPERTIES OF PLANTS

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Methanol extracts of nine (9) representative genera within Melastomataceae were assayed to determine the in vitro susceptibility of bacterial isolates to the plant extracts. A total of twenty-five (25) extracts were tested due to the various plant parts available at the time of collection. Using the disc-agar diffusion method, the Kirby-Bauer Technique for sensitivity discs in the therapeutic use of antibiotics, ad serial dilutions for plate counts, zones of inhibition for each extract in both bacteria, antibiotic controls, and methanol controls were established. The size of the zone of inhibition caused by the diffusion of the plant agent into the agar is directly related to the degree of susceptibility of the organism. Zones of inhibition for Melastomataceae extracts tested against *Micrococcus luteus* ranged from 17 mm to 33 mm while zones of inhibition for the same extracts tested against *Escherichia coli* ranged from 17 mm to 32 mm, with *Tibouchina herbaceae* (root) inhibiting growth in the entire petri dish. *Melastoma sanguineum* (leaf) gave an impressive zone of 32 mm against *E. Coli* and against *M. Luteus, Bertolonia marmorata* (aerial portion) gave a zone of inhibition of 30 mm and *Arthrostemma ciliatum* (stem) gave a zone of 33 mm.

J6

A STUDY OF MASS ALLOCATION IN *LEPIDOPTERA* AND ITS IMPLICATION FOR A LOAD INDEX

Colleen Doherty and Rob Stevenson, PhD
Providence College and University of Massachusetts at Boston

Individuals from sixteen species of *Lepidoptera* were dissected and mass measurements were taken in order to determine if a consistent pattern of mass allocation exists for butterflies and moths of various sizes. *Lepidoptera* can be described as cargo planes with the abdomen as the load carrier that will vary in mass while the rest of the body mass remains fixed. As insects feed both body and the relative abdominal masses increase. Feeding experiments showed that in two minutes four species of butterflies had a mean increase in body mass of 13.5% to 27.6%. The results of this study indicate that variability in mass allocation is dependent on the amount of food stored in the abdomen. This is an important step towards understanding body mass variance and developing a load index.

K1

THE EFFECT OF EMOTION ON TASK PERFORMANCE IN 6-7 YEAR OLDS

Erin Hughes, Amy Parker, Nancy Rader and Research Team 4
Ithaca College

We designed our study to see if we can temporarily induce mood states in 6-7 year olds, and whether or not, under laboratory conditions, these moods affect the children's ability to perform a task. In this study, subjects are read a story which contains a sad event and a happy ending. In the "sad"condition, subjects are asked to complete a block task after the sad event. Then they are read the rest of the story. In the "happy"condition, they complete the block task after the happy ending of the story. In order to determine whether or not we can effectively manipulate mood, we have the children color in a facial affect scale after the sad part of the story and the happy ending. We will analyze the facial affect scales to see if they correspond with the time in the story at which they were administered. To determine whether the children's temporarily-induced mood affects their task performance, we administered a series of block tasks. The study's hypothesis is that the subjects in the "happy" condition will perform more efficiently on the block task than those in the "sad" condition.

K2

A FACIAL DISCRIMINATION TASK ON THE INVERSION EFFECT

Traci L. Lutz
Lycoming College

The following study was a facial discrimination task on the inversion effect. The right medial inferotemporal region of the brain is the area used to recognize faces. Humans have a predisposition to recognize upright faces better than inverted ones. The research on primates is not so clear from an evolutionary perspective. One squirrel monkey was tested on the ability to recognize pairs of upright and inverted primate faces. The percent of correctly learned stimuli was analyzed and line graphs were plotted to show the learning curves for the two tasks. In three instances the monkey showed learning at 90% and the trend of learning for the upright task was overall much greater than for the inverted task. These data suggest there may be a predisposition for the squirrel monkey to recognize upright faces more accurately than inverted faces. Further research on multiple monkeys and rearrangement of the stimuli is encouraged for replication of this study.

K3

THE EFFECTS OF CAFFEINE ON DEPTH PERCEPTION

Michael A. Mateo, Bruno A. Sousa, Justine LaBatch and Mark Wagner
Wagner College

Caffeine is a stimulant drug used by many to increase alertness. In this experiment, the effect of caffeine on depth perception was tested. Fourteen undergraduate students were randomly assigned to one of two groups: an experimental group which received 200 mg of caffeine in pill form (Vivarin) or a control group which received a sugar pill. After allowing for the passage of time required for the drug to be absorbed, each subject's monocular and binocular depth perception was tested using a Howard-Dolman apparatus. Each subject was tested twice while seated two feet and ten feet from the apparatus which was placed at eye level. Significant differences in depth perception were found for distance and the effects of caffeine were limited to the binocular depth perception.

K4

LATERALIZATION OF PHONOLOGICAL WORD TASKS: GENDER AND HANDEDNESS DIFFERENCES

By Heather Porter, Pavitra Sundar, Nancy Rader and the Cognition Lab
Ithaca College

This study looks at the differences in brain lateralization of phonological word tasks for gender and handedness. Past research using brain scans has found that men are more lateralized than women; our study seeks to find out if these findings are true when behavioral measures are used and whether handedness affects lateralization. Using a Cognitive Testing Station that allowed for exact word placement and millisecond response accuracy, 278 college undergraduates were tested: 81 male righthanders, 152 female right-handers, 19 male left-handers, and 26 female left-handers. The participants were presented stimuli determined to be high or low frequency words as well as non-words positioned in either the left or right visual field. Their task was to determine if the word they viewed rhymed with a word presented earlier. The results of the right handers were the opposite of what the brain scan research had found; males were not more lateralized than females. The data for the left-handers are still being analyzed, but the current analysis shows similar effects for left-handers.

K5

BRAIN LATERALIZATION ON RHYME AND LINE TASKS

By Jennifer Joy, Pavitra Sundar, Dr. Nancy Rader, and Cognition Lab
Ithaca College

Shaywitz and associates studied sex differences in lateralization of language through rhyme and line tasks. In our study, the same tasks were used, except that behavioral measures were taken instead of MRI'S. We also looked at differences between lefthanded and right-handed participants. Shaywitz et al. concluded that males were more lateralized on the rhyme task whereas females performed using both brain hemispheres equally. For right-handers, our results showed that the rhyme task was faster and more accurate when presented to the left hemisphere with the degree of lateralization being the same for males and females. In contrast, as expected, left-hemisphere lateralization was not found for the line task. We are currently analyzing the data for left-handers.

K6

GROUP SIZE, EXPECTATIONS ABOUT HUMOR, AND HUMOR RESPONSES

Erin T. Fortier
Ithaca College

When people rate jokes for humor value, the responses indicate cognitive evaluation. Such evaluation reflects only a limited aspect of reactions to humorous material. In this study, participants rated a set of 20 jokes, expecting that they would be very funny or not very funny. Some participants engaged in this task after engaging in a group puzzle solving task; other participants did so individually. We recorded their ratings and displays of mirth (e.g., laughing and smiling). The results revealed that after a group bonding activity, participants' expectations about whether jokes were going to be funny affected their ratings, based on their expectations about the jokes. The presence of others affects participants' ratings of jokes. Building on previous research, we also concluded that the mere presence of others also affects ratings of jokes, but not mirth responses. The dynamics of individual groups may be critical in the expression of mirth.

L1

MISLEADING CLAIMS IN TV COMMERCIALS: LET THE VIEWER BEWARE

Jenny Brennan, Marnie D'Uva, Johanna Hising, Jennifer Joy, Rachel Levy, Megan Roberts, Matthew Thouin, and Amy Vavra
Ithaca College

This study investigated accuracy of perceptions about TV commercials in two age groups (middle school students and college students). Ten commercials identified as misleading were selected from the CRETV archive (See Table 1). Participants were shown a half hour news program containing the ten misleading commercials along with nine truthful commercials, then asked multiple choice questions about each of the commercials. Results showed that while college students were more likely to give correct responses than were middle school students for both the misleading and truthful commercials, even the college students were usually fooled by the misleading commercials. Subjects in both age groups were most likely to give the correct response for truthful commercials; for the misleading commercials, however, they were most likely to give the response reflecting the implied (but incorrect) message shown in the commercial itself

L2

INFLUENCE OF TELEVISION ON BELIEFS ABOUT DEATH AND DYING

Kate Knauf, Cynthia Smith, Emily Patrick, Debra Millstein, and Brian Coate
Ithaca College

This study involves perceptions about death and death-related issues, how they are influenced by age and by distorted information on television. Participants included 210 college students who were randomly assigned to two conditions (one viewing a news program containing 8 reports of murders or other deaths, one viewing a news program with no death). After viewing, participants completed a questionnaire asking for estimates of the percent of people who die due to various causes or at different ages, and true/false questions concerning death-related issues. While college students were more accurate in their responses than middle school students, responses by participants in both age groups reflected vast misperceptions about death and related issues. Although no differences were found by condition, the inaccurate perceptions were reflective of actual distortions found in TV programs.

L3

A DEVELOPMENTAL STUDY OF MEDIA USE AND BODY IMAGE

Darragh Foley, Tanya Lenczewski, Kari Luehman, Carly Roper, Shannon Youst and Melissa Zappan
Ithaca College

This study investigates the extent to which viewing high risk media leads to a distorted perception of peoples own self image and the body size of others in a developmental time frame. Participants in the study were recruited from 6th, 8th, 10th, and 12th grades, and the Ithaca College undergraduate population. Each participant was given three questionnaires; a media use questionnaire, a questionnaire where they were asked to rate overhead projection images on a number of different variables, and a body image questionnaire that also asked about various demographic information. The design of the study provided the latitude to change the order in which the questionnaires were completed, as well as the order of the projected images. This design was created to determine if either or both might significantly affect responses. After completion, all of the responses were analyzed to observe and illustrate the effects that viewing high risk media has on body image throughout the crucial years of development.

L4

A COMBINED ABA AND TEACCH APPROACH TO TEACHING COMPLEX SKILLS TO YOUNG CHILDREN WITH AUTISTIC-SPECTRUM DISABILITIES

Willoughby, Amanda R.
Marymount College, Tarrytown

In this single-subject experimental design, an active treatment program was developed, functionally combining strategies from ABA (Applied Behavioral Analysis) and Division TEACCH (Treatment and Education of Autistic and related Communications-handicapped CHildren). This program involved the use of a work system, task analyses, graduated guidance, and positive reinforcement. The treatment program addressed needs in the area of Motoric Activities of Daily Living, and was used in teaching dressing skills to a four-year-old boy diagnosed with PDD-NOS (Pervasive Developmental Disorder, Not Otherwise Specified). A brief discussion of the literature will be followed by pre-intervention data, illustration of the combined ABA-TEACCH approach, and discussion of implementation with presentation of intervention data and implications to follow.

L5

EARLY VISUAL CLIFF BEHAVIOR AS A PREDICTOR OF LATER SPONTANEITY

April Smith, Nancy Rader, and Research Team 4
Ithaca College

The study was designed to investigate children's behavior in a novel social situation as well as to examine how these interactions related to behavior recorded in earlier studies on the visual cliff. Kagan (1988) has found that the only stable temperamental characteristic of those he studied was that of behavioral inhibition. Previous research involving cognitive tests indicates that eight to I I year-old girls who crossed the visual cliff as infants when a toy was shown were more likely to respond quickly, though with a higher en-or rate, on the MMF'F (Ban, 1998). It was hypothesized that those children who crossed the deep side of the visual cliff as infants would be more spontaneous in the social interactions during the study. In the study, children were invited to a two hour "party" in groups of 8-10 where they played games like dance-freeze, making faces into the video camera, and telling everyone about themselves. The "party" was videotaped and children's behaviors were coded from the tapes. Preliminary analyses indicated that infant emotional state on the visual cliff was significantly related to later willingness to go first in an unknown party activity.

L6

THE EFFECT OF GESTURES ON THE ACQUISITION OF A SECOND LANGUAGE

Jill Fadia, Nancy Rader, and Research Team 4
Ithaca College

Two-and three-year-old children who can construct and comprehend basic sentences, and who have had no prior exposure to Spanish, were tested to see if gestures play a role in the acquisition of a second language. The children were presented with the Spanish names of six common objects via video presentations. Familiarity of the objects was confirmed with the children when they first arrived. Each child was presented with a gesture and no-gesture condition. For half the children, Set A was presented with gestures and Set B with no gestures; the other half received Set A without gestures and Set B with gestures. The combination of set and gesture condition was randomly determined prior to testing. The order of gesture and no-aesture conditions was counterbalanced across subjects. After each video, the children were asked to perform object identification and naming tasks for the words. We hypothesized that children would learn more words from the gesture condition versus the no gesture condition. Preliminary analyses support the hypothesis for three-yearolds.

Poster Abstracts

P1

RELATIONSHIPS BETWEEN STUDENT SATISFACTION AND INTENTIONS TO WITHDRAW

Jessica Andrillo, Joe Laroche, and Kimberly Thulin
Sacred Heart University

Researchers investigated the effects of student satisfaction on intentions to withdraw based on theoretical models of employee satisfaction and turnover intentions developed in the Industrial and Organizational Psychology literature. One hundred college students (46 males and 54 females) participated in the study. A questionnaire was developed to measure levels of satisfaction with 12 aspects of college life and turnover intentions. Participants rated their satisfaction on a 7-point Likert-type scale, ranging from very satisfied to very dissatisfied. Intention to withdraw was measured on a similar scale, ranging from intend to withdraw immediately to plan to graduate from this university. The researchers found significant positive correlations between satisfaction with four aspects of college life (extracurricular activities, social life, food quality, and grades) and turnover intentions. The present study extends knowledge by examining facet satisfaction and turnover intentions in a student population.

P2

ACADEMIC ACHIEVEMENT: A STUDY OF GENDER AND SEATING POSITION IN THE COLLEGE CLASSROOM

Rebecca Hoover
Lycoming College

Past research shows that a student's gender and their seating preference greatly effected classroom performance (Rebeta & Brooks, 199 1). People who sit in the front of the classroom and female students tend to do better on tests. In the current study, it was hypothesized that female students who sat in the front of the classroom would have higher grades than those who sat in the back, male students who sat in the front of the classroom would have higher grades than those who sat in the back, and overall, female students would have higher grades than male students. Ten college instructors were given a seating chart to place the gender and grade of the student in each of the corresponding seats in their classes. Results showed that female students ($\underline{M}$ = 83.54) scored significantly higher on tests than male students ($\underline{M}$ = 76.72) and female students tended to sit in the front of class, whereas male students tended to sit in the back ($\underline{X}^2$ (6)=20.50, $\underline{p}$>.01). However, there was no significant seating preference effect on classroom performance for men ($\underline{r}$ = -.11, $\underline{p}$ >.10) or women ($\underline{r}$ = .03, $\underline{p}$ >.10).

P3

HOW DO THE TASKS THAT INTERVENE BETWEEN THE ENCODING AND RETRIEVAL OF A WORD LIST AFFECT OUR ABILITY TO REMEMBER OR FORGET THAT LIST?

Rosalind A. Brown, Laura Pastiva-Santos, Maggie Piper, and Faith L. Florer
Marymount College

The purpose of this study is to examine how the cognitive processes that occur during the time between memorizing and forgetting a list of words affect the accuracy with which people can remember or forget that list. Subjects were instructed to memorize a list of 20 words. Half of those subjects were then told to forget them. Half of both of those groups then were asked to recall the states associated with a list of 50 American cities, or else to memorize another list of 20 words. Finally, the subjects were tested either explicity or implicitly on their memory for the original 20 words. As in previous studies of directed forgetting using the list method, we found no differences between the memory performance of subjects who were given the forget and remember instructions. An original finding of this study is that when subjects memorized a second list, their memory performance was worse than when they completed a city/state test, in explicit memory tests only. We suggest that! the difference is attributable to the encoding processes inherent in memorizing a second list. We discuss our results in the context of previous studies of directed forgetting, which suggest that the lack of differences between instructions to forget and remember in the list method are attributable to encoding processes inherent in memorizing a second list.

P4

PHEROMONES: ATTRACTION AND EFFECTS OF BODY SCENTS ON MENTAL STATE OF MIND

Jennifer B. Weaver
Lycoming College

Pheromones can influence such physiological processes and behaviors as mate selection, the recognition of family members, and the ability to detect a foe from a friend (Weiss, 1998). The present study explored the role of body scent in romantic relationships. Twenty five male and twenty five female students of Lycoming College answered a questionnaire about their partners' scent and their attraction to their scent. There were a total of the questions inquiring about how a partners' body odor effected the individual emotionally and what that person's mental state of mind was afterwards. Results showed that participants said that their partners' scent had a comforting/calming effect on them. Also, the results compiled supported the idea that pheromones play a role in attraction and mate selection.

P5

HABITUATION OF SHELL WITHDRAWAL TO TACTILE STIMULATION IN THE TERRESTRIAL HERMIT CRAB

Amy M. Siegel and Laurence J. Nolan. Department of Psychology, Wagner College.

Habituation is a simple form of learning in which an organism decreases the vigor of its response to repeated presentations of a stimulus. Hermit crabs withdraw reflexively into their shells in the presence of a novel stimulus. Habituation of this response to a tactile stimulus (brush tip) in six hermit crabs *(Coenobita clypeatus)* was measured. Over three sessions, the following data were recorded for each presentation of the touch stimulus: 1) number of presentations before the crab withdrew into its shell, 2) the strength of the withdrawal response, and 3) latency to the next extension from the shell. Intercorrelation of these variables yielded a negative correlation between the number of stimulus presentations and the response strength and a positive correlation between response strength and latency to next extension ($p<.05$). The withdrawal response was evident upon presentation of a novel visual stimulus which supported the conclusion that the reduced shell withdrawal was due to habituation and not fatigue.

P6

RELATIONSHIP BETWEEN ATTITUDES TOWARD HIV INFECTED PERSONS AND WILLINGNESS TO ASSOCIATE

Meg Arena and Frances Gargano
Sacred Heart University

The present study assessed attitudes toward persons infected with HIV (fear level, knowledge of HIV, and empathy) and willingness to associate with such persons on three levels (playing sports with, sharing a room with, or dating an HIV infected person). Attitudes were measured with a 12-item scale devised by Royce, Dhooper, and Hatch (1987). Respondents were college students whose ages ranged from 18 to 46, with a mean of 22.19. Significant negative correlations were found between fear levels and willingness to room with and willingness to play sports with an HIV infected person. Also, empathy was found to be positively correlated with willingness to room with and to engage in a sport with persons infected with HIV. Neither knowledge level nor age were significantly related to willingness to associate. None of the measures were significantly correlated with willingness to date, possibly due to the low level of variability in willingness to date. The present study extended knowledge by investigating correlations between attitudes and intended behaviors (willingness to associate). It was concluded that fear and empathy were better predictors of willingness to associate than either knowledge or age.

P7

RAMIFICATIONS OF 1000 HIROSHIMA BOMBS

Brian Bunnell, Michael Koosa, Brandon Lyons
Advisor: Dr. Antonio Magliaro; Sacred Heart University

Suppose that NASA has just been alerted that an asteroid is going to enter the earth's atmosphere, directly on the South Pole in Antarctica. There is no way to intercept the asteroid in time to alter the trajectory. Therefore, NASA needs to find the effects of the incoming asteroid during and after the impact. This problem lends itself to a physics problem that deals with an inelastic collision of an asteroid. In determining the effects of a massive astronomical body impacting the earth, we concentrated on deriving the amount of heat given off by the asteroid. The conservation of mechanical energy helped us to derive an equation that enabled us to determine the speed of the celestial body as it impacted the earth. The impact and post impact greatly affected the geography of Antarctica and as a result altered the sea level around the world.

P8

THE KNIGHT'S TOUR ALGORITHM

Sarah Farrell, Sacred Heart University

The problem involves finding a solution where a knight is placed in a given starting point on a chess board of size 8 x 8, and it is only allowed to move according to the rules of chess in the knight's typical L shape. The problem is to compute a tour of 64 moves, if there is one, such that every square on the board is visited once and once only. Note that a different size chess board will greatly affect the success rate of any algorithm. The algorithm I have implemented in Java succeeds on a chess board of size 8 x 8 from 63 different starting positions. It finds more successful tours, and finds them quickly, because it does not use recursion or backtracking which are typical algorithms used to solve this problem. Instead, I look for the first occurrence of the least number of moves from a candidate position (this solution was first proposed by J.C Warnsdorff in 1823). Another unique attribute is that my algorithm does not flip the search order depending on what quadrant the knight is starting from on the chess board - thus the one starting point position that does not have a successful tour in my program is not seen symmetrically around the board. I have purposefully left my algorithm this way to show that it finds a solution from 63 different starting positions without taking into account the symmetry of the chess board.

P9

VEGETATION AND SOIL MAPPING OF SHADE SWAMP, CONNECTICUT.

Kimberly Collette and Dr. Barbara Nicholson, Department of Biological Sciences, Central Connecticut State University, New Britain, CT. 06050.

Soils and vegetation units determined from aerial photographs were mapped for Shade Swamp, a 800-acre wetland located in central Connecticut. Field truthing was conducted using a combination of ground surveys and helicopter reconnaissance at elevations between 300-400 feet. Soils were described for each wetland unit by digging small pits and recording the depth of the humus layer, soil horizons, and soil texture. Peat accumulation was found to be significant in this wetlands, approaching 4 meters in depth. A peat core was removed from the western edge of the wetland, and the macrofossil history of the core described. A sample of the basal peat was removed for radiocarbon dating. The wetland map, soil descriptions and a brief history of the wetland will be presented.

P10

METAMORPHIC HISTORY OF THE BOLTON SCHIST, BOLTON CONNECTICUT

Michael A. Varni and Margaret E. Coleman
Eastern Connecticut State University

During the late Paleozoic rocks of central Connecticut underwent metamorphism during continental collision. A petrologic analysis of schists from north central Connecticut demonstrate that rocks now at the surface equilibrated at amphibolite facies conditions during the Alleghanian Orogeny. Microscopic analysis of pelitic schists from Bolton Connecticut reveal mineralogical assemblages and textural relationships consistent with the following reaction: garnet + chlorite => staurolite + biotite. Using a petrogenetic grid (Spear and Peacock, 1989), the above reaction provides a minimum equilibrium temperature of 525-575°C for the Bolton Schist. Assuming a geothermal gradient of between 20°C/km – 40°C during the Alleghanian Orogeny, indicates that the Bolton Schist was metamorphosed at a depth of 25 to 12 km during crustal thickening. U-Pb monazite ages from deformed pegmatite within the Bolton schist constrains the age of staurolite grade metamorphism to 300 Ma.

P11

SUBSURFACE GEOLOGY AND FLUID TRANSPORT IN THE ECSU ARBORETUM

Mark E. Milikin and Catherine A. Carlson
Eastern Connecticut State University, Willimantic, CT

The spatial distribution of surficial materials 'in the Eastern Connecticut State University arboretum was studied as part of a hydrogeologic investigation of the area. The published surficial geology map of the Willimantic quadrangle shows two materials, Qx (stratified drift) and Qt (glacial till), present in the arboretum. Four existing water table wells are located in these materials, 3 in Qx and 1 in Qt. Slug tests were conducted on these wells to provide information about the surficial deposits. In addition, two core samples, one from each material, were collected so that they could be described and particle size analyses could be conducted. The results of the slug tests indicate that the wells mapped in stratified drift deposit Qx have lower hydraulic conductivities (1.4×10^{-4} cm/sec) than the well mapped 'in glacial till deposit Qt (5.5×10^{-3} cm/sec). Core samples show a dominance of poorly sorted sands for both locations, suggesting stratified drift is more prevalent than till.

P12

IMPORTANCE OF WATERFOWL FECES IN NUTRIENT BALANCE OF FINDLEY LAKE, NEW YORK.

Karen Ryan and David Orvos.
Dept. of Biology, SUNY at Fredonia.

Findley Lake is a 307 acre lake located in the Town of Mina in Chautauqua County, New York that we have been studying since May of 1998. The Findley Lake watershed is approximately 3000 acres and the lake has a mean depth of 3.3 meters with a maximum depth of 11.6 meters. Findley Lake is an eutrophic system that receives significant amounts of nutrients via surface water runoff. We hypothesized that waterfowl feces were significant contributors of nutrients to Findley Lake. Feces analysis showed that nitrate and phosphate concentrations were approximately 0.8 mg and 1.9 mg, respectively, per gram dry weight. Waterfowl counts were variable with a resident population estimated at 300-500 birds. A nutrient mass balance is being constructed and Monte Carlo analysis will be used to quantify uncertainty.

P13

DETERMINATION OF FOREST SUCCESSION STAGE AND TREE DISTRIBUTION PATTERNS ON A CONNECTICUT TRAPROCK RIDGE: TEN YEARS AFTER FIRE AT ONION MOUNTAIN

Cyd Groff
Department of Biological Sciences, Central Connecticut State University

The traprock ridge environments of Connecticut and Massachusetts are unique and little studied. A fire that destroyed most of the vegetation on the ridge occurred in 1989 on Onion Mountain, in the northwestern section of the Connecticut traprock ridge. Past studies done in New England have included long term observation of deciduous and conifer forests after fire disturbance. Due to more available light and space, tree species that need more light are initially favored. Indeed, I have found that since the fire, the Onion Mountain ridge has been colonized by tree species that were not in a 1985 inventory. There are also proportionately more small shrubs and grasses present than in other mountain studies. To determine if the fire caused changes in the soil that may help explain the pattern of regrowth, soil composition testing will be completed. Tree species distribution patterns will be determined to help understand possible means of dispersal. The project will also determine if this unique environment can be included in the scheme of forest succession as it is currently understood by ecologists and foresters.

P14

ISOLATION AND ANALYSIS OF SALMONID MITOCHRONDRIAL DNA.

Peter T. McKenney and David Orvos.
Dept. of Biology, SUNY at Fredonia.

Understanding fishery stocks at a genetic level may aid in fisheries management decisions. Three species of salmonids, including salmon and steelhead, were electrofished from Canadaway Creek, Chautauqua County, New York, and liver mitochrondrial DNA (mtDNA) extracted and purified. DNA that was initially isolated appears unsatisfactory for DNA restriction analysis. Currently, we are attempting to further purify the mtDNA so that it can be restricted and differences between the three salmonid species detected. We believe that these data will prove useful in local fisheries research and management.

P15

BIOCONCENTRATION OF TRICLOSAN (5-CHLORO-2-(2,4-DICHLOROPHENOXY)PHENOL) IN GOLDFISH.

Jeremy Clark and David Orvos. Environ. Sciences Program, SUNY at Fredonia.

Triclosan (5-chloro-2-(2,4-dichlorophenoxy)phenol) is a potent antimicrobial compound currently used in antibacterial soaps, deodorants, toothpastes, and plastics. As a product intended for consumer use, the majority of triclosan-containing products will be disposed of into the local municipal wastewater treatment facility after which the chemical may be released into the aquatic compartment if not biodegraded or biotransformed within the wastewater treatment system. This study examines the potential bioconcentration of triclosan in goldfish using both static and flow-through aquatic testing systems. High performance liquid chromatography analysis of whole-body fish tissues shows that triclosan does bioconcentrate. Currently, we are using flow-through testing systems and are attempting to quantify the amount of bioconcentration.

P16

ENUMERATION OF PCB-DEGRADING MICROORGANISMS FROM CONTAMINATED SOILS

Steven J. Luke and Mark Gallo
Department of Biology, Niagara University

Polychlorinated biphenyls (PCBS) are aromatic hydrocarbons with chlorines attached to the ring structure. These materials are not readily degradable by microorganisms, therefore remain in the environment for long periods of time. Their longevity, coupled with their tendency to intercalate into animal cells, poses a significant threat to the environment. Certain aerobic and anaerobic pathways have been uncovered for PCB dechlorination and degradation, and the organisms containing these pathways have become important research targets due to their role in these processes. As such, there is an interest in the development of a technique for the rapid enumeration of the organisms that contain PCB degrading pathways. One such method involves the polymerase chain reaction (PCR). This study investigates the conditions necessary for faithful amplification of DNA using PCR from soil samples contaminated with PCBs.

P17

LIMNOLOGICAL SURVEY OF FINDLEY LAKE, NEW YORK.

Jeffrey Diers and David Orvos.
Environ. Sciences Program, SUNY at Fredonia.

Findley Lake, New York, is a 307 acre lake located in the Town of Mina in Chautauqua County. As part of assisting in the development of watershed management plan, SUNY scientists conducted an aquatic survey in 1998. The Findley Lake watershed is approximately 3000 acres and the lake mean depth was determined to be approximately 3.3 meters with a maximum depth of 11.6 meters. Excessive aquatic macrophyte growth was observed with the predominant species determined to be the Eurasian watermilfoil (Myriophyllum spicatum). The aquatic weevil Euhrychiopsis lecontei , a potential biological control agent for watermilfoil, was documented in Findley Lake. We will discuss the limnological findings as well as potential usefulness of the weevil as a biological control agent.

P18

CAN NORTHERN CARDINALS RECOGNIZE THEIR NEIGHBORS BY THEIR SONGS?

Rachel D. Dodakian and Sylvia L. Halkin, Department of Biological Sciences,
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The ability to discriminate between the songs of neighbors and strangers could save cardinals time and energy by allowing them to focus their responses on birds with which territory boundaries are not already established. Moreover, the ability to discriminate between individual neighbors could allow them to detect if a neighbor has moved to a new location, requiring territory boundaries to be re-established. Our song playback experiments indicate that one cardinal could make both of these discriminations. Results for a second bird were inconclusive, possibly due to a construction project that may have caused a shift in territory boundaries. Currently we are testing additional cardinals, and will report on these results as well.

P19

TAXONOMIC AND ECOLOGICAL EXAMINATION OF A TWO-SPONGE SYMBIOSIS FROM THE FLORIDA KEYS.

Kelly DeMeo[1], Malcolm Hill[1] and Tom Wilcox[2]
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On tropical coral reefs, and in most marine systems, overgrowth is commonly viewed as a competitive strategy to overcome the potential constraint of substrate limitation. Organisms from these habitats have evolved several mechanisms to prevent overgrowth. However, stable epizoic associations between species have been recorded from a number of marine systems. Sponges rely on inward directed currents for feeding and waste removal, thus ostial blockage caused by overgrowth would result in significant reductions in pumping capabilities. Instances of epizoism involving sponges present a unique opportunity to examine forces that change potentially competitive encounters into positive or facilitative interactions. Here, we report a two-sponge symbiosis from the Florida Keys that appears to be highly species specific. Surveys conducted around Pigeon Key in the Florida Keys indicated that the symbiosis is relatively common and highly specific (involving only two sponge species). Examination of spicules and the skeletal architecture of the interacting species suggested that the epizoic sponge is a haplosclerid (probably in the Family Haliclonidae), and the supporting sponge is *Geodia gibberosa* (Demospongiae; Choristida). We discuss some of the ecological and evolutionary factors that may be responsible for this sponge-sponge symbiosis.

P20

THE EFFECTS OF ADULT ADSAEMA TRYPHYLLUM ON THE GERMINATION OF ITS PROGENY.

Danielle Mahoney and Melinda LaBranche. Dept. of Biology SUNY College at Fredonia

Arisaema triphyllum (Jack-in-the-pulpit) is a small, perennial woodland herb that can reproduce both clonally and sexually. Jack-in-the-pulpits usually grow in patches from clonal reproduction. Jack-in-the-pulpit seeds are dispersed a short distance from the parent plant. I studied the effects of possible allelopathy by planting progeny and non-progeny seeds at different distances from 14 parents. 66% of the corms did not grow. The percent of seed germination was 18.7%. There was no difference in germination between progeny and non-progeny seeds. There was not a difference in germination for seeds near and seeds far from the parent. In this study, there was no evidence for the allelopathy from the parents to the progeny.

P21

BIODIVERSITY: MEADOW RESTORATION VS. MOWED LAWN

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This experiment was conducted to track the restoration of a mowed lawn to a meadow. The land was cleared of sod and arranged in eight blocks with four treatments in a Latin square design. The treatments were as follows: the A plots were seeded with *Asclepias tuberose* (butterfly weed), *Rudbeckia hirta* (black-eyed susan) in the B plots, both of these in the C plots, and a meadow mix that included twenty different species in the D plots. A species count was taken of each of the planted species. It was found that most of the planted species survived, and that many invaded the area, including, but not limited to: mugwort, plantain, chicory, catchfly, horsenettle, and Queen Anne's lace. A collection of insects in the meadow was identified from seven different orders. There were eight species from Lepidoptera, fourteen from Hymenoptera, six from Coleoptera, thirteen from Hemiptera, ten from Diptera, and one each from Odonata and Trichoptera. A comparable study of an eleven square meters of mowed lawn was done. In this area, twelve insect species from four orders were found compared to the fifty-three found in the meadow. The plant diversity for the meadow in comparison to the lawn was also found to be much greater. In the lawn, four plant species were found, and in the meadow there were twenty-four species, including the species that were planted and those that invaded. This experiment will continue into the future with the development of a butterfly garden to attract the butterfly species native to the area. The meadow will also continue to be used for the educational purposes of the university.

P22

BIOLOGICAL CONTROL OF PURPLE LOOSESTRIFE *(LYTHRUM SALICARIA)*

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Purple Loosestrife *(Lythruni salicaria)* is an invasive dominant weed that has taken over our wetlands. Seeds were brought over in the late 1890's-early 1900's, from Europe via ballast water and the cargo of ships. Loosestrife was not a problem until approximately the 1930's when it spread aggressively in the floodplains of the St. Lawrence River. It favors growth in native emergent vegetation and shallow marshes (any wetland area) and is quickly replacing native species such as cattail. It eventually overgrows and chokes out native species that provide food and shelter for native wildlife. With the increase of Loosestrife we will and have begun to see a decrease in native wildlife as they lose their former habitats to this species. One way to combat an invasive is by means of biological control. Biological control is a logical method in a system such as a wetland as any other means of control could significantly harm this delicate environment. For control of Purple Loosestrife, we will use two leaf feeding beetle species that were approved for use in controlling this plant by the USDA in 1992. These beetles *(Galerucella calmariensis* L. and *Galerucella pusilla)* are specialists and feed exclusively on Loosestrife. Since approval, more than 36,000 beetles have been released at varying sites in Connecticut alone. In a caged experiment this summer, we will be testing different beetle densities and their effects on seed production of Purple Loosestrife here at Sacred Heart.

P23

CULTIVATION AND EMBRYONIC DEVELOPMENT OF JAPANESE MEDAKA FOR THE USE IN DEVELOPMENTAL BIOLOGY

Dennis Quinn and Cheryl L. Watson
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I am developing a protocol for obtaining a regular cultivation cycle, and a embryonic development chart of the Japanese Medaka that will be used as a teaching supplement in Developmental Biology at CCSU. This protocol will be used as a tool to learn more about cardiac and other organ development. Areas that will be investigated are the general maintenance needs required for successful reproduction, such as temperature, light schedules, proper feeding, and water conditions. After I have developed a protocol for a cultivation cycle I will be photographing embryonic development. These photographs will be made into a chart of the cardiac development of the Medaka, which will be used in research and in Developmental Biology at CCSU.

P24

MEASURES OF DNA IN NEURONS OF THE CINGULATE GYRUS FROM SUBJECTS WITH ALZHEIMER'S DISEASE

James Nilson and Gloria J. Colurso
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Alzheimer's disease (AD) is a neurodegenerative disorder clinically characterized by cognitive decline. One brain region that exhibits the typical neuropathology of AD is the cingulate gyrus. This area functions in motivation, attention, and memory, which are activities impaired in AD. Clinical symptoms have been correlated with certain neurochemical disruptions, such as condensation of DNA chromatin with loss of gene expression. In the current study, brain tissue sections were obtained from the cingulate gyrus of nine AD subjects and eight, aged-matched controls. Tissue sections were stained using the Feulgen-Schiff reaction, a quantitative cytochemical marker for normal DNA conformation. A Vickers M85a microdensitometer was used to measure the extent of Feulgen dye-binding to DNA (F-DNA) in pyramidal neurons. Results indicated no significant differences in mean F-DNA levels between AD and control brains. While both control and AD neurons exhibited unimodal profiles, AD subjects revealed greater heterogeneity in their distribution of F-DNA levels. These data may indicate the initial stages of alterations in DNA conformation in AD that eventually lead to neuritic dementia.

P25

BIOASSAYS USING JAPANESE MEDAKA *(ORYZIAS LATIPES)* AND NORTHERN LEOPARD FROGS *(RANA PIPIENS)*

Deborah L. Johnson and Frank J. Dye
Western Connecticut State University

Recently an increase in abnormalities has been observed in many species in nature. These abnormalities have been especially notable in frogs. One theory states that this may be due to environmental estrogen. In this research, Japanese Medaka embryos were placed in various concentrations of estrogen; embryos of both Medaka and northern leopard frogs were placed in water from eight local water sources. Abnormal development was noted in many of the embryos suggesting that something in the water sources was detrimental to the developing embryos.

P26

INTEGRIN-MEDIATED PROLIFERATION AND CELL SIGNALING IN YOUNG AND OLD HUMAN FIBROBLASTS

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Integrins are specialized links between the extracellular matrix (ECM) and the intracellular environment. These transmembrane glycoproteins exist as heterodimers of α and β chains. There are several types of α and β polypeptides, which are arranged in various combinations; each combination imparts a different specificity for the ECM components. Integrins not only act as binding sites for ECM proteins, but also function in the transmission of intracellular signals to the nucleus. We cultured young (early passage) and old (late passage) human skin fibroblasts on the ECM proteins fibronectin and collagen, as well as poly-L-lysine and plastic. The old cells did not proliferate as well as young fibroblasts one either collagen or fibronectin. In addition, old cells had reduced intracellular signaling to the matrices as monitored by phosphotyrosine levels. It is likely, therefore, that this decreased response is due to either lower integrin levels or signaling molecules. This research will provide important insights into the molecular aspects of aging.

P27

EVOLUTION OF ANTIBIOTIC RESISTANCE IN BACTERIA

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Multi-drug resistant strains of bacteria are a major threat to health care today. The number or resistant genes in a population and the extent of antibiotic use affects whether bacteria will evolve resistance or not. Understanding the way that antibiotics affect bacteria and the mechanisms that the bacterial cells have evolved to counteract these effects is an important step in solving this problem. A pressing issue is whether bacteria lose their resistance or remain resistant indefinitely. The purpose of this research was to test the hypothesis that antibiotic resistance would be lost when cells were grown in an antibiotic free environment. Three strains of *Escherichia coli,* each resistant to a different antibiotic, were maintained in antibiotic free environments for twenty five transfers (approximately 500 cell divisions) and tested for the proportion of resistant cells every five transfers. There was no significant change in the proportion of antibiotic resistant cells for any of the strains tested.

P28

ORGANOSILICONE SURFACTANTS AS POTENTIAL MITICIDES

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Connecticut Agricultural Experiment Station, Windsor, CT

The two-spotted spider mite, *Tetranychus urticae* (Koch) is a cosmopolitan, economically important nursery, fruit tree, and vegetable crop pest. Chemical control of this mite is difficult because they feed on the underside of leaves. Their high reproductive capabilities, and arrhenotokous genetics, coupled with intense selective pressure results in the rapid evolution of miticide resistance. Using leaf dip bioassays we determined that organosilicone surfactants, Silwet L-77, L-408, and L-806 have miticidal properties. The LC_{50} exhibited by these compounds range from 4.5-7.5 parts per million (ppm) on bean leaves. These results compare favorably with commercially used miticides. Silwet L-7607, however, has poor surfactant qualities and exhibits an LC_{50} of 4800 ppm. The structural feature of miticidal Silwet compounds is the presence of a trisiloxane backbone and a long-chain hydrophilic group. These features permit "super-spreading' of water on hydrophobic surfaces, which likely interferes with the mites' respiratory apparatus. We believe that surfactants may prove to be effective miticides. Furthermore, liquid flowable formulations of new products need to be examined to determine whether surfactants, rather than labeled "active ingredients" are responsible for claimed miticidal activity.

P29

THE EFFECT OF LOCAL WATER FROM SIX SOURCES ON VINEGAR EELS

Anthony Doran, Desmond Cabrera and Susan Maskel
Western Connecticut State University

Students at Western Connecticut State University have studied the effects of local water on onion cells and embryos of Medaka (a freshwater fish), northern leopard frogs and salamanders. Another animal that is ideal for laboratory study is the vinegar eel *(Turbatrix aceti),* an inexpensive nematode that is easy to care for. In this research, the effect of commercially available water pollutants and local water on vinegar eels was examined. Vinegar eels were exposed to silver nitrate, mercury (II) nitrate, nickel nitrate, lead nitrate, aluminum nitrate, and copper (II) nitrate (from a kit from Ward's Natural Science) and to local water from six sources. The swimming behavior of the vinegar eels exposed to each of the above was observed and recorded. The local water was then tested for pH, hardness, chlorine, chloride ions, nitrates, nitrites, copper, iron, nickel, ammonia, and sulfate ions. Results will be discussed.

P30

MANGANESE TOXICITY IN HUMAN FIBROBLASTS

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Manganese (Mn) toxicity causes a number of severe, pathological effects including encephalopathy and parkinsonism; however the effect of Mn on cell growth is poorly documented. The purpose of this research was to study human fibroblast proliferation and morphology in the presence of Mn. The human fibroblasts proliferated in the absence of Mn, but 25 and 50 ppm concentrations of Mn distinctly limited growth in a dose-dependent manner. The lowest concentration on Mn used (7.5 ppm) however, still inhibited cell proliferation. These results are in good agreement with those of Blackwell et al.; yeast growth *(S. cerevisiae)* was inhibited at 27.5 ppm. In addition, other ions such as calcium and magnesium will be examined to see if they can counteract the inhibitory effects of Mn. This work is especially relevant to this area of Connecticut, where high Mn levels are found in the ground water supply.

P31

CAN AFFINITY CHROMATOGRAPHY BE USED TO ISOLATE CONNEXINS?

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Some cells communicate with each other through structures called gap junctions. Connexins, the proteins that make up gap junctions, are isolated in many laboratories using sucrose gradient centrifugation. When this technique was used in our lab to isolate planarian connexins, the yield was small and purity was questionable. In this research, connexin isolation was attempted by affinity chromatography. EAH Sepharose 4B was chemically linked to antibodies to connexin 26 and poured into a column. Cyanogen bromide activated Sepharose 4B was chemically linked to antibodies to connexin 43 and poured Into a second column. The two columns were then used in an attempt to isolate connexins. Results, including problems encountered, will be discussed.

P32

DISTRIBUTION OF MERCURY RESISTANT ORGANISMS IN ONONDAGA LAKE.

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Onondaga Lake in Syracuse, New York, is contaminated with mercury and other hazardous materials. Over a span of 24 years (1946-1970) it is estimated that 75,000 kg of mercury was released into Onondaga Lake from the chlor-alkali process. The presence and distribution of mercury resistant organisms in Onondaga and Oneida Lakes were analyzed. Total organisms in each lake varied between 1000 and 6000 cells/mL depending on the sampling location. Water samples from Onondaga Lake contained the highest percentages of mercury resistant organisms, up to 20% while samples from Oneida Lake contained mercury resistant organisms at levels below 1%. Unicellular and filamentous cyanobacteria have been isolated from Onondaga and Oneida Lakes. These isolates will be analyzed for amplification of the mercuric reductase gene.

P33

MIEDIUM-DEPENDENT PRODUCTION OF SECONDARY METABOLITES FROM STREPTOMYCES WHICH INDUCE APOPTOSIS IN CULTURED MAMMALIAN CELLS.

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Several *Streptomyces* isolates from Niagara County were screened for their potential to produce apoptotic compounds when grown under various conditions. Cultures were supplemented with different carbon sources. Upon incubation, a number of the organisms began to produce compounds, some of which were pigmented, as evidenced by significant color changes in the broths. Extracts derived from the especially active ML9 and ML15 strains were chemically analyzed via TLC, and the presence of several different compounds was observed. These extracts were also assayed for their ability to induce apoptosis in radiation-induced fibrosarcoma (RIF) cells to determine any and optimal anti-tumor potential.

P34

A COMPARISON OF ANTIBIOTIC RESISTANCE BETWEEN MERCURY-RESISTANT AND SUSCEPTIBLE FECAL COLIFORMS FROM THE SUSQUEHANNA RIVER

Douglas Kovatch and Randy Engelman
Wilkes University

One method of incorporation of new genes into bacterial genomes is horizontal gene transfer. Plasmids that convey resistance to both antibiotics and mercury can be included in such conjugal transfers. Due to a possible link between mercury and antibiotic resistance genes, mercury released from dental amalgams may increase the transfer of multiple antibacterial resistance genes in oral and intestinal bacteria. However, conflicting evidence for this phenomenon has been shown experimentally. For this experiment, water was sampled from the Susquehanna River and filtered to obtain two populations of Escherichia coli, differing only in their ability to grow in the presence of mercuric chloride. Microbroth assays were run to determine minimal inhibitory concentrations for a series of six antibiotics of various classes. Resistance to nalidixic acid, streptomycin, and tetracycline was significantly more prevalent in the mercury resistant population than in the mercury susceptible population. Also, the four individuals that showed resistance to tetracycline were resistant to both nalidixic acid and streptomycin. The results of the study demonstrated a correlation between mercury and antibiotic resistance and are consistent with previous findings from study of commensal coliforms.

P35

CASE STUDIES IN HUMAN ANATOMY AND PHYSIOLOGY INCREASE LEARNING IN HIGH SCHOOL STUDENTS.

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Case study analysis improves the learning of human anatomy and physiology by university students. This project tested the effectiveness of the case study method in the high school. We taught respiratory anatomy by either case analysis or lecture to separate sections of an anatomy and physiology course offered at two different high schools. Prior to teaching, we measured student understanding by a multiple choice test (pretest) and motivation to learn by a survey. Following teaching, we administered another multiple choice test (posttest) and a survey to determine changes in understanding and motivation. Class sections that performed case analysis scored higher on the posttests (9.31 ± 0.6, n= 19 students vs 8.6 ± 0.9, n= 15 and 8.71 ± 1.2, n = 14 vs 6.6 ± 1.2, n = 15; $p < .05$) and had a greater pre-to-post test differential ($p < .05$) than matched sections that received lecture. No differences were found in student motivation. These results indicate that case study analysis enhances the learning of anatomy and physiology by high school students and suggest that case analysis can be an effective strategy for improving teaching in the secondary science classroom.

P36

CONSTRUCTING ARABIDOPSIS PLANTS WITH COLOR-CODED ORGANELLES.

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Organelles such as mitochondria or peroxisomes are difficult to identify in living tissue by light microscopy, and cumbersome techniques such as marker enzyme assays are required to identify the fractions containing these organelles after cell fractionation procedures. To facilitate identification of these organelles for undergraduate labs we are constructing transgenic Arabidopsis transformed with BFP fused to GUS and to a mitochondrial transit peptide, and with rsGFP fused to firefly luciferase (which contains a peroxisomal localization sequence). We are also constructing transgenic Arabidopsis transformed with smGFP fused to a nuclear localization sequence. We will then do the appropriate crosses to obtain plants in which all three organelles will be marked. We intend using these plants for cytology labs where we hope to determine the locations of these organelles in vivo by fluorescence microscopy. We will also use these plants for cell fractionation labs since the position of each color-coded organelle in a density gradient or after differential centrifugation can be readily ascertained with the appropriate lamp, and for genetic studies since we will be able follow segregation of the different colors in the F2 generation after crossing parents crossed with different-colored organelles. Finally, we have designed each construct to encode a protein of substantially different molecular weight, such that an extract containing all three proteins can be used to demonstrate gel filtration chromatography or other separation techniques.

P37

CLONING SOYBEAN BETA-KETOACYL-ACP REDUCTASE.

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The fatty acid composition of plant membranes is thought to influence how plants respond to temperature, salinity and other environmental stresses. Therefore, understanding how plants regulate fatty acid synthesis is important for improving resistance to various stresses. We have attempted cloning soybean beta-ketoacyl ACP-reductase, a fatty acid synthesis gene that has been cloned from other plants but not from soybeans. Amino acid sequence alignments were used to design degenerate primers expected to anneal to conserved regions of this gene. Using these primers for RT-PCR on soybean mRNA we obtained several fragments of the expected length. We have cloned these fragments into pBlueScript, and are now preparing to have these fragments sequenced to determine whether they encode the soybean beta-ketoacyl-ACP reductase enzyme.

P38

EFFICACY OF DIFFERENT PORPHYRIN MOTIFS INDUCING APOPTOSIS IN RADIATION-INDUCED FIBROSARCOMA (RIF) CELLS.

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Novel cationic porphyrins were activated by light irradiation producing programmed cell death (apoptosis) in cultured fibrosarcoma cells. RIF cells were treated with porphyrin free base or with compounds synthesized with either zinc or nickel substitutes. After 24 hours, cells were exposed to UV light at 1.6 mW/cm sq. for 1 hour and incubated in fresh media for 24 hours. Morphological changes in the samples were observed by microscopy and DNA fragmentation was analyzed by agarose gel electrophoresis. Results indicate that short peripheral amino structures with zinc substituted free base porphyrins are more effective in inducing photodynamic apoptosis in RIF cells in culture.

P39

O_2 CONSUMPTION AND BASAL METABOLIC RATES IN SHORN AND SPRAGUE DAWLEY RATS

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Central Connecticut State University

Recently a spontaneous mutation was discovered in our colony of albino laboratory rats. This mutant rat expresses a hairless phenotype and was named shorn (gene symbol, *shn).* We hypothesize that the shorn rat will have higher O_2 consumptions and basal metabolic rates (BMR) than normal Sprague Dawley rats. Rats were placed in a glass chamber in which C02 was removed by soda lime. The pressure of the chamber was kept constant so that any volume changes represented O_2 consumption. The STPD corrected volume of O_2 was used to calculate BMR. The mean ± SE O_2 consumption (ml/100g body wt/min) and BMR (kcal/m^2/hr) were higher in shorn rats (3.092 ± 0.433 and 66.265 ± 4.683, respectively; n=3) compared to Sprague Dawley rats (2.019 ± 0.137 and 43.425 ± 2.635, respectively; n=5).

P40

THE ROLE OF HYPOTHALAMIC NEURONS IN THE GENERATION OF A FEVER: DEVELOPMENT OF PHYSIOLOGICAL RECORDING AND MORPHOLOGICAL STAINING METHODOLOGY

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A well known response to an infection or inflammation is an increase in body temperature, or fever. Recent physiological and anatomical evidence suggests that this response is triggered by a change in the activity of thermoregulatory neurons in the hypothalamus. To obtain a better understanding of the fever response, we have developed a series of techniques, which will allow us to characterize the intracellular activity and morphology of hypothalamic thermoregulatory neurons in an *in vitro* tissue slice preparation. Changes temperature, and the presence of endogenous cytokines (i.e., IL-1beta and PGE_2), can be tested to determine the electrophysiological responses of hypothalamic neurons. Once the electrophysiology experiments are completed, recorded neurons are injected with the intracellular marker, biocytin. Tissue slices are then processed for this histochemical marker to characterize the local morphology of each neuron. The methods employed allow a comprehensive characterization of the functional morphology and electrical activity of hypothalamic neurons. Results obtained using these techniques may provide evidence to support or refute the current model of fever induction.

P41

EFFECTS OF ESTRADIOL AND INTERLEUKIN-1β ON BRAIN C-FOS EXPRESSION IN FEMALE RATS

Joseph Triplet and Peter Butera
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Contact with infectious agents causes the release of proinflammatory cytokines (e.g., IL-1, TNF-α) in the periphery and in the brain. IL-1 has been shown to elicit a set of physiological and behavioral responses collectively known as sickness behavior, and previous research indicates that the effects of IL-1 are modulated by ovarian hormones. This experiment evaluated the hypothesis that the interactions between IL-1 and estrogen on behavior are accompanied by changes in Fos expression within the brain. To accomplish this, Fos expression was quantified with image-analysis software in the paraventricular nucleus of the hypothalamus (PVN) and nucleus of the solitary tract (NST) in female rats treated with IL-1 and estradiol singly and in combination. These brain regions are known to be involved in the actions of IL-1. Differences in the number of Fos-positive cells among the treatment groups are presented.

P42

BINDING PARTNERS OF THE ALPHA-DYSTROBREVIN CARBOXY TERMINAL DOMAIN

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Duchenne muscular dystrophy (DMD) is a fatal recessive X-linked genetic disorder. DMD is caused by the absence of the protein dystrophin in a complex that is critically important in muscle cells. Dystrobrevin is a dystrophin homologue that directly associates with dystrophin in this sarcolemmal protein complex. The carboxy terminal(CT) domain of alpha-dystrobrevin is an extremely interesting domain, because it is a region that is not homologous to dystrophin and also appears to have a significant effect on the function and location of alpha-dystrobrevin in vivo. This experiment attempted to identify binding partners to the CT domain of alpha-dystrobrevin in order to gain further understanding of this protein complex. A bacteriophage cDNA expression library created from the electric organ of the marine ray *Torpedo* was screened with an alpha-dystrobrevin tail fusion protein. No positive binding partners to the alpha-dystrobrevin tail were identified from this library. This result or lack thereof could suggest a number of different conclusions. It is possible that the alpha-dystrobrevin tail is not directly involved in protein-protein bindings as is it possible that modifications must be made in the screening protocol in order to identify positive alpha-dystrobrevin tail binding partners.

P43

THE EMERGENCE OF NEW BACTERIAL PATHOGENS

Karyn Moore and Michael A Davis
Central Connecticut State University

Recently, a pathogenic variant of the human commensal bacterium *Escherichia coli* appeared in the Northeast, and was responsible for several outbreaks of foodborne gastrointestinal illness and a few deaths. Named *E coli* O157:H7, it appears to have evolved from normal *E coli* partly by acquisition of virulence genes on a plasmid from the related intestinal pathogen *Shigella flexneri.* How did the plasmid move from *Shigella to E coli?* We are attempting to observe self-mediated transfer of the virulence plasmid of *Shigella flexneri* into a wild-type lab strain of *E coli.* We are proceeding on two fronts: first, we have a system for genetic selection of *E coli* bacteria that have acquired the virulence plasmid after co-incubation of *Shigella* and *E coli* under various conditions; and second, we are characterizing the sensitivity and reversion rates in our selection scheme, so if we fail to detect virulent *E coli,* we can state clearly that plasmid transfer is an extremely rare event. If we can identify co-incubation conditions under which the virulence plasmid transfers to other bacterial species at measurable frequency, it could suggest a likely mechanism for part of the evolution of *E coli* O157:H7. We hope this information can lead to a reduction in the emergence of new pathogens and the advancement of human health.

P44

TRIGGERS OF BACTERIOPHAGE LAMBDA'S SIEB (SUPERINFECTION EXCLUSION SYSTEM B)

Michael R. Langlois and Dr. Dale Rennell
Assumption College

Bacteriophage P22 and Lambda have several exclusion systems which allow these phage, when existing as prophage's, to prevent other phage from superinfecting their host bacterium. Bacteriophage P22 encodes a gene known as *sie* B (superinfection exclusion B) which prevents superinfection by several *Salmonella* phages. Lambda also has a *sie* B gene, but the superinfection exclusion activity of this gene has never been observed in the normal host of *lambda, Escherichia coli.* It has been shown, however, that the *sie* B promotor region of both lambda and P22 have great homology and that lambda's *sie* B gene is capable of excluding *Salmonella* phages when expressed in *Salmonella typhimurium.* A strain of E *Coli* sensitive to infection by P22 has been obtained and transformed with a plasmid bearing the lambda *sie B* gene. This bacterial strain was then used to determine if lambda's *sie* B exclusion appears inefective due to lack of appropriate trigger, or whether the E Coli environment is incapable of supporting the activity of the gene product.

P45

VIRUSES AS THERAPUTIC AGENTS FOR TREATING BACTERIAL INFECTIONS

Tammy Vieira and Nfichael A. Davis
Central Connecticut State University

Acne is a common problem among young adults and thus far has been combated by theraputic antibiotics, benzoyl peroxide, or retinoic acid. We are taking a different approach. While antibiotics are a good way to combat acne, we are going to make use of the way a lytic virus works as a novel approach. We are attempting to isolate a lytic virus for acne species that cause acne lesions. Preparations of the virus could be administered as a topical ointment and eradicate bacteria that cause acne. One of the species that is a causative agent of acne is *Propionibacterium acnes. We* are presently isolating *Propionibacterium* from the skin, and further attempting to isolate lytic bacteriophage from the environment (i.e., our noses) that attack this causative agent of acne. We have isolated skin microorganisms and have tentatively identified several strains as *Propionibacterium.* We will be performing a series of biochemical tests to confirm that they are *Propionibacterium* species. We will then begin to look for lytic bacteriophage specific for *Propionibacterium acnes.* As more bacterial species become resistant to antibiotics, the use of a lytic virus will be an alternative therapy to treat acne with fewer side effects.

P46

EXAMINATION OF THE CONSEQUENCES OF SILENCING FUNCTION WHEN ARS IS PRESENT WITHIN A SILENCER

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Mating type genes of Saccharomyces cerevisiae are regulated by DNA sequences, known as silencers, that determine when a particular gene is expressed or repressed. There are specific parts that make up the silencer; the origin of replication is referred to as ARS (Autonomously Replicating Sequence), and the activator is known as RAP-1 (Repressor Activator Protein-1). It is not certain whether replication at the ARS within a silencer affects silencing function. This area of replication is explored using ARS and RAP-1 as the silencer. Plasmids were utilized in this research; they contain one origin of replication, which was also a component of a silencer. Transcription of a downstream lac-z gene was measured by Beta-galactosidase assays. Preliminary data suggests that the silencer represses transcription, while RAP-1 alone activates it. These results will be compared to plasmids containing an additional origin of replication and an ARS within the silencer. In this case, the ARS within the silencer will not be forced to replicate; therefore, transcription levels may vary from the data previously described.

P47

PCR MUTAGENESIS OF THE P1 PARTITION PROTEIN PARA II.

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ParA is an essential protein for accurate distribution of the P1 plasmid at the time of bacterial cell division. Its direct role in the process is not understood and yet many functions have been ascribed to the protein. The nature of these functions and the importance of each to the process of partition will be discussed. The strategy for determining a direct role for the protein in the partition process will be described.

P48

INSERTION OF CLOSTRIDIUM RUBREDOXIN GENE INTO MUTANT STRAIN OF SYNECOCCUS 7002 TO EXAMINE PHOTOSYNTHETIC PATHWAYS.

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Cyanobacteria is classified as a photosynthetic bacteria. One member of the cyanobacteria family is Synecoccus 7002. We are interested in the photosynthetic machinery of this organism. Recently, a mutant Synecoccus 7002 strain was created (Bryant et al) which lacks the rebredoxin gene necessary for photosynthesis. We are using the clostridium rubredoxin gene to see if it will complement the mutation. Currently, efforts are underway to place the gene in a vector suitable for integration into the Synecoccus mutant strain.

P49

GENETICS OF THE SHORN *(shn)* MUTATION IN THE RAT II: SEARCH FOR MOLECULAR GENETIC LINKAGE

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A spontaneous hypotrichotic rat (lacking a normal hairy coat) was recently discovered among our colony of hairy albino rats. 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 more than 35 markers tested so far, we expect to reveal at least a partial exclusion map by April 24, 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.

P50

RAPD ANALYSIS OF GENETIC POLYMORPHISMS IN THE FRESHWATER *LIMPET, FERRISSIA RIVULARIS,* DISTRIBUTED ALONG THE OHIO AND SUSQUEHANNA RIVER BASINS

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The RAPD (Random Amplified Polymorphic DNA) technique was used to examine if a genetic difference exists between populations of limpets on opposite sides of a geographic barrier. Limpets were collected from various streams in each drainage basin and the genomic DNA of each was extracted. The DNA was amplified and then viewed through agarose gel electrophoresis. The resulting photos of the gels were examined and the bands of each sample were compared against those samples of the same site and those samples from other sites in order to determine if some difference in the genetic polymorphisms does exist. Preliminary data revealed that limpets on opposite sides of the geographic barrier are, in fact, different in their genetic DNA band patterns. Through further study, the exceptional site can be examined more closely and more concrete evidence can be found to support the hypothesis that there is a genetic difference in these limpets.

P51

CONSTRUCTION OF A GENE FUSION TO STUDY THE TRANSCRIPTIONAL REGULATION OF sigB EXPRESSION IN Synechococcus sp. PCC 7002.

Brian R. Chapados and Laurie F. Caslake. Dept. of Biology. SUNY-Fredonia

Cyanobacteria are ubiquitous in the marine environment, yet we lack a detailed understanding of how these organisms respond to environmental changes at the molecular level. In the marine cyanobacterium, Synechococcus sp. strain PCC 7002, transcript levels of an alternate sigma factor, sigB, increase with increasing periods of nitrogen and carbon starvation. Analysis of the putative sigB promoter reveals a 19-bp interhexamer spacer, 2-bp longer than that of the E. coli s70 consensus promoter. This leads us to believe that an activator protein may be involved in the regulatory process. Our goal is to identify important regulatory sequence elements in the putative sigB promoter.

P52

THE EFFECT OF TRANSCRIPTIONAL REGULATION ON REPLICATION IN *S.CEREVISIAE.*

Jim Magee, Dr. Susan Reimer
Saint Francis College

We are interested in the effect, if any, that the regulatory protein RAP1 will have on the replication origin of a nearby ARS (autonomous replicating sequence) in yeast plasmid. RAP1 has the ability to act as both a silencer or enhancer. This happens by specific proteins binding to regulatory elements on DNA. The level of transcription is either expressed or repressed depending on the type of protein. This binding of the protein to DNA is very specific which also helps account for the regulation of expression. The case of interest here is silencing, which occurs when a negative regulatory protein binds to the regulatory element on the DNA strand. These regulatory elements are effective up to 1000 bp from the promotor. Promotors are crucial for determining whether transcription occurs, while enhancers and silencers determine the level expressed. Here we are interested in the effect the regulatory protein RAP1 will have on replication of a plasmid at the ARS. This will help us better understand gene regulation in human DNA.

P53

BEHAVIORAL AND MOLECULAR CHARACTERIZATION OF A PROGRESSIVE FLIGHT-IMPAIRMENT MUTANT IN DROSOPHILA MELANOGASTER.

Natalie Coy. Hofstra University, Hempstead, NY 11549.

We are using enhancer trap techniques to study genes involved in the development and function of skeletal muscles in Drosophila melanogaster. Line AS68, has a P-element insertion in the 53E region of the second chromosome and exhibits lacZ expression in indirect flight muscles in adults and in mesoderm in embryos. There is, however, no observable mutant phenotype. In order to generate deletion mutations, the P-element was mobilized genetically. We isolated five jump-out lines, which display a progressive loss of flight ability. As a starting point for a molecular analysis of these mutants, we isolated a 2.2 kb genomic clone downstream of the P-element (plasmid rescue clone). This genomic clone was sequenced and found to have 99% identity to a gene called buttonless on the third chromosome. Further studies made it apparent that this plasmid rescue clone is DNA from the 94B region of the third chromosome that is attached to the P-element. We report here our strategy for 'walking the chromosome' downstream of the P-element and past buttonless to genomic DNA in the 53E region. This strategy should allow us to isolate DNA that includes the coding region for the gene that was disrupted in flight-impairment mutation.

P54

CLONING OF nblA FROM Synechococcus sp. PCC 7002.

Joseph A. Brzezinski, IV, Kristen E. Miller and Laurie F. Caslake. Dept. of Biology SUNY-Fredonia

In response to nutrient deprivation, cyanobacteria degrade their phycobilisomes. Phycobilisomes are protein complexes that funnel light energy into photosystem II in cyanobacteria. The degradation of phycobilisomes is known to occur in response to limiting amounts of carbon, nitrogen, and other essential nutrients. In Synechococcus sp. PCC 7942, phycobilisome degradation does not occur when a gene, nblA, is mutated. We have cloned nblA from Synechococcus sp. strain PCC 7002 in order to study its role in phycobilisome degradation.

P55

JUMP START MUTAGENESIS SCREEN FOR FLIGHT MUTANTS IN DROSOPHILA MELANOGASTER.

Marie Palazzo, Hofstra University

Prior to this experiment, flight impaired mutants of Drosophila melanogaster were created by removing a P transposable element inserted in the 53E area of chromosome 2R. In these mutants, flight muscle shows progressive loss of function four weeks after birth. In order to isolate the gene affected in the mutants, I performed a jump start mutagenesis in which the P element in the original P element insertion line was allowed to jump around the Drosophila genome and then reinsert. Since most jumps of this type occur over a short distance, I expected some of the new insertion sites to be close to the gene that results in the flight impairment when mutated by P element removal. Newly eclosed flies were isolated for four weeks and then flight tested. The results from the first trial of flight testing of 69 lines show 8 had a complete inability to fly at four weeks and 51 showed a flight impairment. After confirmation of these results, genomic clones in the area of the P element insertion will be isolated and sequenced.

P56

NUCLEOTIDE SEQUENCING OF cDNAs ISOLATED BY DIFFERENTIAL SCREENING OF A *DICTYOSTELIUM* HEAT SHOCK LIBRARY

Marissa Moore, Jessie Brosseau and Valerie Hau *Mentor.- S. Brightman*
Department of Biology, Sacred Heart University

Environmental stress stimulates cells to express heat shock proteins in higher concentrations. This is a protective mechanism to combat protein denaturation and the improper folding of newly synthesized proteins. The objective of this project was to sequence and describe cDNAs isolated from a gene library representing heat shocked *Dictyostelium discoideum* amoebae. Several cDNAs had previously been isolated by differential screening of this library for stress-induced genes. Before these cDNAs could be sequenced, PCR amplification was necessary to obtain ample amounts of starting material. Amplification yielded product for two clones. Partial sequences were obtained for these two cDNAs using a thermocycle sequencing protocol followed by polyacrylamide gel electrophoresis and silver staining. BLAST searches for these sequences resulted in the possible identity of one as Dd 17S RRNA. The second cDNA remains unknown, but it exhibits limited sequence similarity to regions of the *D. novemcinctus* mitochondrial genome, a *P. falciparum* HB3 chloroquine resistance candidate protein gene, and the *P. falciparum* gene for HSP86.

P57

DOES SUBLETHAL PREHEATING ENHANCE SURVIVAL IN *CHLAMYDOMONAS* EXPOSED TO NORMALLY LETHAL TEMPERATURE?

Denise Ramoutar, Mike Adams
Eastern CT State University/ Biology Department

Organisms respond to stress in a variety of ways, one of them being heat shock. When an organism is exposed to temperatures above 20°C they are under the treatment of heat shock. Organisms may respond to heat shock by producing a specific set of heat shock proteins called hsp 70. Already shown on *Chlamydomonas* hsp 70 first appears at a temperature of 35°C. Cells incubated at 35°C exhibit 100% survival. In contrast, cells incubated at 45°C for 20 minutes exhibit 0% survival. In cells incubated at 35°C for 1 hour followed by 45°C for 5 minutes 25.8% survived. Since cells produce the hsp at 35°C, with no lethality, could a pretreatment at 35°C have an effect on survival at 45°C? Previous work in this lab has shown that *Chlamydomonas* cells show a similar response in terms of hsp 70 production following deflagellation. We are currently researching to see if this also affects survival.

P58

ANALYSIS OF *STAR* AND *ASTEROID* P ELEMENT MUTATIONS

Leigh Anne Borawski, Stephen P. Voght, Adrienne L. Stevens, Amy E. Martin, Stacey A. Sedore, Jeffrey Bergeron, Steven Luke, Michael Piazza, Michael A. Kotarski, Deborah A. Leonard
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Star and *asteroid* are two genes which function in the Egfr signaling pathway in *Drosophila* development. They lie very close together, their 5' ends separated by only 189 base pairs. The insertion of transposable P elements into the *Star-asteroid* region produced mutations which were recovered and analyzed for levels of mRNA of the two genes. Three of these mutations, 218-2, 1117-2, and 31-2, were found to produce very different levels of mRNA of *Star* and *asteroid.* Genomic clones containing the P element from each strain were recovered in the λ2001 phage vector. These clones were restriction mapped, and fragments containing the P elements were subcloned and sequenced to determine the position and orientation of each element. These data will provide the basis for determining how each element influences each of the genes and will prove useful in determining the positions of promoters and enhancers of *Star* and *asteroid.*

P59

MOLECULAR CHARACTERIZATION OF XYLITOL UTILIZATION IN THE *ENTEROBACTERIACEAE*

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The *Enterobacteriaceae* have a wide spectrum of capabilities to degrade various sugars. However, within this family is a large variation in the ability to utilize compounds found in the environment. One less common compound is xylitol - a five carbon alcohol sugar. This study addresses the ability of various *Enterobacteriaceae* to utilize xylitol and identify the presence of xylitol utilization genes in this family of organisms.

P60

PURIFICATION OF THE C-TERMINAL DOMAINS OF DNA LIGASE III AND XRCC1

Catherine Couture and Dr. Gregory Mullen
Providence College and the University of Connecticut Health Center

The carboxyl terminal domains of both DNA Ligase III and XRCC1 are involved in DNA base excision repair as a heterodimeric complex whose structure has not yet been determined. To determine the structure of this complex via NMR analysis, a small, protein sample that is both concentrated and pure is needed. In order to attain these NMR conditions, differing methods of purification were employed because the domains behave differently in aqueous media. The XRCC1 c-terminal domain is soluble and was purified using ammonium sulfate precipitation and gel filtration. The DNA Ligase III c-terminal domain appeared to be soluble only in denaturing conditions and was thus purified using an affinity column in 6M urea. The complex was formed by removing the urea by dialysis and seeing that the domains as a complex were soluble. The individual domains were successfully purified from both contaminating proteins and from nucleotides that appeared to bind to the domains. Moreover, the physical association between the domains was successfully observed.

P61

USE OF CHEEK CELL EXTRACTS FOR PCR AMPLIFICATION OF D1S80 AND D17S5 LOCI

Alexandra Estrella and Diona Koerner
Chemistry Department, Marymount College, Tarrytown, NY

Cheek cell extracts were prepared from saline mouthwashes by treating with Chelex resin and boiling. The cell extract was used as a source of DNA template for amplification of the variable number tandem repeats, VNTR, of the D1S80 and D17S5 loci using the polymerase chain reaction. The ability of the sample to serve as a template decreased with storage at -200C and reached zero after one month. All subsequent studies used freshly prepared extracts. Samples from 10 individuals were examined for the D1S80 locus. Amplification was obtained in 6 individuals and the rest showed no amplification. The age range of the subjects was from 3 to 75 years and included both males and females. Neither age nor gender was related to the ability to amplify the locus. DNA concentration was not a factor. Similar variability was encountered when the D17S5 locus was examined - some samples showed good amplification and some showed none. Amplification was achieved in some individuals with the D1S80 probe but not the D17S5 probe. In others the reverse result was observed. This indicates that the lack of PCR amplification was the result of individual differences around the VNTR loci and not due to the quality of the DNA template in a particular sample. Further studies using purified DNA samples are in progress.

P62

GENETICALLY ALTERED PLANTS MAY BENEFIT THE ENVIRONMENT

Stacy Kreger and Clint Chapple
Providence College and Purdue University

Several mutant plants of the *Arabidopsis thaliana* species have been discovered. These mutants lack some products of the phenylpropanoid pathway such as sinapolyl malate (SM) and syringyl lignin, but have normal growth patterns. Under UV light wild type plants which contain SM fluoresce blue-green, while the mutants lacking SM fluoresce dark red/magenta due to chlorophyll. It was determined that these mutants were defective in the enzyme ferulate-5-hydroxylase (F5H), a cytochrome P450-dependent monooxygenase. F5H was cloned and designated a member of a new subfamily, CYP84. Altering the genes of plants and trees so as to over express F5H results in an increase in syringyl lignin (easy to degrade) and a decrease in guaicyl lignin (harder to degrade). These altered species may benefit the paper and pulping industry as well as animal breeding.

P63

BETTER CATALYSTS THROUGH FUNTIONALIZATION OF METALLOCENES

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Metallocene catalysts are successfully being used to catalyze the production of plastics such as polyethylene, even though there is only one active site, By completely funtionalizing the metallocene with phosphine donors, the number of active catalytic sites will be increased. The increase in active sites may allow for more flexible catalyst design. While initial studies involved using ferrocene as the metallocene core, the focus of the research has now been shifted to pentamethylruthenocene. This was done in order to take advantage of the increased organic solubility as well as the simplified spectroscopic analysis. One method used to attempt full functionalization of the metallocene involves the reaction of chlorodiphenylphosphine with the acetoxymercurated metallocene. Results of this reaction will be presented. Studies on a different reaction pathway, the reaction of pentachloropentamethylruthenocene with a lithiumphosphine reagent, will also be presented.

P64

PROTEIN ELECTROCHEMISTRY AT MODIFIED AG AND AU ELECTRODES

Tracy L. Paxon, Rose A. Clark
Saint Francis College, Loretto, PA.

Protein electrochemistry is of interest to better understand biological electron transfer and for the development of future biosensors. The majority of protein electrochemistry focuses on solution proteins. Our goal is to develop electrodes that incorporate membrane proteins; however, our initial studies will focus on adsorbed solution proteins. Cytochrome c is a biological electron transfer protein that readily adsorbs to electrodes that exhibit appropriate interfacial properties. Biocompatibile electrode surfaces on Au and Ag can be prepared using thiols to create a self-assembled monolayer (SAM). Initial studies focused on using the Ag modified electrode. Difficulty in preventing the oxidation of the Ag has been encountered with short chain modifiers-however, longer chains seem to prevent oxidation. This poster addresses the electrochemistry of cytochrome c on both Ag and Au electrodes after modification with SAM'S.

P65

METALLOTHIAPORPHYRINS AS PHOTODYNAMIC THERAPY AGENTS

Amy L. Gryshuk*, Dawn Cox*, Ryan J. Howard*, Lynn E Maelie+, E. P. Zovinka*
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The study of metallothiaporphyrins is of interest because of their potential use as Photodynamic Therapy (PDT) agents for cancer treatment. When light activated (630-800 nm), the porphyrin excites the oxygen in the tumor cell to its toxic singlet state which kills the cancer. Prior experimentation on the insertion of molybdenum into a thiaporphyrin ligand has shown bands in this optimal red region (~719 nm). The goal of this project is to efficiently and affordably synthesize thiaporphyrins and dithiaporphyrins according to a "3 +1" method using a thiotripyyrane-dicarboxylic acid with 1-H-pyrrole-2,5-dicarboxaldehyde. The thiotripyrrane has been successfully synthesized according to ^{1}H NMR data and we are currently preparing 1-H-pyrrole-2,5-dicarboxaldehyde. The full synthesis will be presented.

P66

THE EFFECTS OF CTAX AND SDS MICELLES ON THE ACID IONIZATION CONSTANTS OF 1 AND 2-NAPHTHOIC ACID

Jared Kostka and Charles Marzzacco
Rhode Island College

The effects of cetyltrimethylammonium chloride and bromide (CTAX) and sodium dodecylsulfate (SDS) micelles on the pK_as of 1- and 2-naphthoic acid have been determined from spectroscopic and pH measurements. Fluorescence and absorption spectroscopic evidence will be presented to show that both the free acid and the conjugate base forms of the naphthoic acids associate with CTAX micelles while only the free acids associate with SDS micelles. It will also be shown that the naphthoic acids become stronger acids than they are in water when CTAX micelles are present, and they become weaker acids when SDS micelles are present. The effects of the ionic strength of the solution on the pK_as of these systems will also be presented. The results will be presented in terms of relative stabiliztions of the acid and conjugate base species by the micelles.

P67

SYNTHESIS OF NOVEL ANTIMICROBIAL COMPOUNDS

David A. Henningsen and Dr. Georgia Arvanitis
The College of New Jersey

Several types of novel antimicrobial agents were prepared. The first series contained a heterocyclic system coupled to two alkyl chains. An aliphatic chain was tethered between the exocyclic sulfurs and the other shorter chains to the endocyclic nitrogens, thus forming the quaternary ammonium salt. Different alkyl chain lengths were used in each case to optimize activity. Another series focused on forming quaternary ammonium compounds from dibromoxylenes, where the bromines were oriented ortho, meta, or para to one another. Different amine group lengths were again tried in an effort to optimize the activity of these compounds. The reactants and products of all reactions were characterized using 1H and 13C-NMR spectroscopy, as well as IR spectroscopy.

P68

SUBSTITUENT STUDIES IN ARYL TRIAZENE CONJUGATE ADDITION REACTIONS.

Anthony Tedesco, Peter Korakas, Brian Raudenbush, Dr. James Louey.
Sacred Heart University, Fairfield, CT 06432-1000.

A series of substituted aryl triazenes (ortho, meta, and para) have been prepared and reacted with methyl vinyl ketone (MVK) and 4-hexen-3-one in the presence of titanium (III) chloride. The observed impact of both electronic and steric effects will be presented. This reaction may have potential use in the synthesis of natural products.

P69

SYNTHESIS OF A NOVEL PYRIDINE BASED LIGAND

Letitia Vega and Linda Farber
Sacred Heart University, Dept of Chemistry/Physics

We are investigating the self-assembly of 1,3-Bis-[4-(methylthio)-2-(phenyl)pyridin-6-yl]phenylene 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 a novel pyridine based ligand will be described. The ligand's self-assembly with several appropriate transition metals will ultimately 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.

P70

ANALYSIS OF HAIR DYES WITH VISIBLE SPECTROSCOPY

Marcela A. Escobar and Dr. Penny Snetsinger
Sacred Heart University, Fairfield, CT

Visible spectroscopy was used to analyze a variety of hair dyes. Permanent hair dyes are made up of a variety of individual dye molecules. Each dye molecule absorbs a unique wavelength of visible light. By using visible light spectroscopy, one can determine the number of different dyes and the proportions of the different dyes in a given hair color. Different brands of hair dyes and different colors of dyes within that brand were tested. Molecule modeling was also used to investigate the visible absorption of known dye molecules. We investigated how different brands of hair dyes differ from each other, while giving rise to be the same color.

ECSC 1999 Participants

(* = Faculty)

Assumption College

Dale Rennell *	P44
Michael Langlois	P44

Buffalo State College

William Durfee*	A10,D1,D6
M. Scott Goodman*	D6
Richard Potucek	A10,D1
Jay Stork	A10,D1
Brian Zelakiewicz	D6

Central Connecticut State University

Douglas Carter*	
Michael Davis*	P43,P45
Sylvia Halkin	P18
Martin Kapper*	
Thomas King*	H4,H5,P39,P49
Kathy Martin-Troy*	H3,P47
Ruth Rollin*	P39
David Spector*	
Robert Troy*	
Cheryl Watson*	I3,I4,P23
Joe Abagis	P49
Arbella Baba	H4
Tammy Badigian	
Lesa Clarke	
Kim Collette	P9
Katty Delicein	
Rachel Dodakian	P18
Donna Gicewski	
Marcy Grabiec	
Cyd Groff	P13
Emily Hall	H5
Scott Hevner	
Amy Higgins	H3,P47,P49
Dan Jamieson	
Siri Khalsa	
Izabela Krakowiak	I3,I4
James Lanza	
Jessica Lathrop	H5
Careen Malcolm	
Hulda Landeline Michel	
Karyn Moore	P43
Raye Mutcherson II	H4,P49
Brenna Nelson	I3,I4
Sara Patterson	
Michael Phaneuf	P39
Timothy Phelan	
Kevin Potter	
Isabella Puskarsz	H3,P47
Dennis Quinn	P23
Monica Rodriguez	

Central Connecticut State University (cont.)

Milagros Serpa	
Katerina Serrano	H3,P47
Amy St. Pierre	
Steve Stanchfield	
Gregory Sturges	
Christy Thoma	
Tim Tomaszewski	
Justina Traber	
Tammy Vieira	P45
Brian Wagner	P39

The College of New Jersey

Lynn Bradley*	D2,D9
Homar Barcena	D9
Patricia Fitzgerald	D2
Brian Falcone	D7
David Henningsen	P67

Eastern Connecticut State University

Mike Adams*	G2,P57
Catherine Carlson*	P11
Margaret Coleman*	P10
Gloria Colurso*	P24
Elizabeth Cowles*	P26,P28,P30
Ross Koning*	
Sarah Blair	P30
Kateri Fischer	G2
Tracy Gaylord	
Anne McDermott	P28
Mark Milikin	P11
James Nilson	P24
Denise Ramoutar	P57
Michael Varni	P10
Ryan Zengou	P26

Elms College

Sr. Mary Wright*	J1,J2,J3
Sinnet Abdoo	
Christina Alves	J3
Julie Duffy	J1,J2
Catharine Guertin	J1,J2
Kim Hutchinson	
Mary Szatkowski	
Tara Shea	

Fairfield University

Nancy Haegel*	F2,F3
Malcolm Hill*	P19
David Palmieri	F2
Kelly DeMeo	P19
Kristen Record	F3

Hofstra University

Beverly Clendening*	
Natalie Coy	P53
Marie Palazzo	P55

Ithaca College

Cyndy Scheibe*	
Jenny Brennan	L1
Seth Depuy	I1
Marnie D'Uva	L1
Jill Fadia	L6
Darragh Foley	L3
Erin Fortier	K6
Erin Hughes	K1
Jennifer Joy	K5,L1
Keith Jordan	F6
Kate Knauf	L2
Tanya Lenczewski	L3
Rachel Levy	L1
Kari Luehman	L3
Michelle Fura	C2
Debra Millstein	L2
Emily Patrick	L2
Heather Porter	K4
Megan Roberts	L1
April Smith	L5
Cindy Smith	L2
Matthew Thouin	L1
Amy Vavra	L1
Melissa Zappen	L3

John Carroll University

Helen Murphy*	
Cyrilla Wideman*	
Joseph Carino	I7
Michael Hasman	I2
Andrew Young	I5

Lycoming College

Kathryn Ryan*	
Rebecca Hoover	P2
Jennifer Weaver	P4
Traci Lutz	K2

Manhattan College

Lance Evans*	
Walter Faber*	
Brian Fee*	
James Haley*	
Michael Judge*	
William Tramontano*	G6,H1
Arlene Balubayan	H2
James Dauterman	E2
Thao Doan	G1
Christopher Frenz	
Elvira Liclican	J4

Manhattan College (cont.)

Marigrace Lim	
Jody McAleer	G6,H1
Diana Rodriguez	J5
Anthony Uglialoro	G6,H1

Marymount College

Faith Florer*	P3
Carl Hoegler*	
Aura Ardon	
Rosalind Brown	P3
Alexandra Estrella	F1,P61
Laura Tastivos-Santos	P3
Amanda Willoughby	L4

Monmouth University

J. Asoka*	A4,A6,A8,D4
T.J. Zielinski*	
Maricar Acab	
Paulo Borges	A6
Shawn Kennedy	A4
Mike Principe	A8
Parinaz Rajaii	
Mike Rietmann	D4
David Santimana	D4

Morgan State University

Tyan Frazier	A11
Kingsley Gwei	A2
Jerainne Johnson	A5
Rachel Mohammed	A7
Bolanle Sosanya	A9
Andrea Young	D10

Niagara University

William Cliff*	P35
Mark Gallo*	C1,E1,P16,P33,P59
Robert Greene*	G5,G7,P33,P38
Connie Guthrie*	
Michael Kotarski*	P58
Josef Krause*	G5
Mary Schreiner*	A1,B2,B3
A. Ruth Steward*	B1,B2,B3
Carol Sweeney*	
Brandi Blumling	P33
LeighAnn Borawski	P58
Renee Brennan	E1
Monica Brugio	P35
Rebecca Dudek	
Kerry Fein	C1
Bryan Gargano	B1
Ken Halliwell	P38
Melissa Hooper	A1
Todd Janicki	B2
Kelly Ludden	P59
Steve Luke	P16,P58
Amy Martin	P58

Niagara University (cont.)

Laura Murray	
Rob Parry	G7
Cory Romesser	B3
Ann Smyntek	E1
Adrienne Stevens	P58
Joe Triplet	P41
Shawn Vainio	G5
Stephen Voght	P58
David Wolford	A3

Providence College

James Belliveau*	
Kathleen Cornely*	G4
Yvonne Arsenault	C4
Catherine Courture	P60
Colleen Doherty	J6
Adam Hantman	P42
John Higgins	E5
Stacy Kreger	P62
Ruth Lambert	E3
Douglas Matthews	G4
Meghan Murray	C4
Alyssa Nadeau	C4
Sina Shah	I6
Rebecca Waggett	E6

Rhode Island College

Douglas Furton*	
Charles Marzzacco*	P66
John Williams*	
Jason Durand	
Jared Kotska	P66
Tim Pernini	
Alberto Savoretti	
Rosa Tabaoda	

Sacred Heart University

Aid Alkhatib*	
Carol Batt*	
Shannon Brightman*	G3,P56
Maureen Conard*	
Linda Farber*	P69
Babu George*	
John Griffin*	P40
Efim Kinber*	
Rose Marie Kinik*	
Peter Loth*	
James Louey*	D8,P68
Antonio Magliaro*	
Jennifer Mattei*	E7,P21,P22
Gerald Reid*	
Jean Sells*	
Marlina Slamet*	
Penny Snetsinger*	P70
Grant Walker*	
Jessica Andrillo	P1
Meg Arena	P6

Sacred Heart University (cont.)

Darci Britner	G3
Jill Bruno	P22
Brian Bunnell	P7
John Campolettano	G3
Marcela Escobar	P70
Sarah Farrell	P8
Frances Gargano	P6
Rielle Giannino	P40
Jennifer Hauge	P40
Sara Ignudo	E7
Peter Korakas	D8
Mike Koosa	P7
Joe Laroche	P1
Brandon Lyons	P7
Audra McMahon	P40
Marissa Moore	P56
Nathan Petersen	G3
Brian Raudenbush	D8,P68
Wendy Scheer	P21
Anthony Tedesco	D8,P68
Kimberly Thulin	P1
Letitia Vega	P69

Saint Francis College

Edward Zovinka*	P63,P65
Rose Ann Clark*	P64
Sue Reimer*	P46,P48,P52
Amanda Beyer	P48
Laura Frieko	P46
Amy Gryshuk	P65
Bill Kilgore	
Jim Magee	P52
Jude Naylor	P50
Tracy Paxon	P64
Christina Petrarca	P63

SUNY Fredonia

Laurie Caslake*	P32,P51,P54
David Orvos*	P12,P14,P15,P17
Joseph Brzezinski	P54
Brian Chapados	P51
Jeremy Clark	P15
Jeffrey Diers	P17
Chris Genske	P32
Danielle Mahoney	P20
Peter McKenney	P14
Kristen Miller	P54
Adam Ryan	
Karen Ryan	P12
Susan Sanders	P32

SUNY Potsdam

Biman Das*	F4
Sean McCarthy	F4
Daniel Neilson	F4

Wagner College

Kathleen Bobbitt*	
Walter Kanzler*	
Laurence Nolan*	P5
Linda Raths*	
Donald Stearns*	
Christine Gerke	C3
Michael Mateo	K3
Amy Siegel	P5

Western Connecticut State University

Ronald Chriss*	D3,D5
Susan Maskel*	P29,P31
Andrea Applegreen	D5
Anthony Doran	P29
Maria Duclos	P27
Deborah Johnson	P25
Vichitdara Vongsouvanh	P31
Michael Wodjenski	D3

Wilkes University

Anthony Kapolka*	
Ken Pidcock*	
Richard Ali	E4
Michael Donahue	P36
Randy Engelman	P34
Matthew Himlin	F5
Laurence Kocylowski	P37
Douglas Kovatch	P34
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