The Honors Program's
Center for Undergraduate Research Opportunities

CURO Symposium 2002
Program and Abstracts

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CURO Symposium 2003

Center for Undergraduate Research Opportunities

University of Georgia, Tate Student Center
April 14-15, 2003

CALL FOR ABSTRACTS

The Center for Undergraduate Research Opportunities at the University of Georgia provides a forum for all undergraduates to present original research sponsored by faculty members. Undergraduate students from all disciplines are encouraged to participate. Representatives of public and private higher education institutions in Georgia are encouraged to apply.

Presentations may be in the form of an oral presentation, poster session, exhibition, performance, or work of art. Students can also present a tutorial about a research methodology or new technology. Undergraduate researchers who are at various stages of the research process are encouraged to submit abstracts describing where they are in the research process and the issues they face. Those who wish to present their work should submit an application located on the CURO Website, an abstract of a maximum of 250 words, and a brief supporting letter from the sponsoring faculty member no later than January 10, 2003. Group research projects should be submitted with one application and one letter of faculty support. All abstracts will receive student peer review with faculty guidance. All participants accepted into the symposium will be notified by February 14, 2003, and their abstracts will be published in a book of abstracts. Sponsoring faculty will be invited to preside at their students' sessions. Abstract submission is open to all undergraduate researchers.

Best Paper Awards
Papers on work being presented at the CURO symposium submitted by March 7, 2003 will be considered 'best paper' awards in humanities, sciences, and social sciences.

Purpose of the Symposium:
- Highlight excellence in research by undergraduate students.
- Enrich the undergraduate experience by promoting communication and cooperation between faculty and students.
- Inform undergraduates at the University of Georgia about the many existing opportunities available for collaboration with faculty to produce original research projects at the University of Georgia.
- Provide an opportunity for undergraduate researchers in the state of Georgia to engage with their peer researchers.

Criteria for Selection:
- Originality and quality of research.
- Quality of written abstract.
- Ethical and responsible research.
- Extent of involvement of the undergraduate student in the development of the research design and execution of the project. Research presented at the CURO Symposium should go beyond work completed for a class paper or project.
- A letter of support from supervising faculty.

This event will be free and open to the public. All interested faculty and students are encouraged to attend the CURO Symposium. For more information, contact Dr. Pamela B. Kleiber, Associate Director, Honors Program, 203 Moore College, Athens, Georgia, 30602, CURO@uga.edu, (706) 542-3240.

CURO 2002 Symposium at Glance

Monday, April 15, 2002

Concurrent Oral Sessions **9:05 a.m. -3:20 p.m.**
Tate Student Center Conference Rooms 138, 139, 140, 141, 142

Opening Sessions and Welcome **4:00 p.m.**
Tate Student Center, Georgia Room

Keynote Address **Dr. Steven Stice**
Georgia Research Alliance Eminent Scholar
Department of Animal and Dairy Science

A View from the Laboratory:
Scientific Possibilities and Ethical Restraint in Human Stem Cell Research

Reception and Poster Presentations **5:00 p.m. – 7:00 p.m.**
Sponsored by the Honors Program
Tate Center, Georgia Room

Tuesday, April 16, 2002

Visual and Performing Arts Presentations
Memorial Ballroom

Welcome **9:00 a.m.**

- **Gallery Talks**
- **Poetry Reading**
- **Dance Performances**
- **Musical Performances**

Closing Session
Memorial Ballroom

Reception sponsored by the Honors Program **3:30 p.m.**

Awards Ceremony **4:00 p.m. – 6:00 p.m.**

Evening Concert **8:00 p.m.**
Hodgson Hall

Monday, April 15, 2002

Concurrent Sessions
Tate Student Center Conference Rooms 138, 139, 140, 141, 142

9:05-9:55 a.m. **First Concurrent Session**

Room 138	**Siobahn Beaton**	Progress toward the Partial Purification of a Pectin Biosynthetic Gene
	Faculty Mentor	Dr. Debra Mohnen, Complex Carbohydrate Research Center, University of Georgia
	April Harper	Expression of Putative Arabidopsis UDP-Glucuronic Acid 4-Epimerase Genes
	Faculty Mentor	Dr. Debra Mohnen, Complex Carbohydrate Research Center, University of Georgia
	Donte Howard	Use of a Non-Radioactive Gel Assay to Assess whether Protein Purification Separates a Pectin Degradative Activity from the Pectin Biosynthetic Enzyme Alpha-1, 4-Galacturonosyltransferase
	Faculty Mentor	Dr. Debra Mohnen, Complex Carbohydrate Research Center, University of Georgia
Room 139	**Jacoby Hudson, Cassandra Kirkland, and Crystal Oliver**	Identifying Expressed Genes in Sorghum
	Faculty Mentors	Dr. Marie-Michèle Pratt and Dr. Lee Pratt, Department of Botany, University of Georgia
	Dipinder Singh Keer	An Online Analytical Processing Approach to Single Nucleotide Polymorphism Discovery and Analysis
	Faculty Mentors	Dr. Marie-Michèle Pratt, Dr. Chun Liang, and Dr. Lee Pratt, Department of Botany, and Dr. Mark Huber, Department of Management Information Systems, University of Georgia
	Dmitri Kolychev	Analysis of Microsatellites in Sorghum ESTs
	Faculty Mentors	Dr. Marie-Michèle Pratt, Dr. Lee Pratt, and Dr. Suchendra M.Bhandarkar, Department of Botany, University of Georgia
Room 140	**Eirin Kallestad**	It Was Broken, but They Did Not Fix It: Italian Election Reform in the Nineties
	Faculty Mentor	Dr. Christopher S. Allen, Department of Political Science, University of Georgia

	Matt Edwards	Evaluating the Moscow Center for Export Control's Role as a Non-Proliferation Epistemic Community Member
	Faculty Mentor	Dr. Gary Bertsch, Department of Political Science, University of Georgia

10:10-11:00 a.m. **Second Concurrent Session**

Room 138	**David Cureton**	Development of an *In Vitro* Packaging System for Streptomyces Bacteriophage
	Faculty Mentor	Dr. Janet Westpheling, Department of Genetics, University of Georgia
	Amanda Hudson	Screening Mutant Yeast Strains for Abnormalities in the Localization of snoRNA
	Faculty Mentor	Dr. Michael Terns, Department of Biochemistry and Molecular Biology, University of Georgia
Room 139	**Kristen Bryant**	Rapid Detection of *Salmonella* Using Three DNA Extraction Methods in Conjunction with Polymerase Chain Reaction
	Faculty Mentor	Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia
	Quyen Dam	Clones of Resistant *Enterococcus faecium* Found in Humans and in Their Pets
	Faculty Mentor	Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia
	Jessie Hopkins	Comparison of Several DNA Extraction Methods in Conjunction with PCR for the Rapid Detection of *Rhodococcus equi* and *Steptococcis equi*
	Faculty Mentor	Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia
Room 140	**Lotus Seeley**	The Construction of the Lesbian Identity in the Undergraduate Classroom
	Faculty Mentor	Dr. Bonnie Dow, Women's Studies, University of Georgia
	Carrie Brooks	Reaching Across Cultures: An International Teaching Experience
	Faculty Mentor	Dr. Carole Henry, Art Education, University of Georgia
	Robert Brown	Risk/Resilience Systems and Child Behavioral Development
	Faculty Mentor	Dr. R. W. Kamphaus, Department of Educational Psychology, University of Georgia

Room 141	**Robin Seagraves**	New Balance Athens: "Endorsed by No One but Our Valued Customers"
	Faculty Mentor	Dr. Michael Lomax, Department of Physical Education and Sports Studies, University of Georgia
	Sara Smith	Optimization of Textural and Structural Properties of a Refrigerated Soy Based Dessert
	Faculty Mentor	Dr. Milena Corredig, Department of Food Science and Technology, University of Georgia
	Margaret Young	Adintern.com: A Website to Assist Advertising Focused Students in Finding, Getting, Keeping, and Leaving an Internship
	Faculty Mentor	Dr. Kirsten L. Strausbaugh, Department of Advertising/Public Relations, University of Georgia
Room 142	**Applying and Getting Accepted to the National Conference on Undergraduate Research (NCUR): A Panel**	
11:15 a.m.-12:05 p.m.	**Third Concurrent Session**	
Room 138	**Peter Harri**	Gene Expression in *Leishmania*: Control of Protein Synthesis in *Leishmania* 5' Untranslated Regions
	Faculty Mentor	Dr. Kojo Mensa-Wilmot, Department of Cellular Biology, University of Georgia
	Sharon Ballew	Bumblebee and Wildflower Species Associations
	Faculty Mentor	Dr. John Pickering, A & S Institute of Ecology, University of Georgia
	Amanda Casto	Analysis of the Role of the Protein Hfq in the Regulation of Polyadenylation in *Escherichia coli*
	Faculty Mentor	Dr. Sidney Kushner, Department of Genetics, University of Georgia
Room 139	**Jeff Halley**	Cell Wall-Degrading Enzymes from the Fungus That Causes the Devastating Rice Blast Disease
	Faculty Mentor	Dr. Sheng Cheng Wu, Department of Biochemistry and Molecular Biology, University of Georgia
	Lindsay Boozer	Lack of Utility of Creatinine Concentration for the Diagnosis of Feline Chronic Renal Insufficiency
	Faculty Mentors	Dr. Scott Brown, Department of Physiology and Pharmacology, University of Georgia
	Gregory Fonzo	The Effects of Exercise of Brain Derived Neurotrophic Factor
	Faculty Mentor	Dr. R. K. Dishman, Department of Exercise Science, University of Georgia

Room 140	**Heather Howdeshell**	Ceramic Analysis at Lake Springs (9Cb22): A Late Archaic Site of the Savannah River Valley
	Faculty Mentor	Dr. Mark Williams, Department of Anthropology, University of Georgia
	Crystal Leaver	Motivations of U.S. Southern Homegardeners: Preserving the Past in the Modern World
	Faculty Mentor	Dr. Virginia D. Nazarea, Department of Anthropology, University of Georgia
	Kathleen Teeples	Biometric Differences between Otoliths of Two Species of Sea Catfish
	Faculty Mentor	Dr. Elizabeth Reitz, Georgia Museum of Natural History, University of Georgia
Room 141	**Adam Cureton**	Differences in Cognitive Content between Propositions with Equivalent Referential Truth Conditions
	Faculty Mentor	Dr. Yuri Balashov, Department of Philosophy, University of Georgia
	Adam Cureton	Privacy as Autonomous Control of Personal Information
	Faculty Mentor	Dr. Clark Wolf, Department of Philosophy, University of Georgia
	Joshua Striker	Time and Myth: Literary/Philosophical Accounts/ Representations
	Faculty Mentor	Dr. Thomas Cerbu, Department of Comparative Literature Department, University of Georgia
Room 142	**Finding Opportunities for Extramural Undergraduate Research: A Panel**	
12:20 p.m. **1:10 p.m.**	**4th Concurrent Session**	
Room 138	**Claudia Vargas**	The Genomic Study of Multigene Families of *Pneumocystis carinii* for Potential Drug Targets
	Faculty Mentor	Dr. Jonathan Arnold, Department of Genetics, University of Georgia
	Kate Smith	Immunohistochemical (IHC) Detection of Natural Killer Cells in Fish
	Faculty Mentor	Dr. Kenneth S. Latimer, Department of Pathology, University of Georgia

	John Woodruff	The Generation of Mutations in the N-Terminal Region of the Protoporphyrinogen Oxidase of *Bacillus subtilis* to Create a Protein Capable of Mitochondrial Targeting in Mammalian Cells
	Faculty Mentor	Dr. Harry Dailey, Department of Microbiology, University of Georgia
Room 139	**Parul Shah**	Induction of Apoptosis by Rabies Virus Proteins
	Faculty Mentor	Dr. Zhen F. Fu, Department of Pathology, College of Veterinary Medicine, University of Georgia
	Jai Sikes	Developing a Sensor for Measuring Suspended-Sediment Concentrations
	Faculty Mentor	Dr. Bruce L. Upchurch, Department of Biological and Agricultural Engineering, University of Georgia
	Glorianne de Guzman and Joseph Moore	Application of Bioinformatics for Analysis of Sorghum ESTs
	Faculty Mentors	Dr. Marie-Michèle Pratt and Dr. Lee Pratt, Department of Botany, University of Georgia
Room 140	**Charlie Pitts**	Georgian Computer Usage
	Faculty Mentor	Dr. James Bason, Survey Research Center, University of Georgia
	Jennifer Byrne	An Assessment of Judicial Review and Judicial Behavior: The Factors That Influence the Supreme Court Decision Making Process
	Faculty Mentor	Dr. Stefanie Lindquist, Department of Political Science, University of Georgia
	Sayan De	The Progress and Modernization of Former East German Healthcare after Communism
	Faculty Mentor	Dr. Max Reinhart, Department of Germanic and Slavic Languages, University of Georgia
Room 141	**Andrew Littlejohn**	Ferdinand Warren: Artist, Craftsman, American Aristocrat
	Faculty Mentor	Dr. William Eiland, Georgia Museum of Art, University of Georgia
	Lorina Naci	"each morning I get up with one word in mind: plastik…"
	Faculty Mentor	Professor William Paul Jr., Drawing and Painting, School of Art, University of Georgia
	Lynn Nguyen	Chinese Classical Dance
	Faculty Mentor	Dr. Mark Wheeler, Department of Dance, University of Georgia

Room 142 **Association of Women in Science: A UGA Chapter Panel**

1:25 5th Concurrent Session
2:15

Room 138	**Chris Hartley**	Experimental Study of Male-Male Combat in a Parasitoid Wasp
	Faculty Mentor	Dr. Robert W. Matthews, Department of Entomology, University of Georgia
	Tricia Rodriguez	Amphibian Declines and the Frog Fungus Disease: Effects of Infection of Frog Eggs and Tadpoles
	Faculty Mentor	Dr. David Porter, Department of Botany, University of Georgia
	Buudoan V. Tran	Parameter Development and Application of the Glycam Force Field for Sialic Acid Derivatives
	Faculty Mentors	Dr. Karl N. Kirschner and Dr. Robert J. Woods, Complex Carbohydrate Research Center, University of Georgia
Room 139	**Kenneth Miller**	Synthesis and Use of Caged Compounds to Explore Cellular Processes
	Faculty Mentor	Dr. Timothy Dore, Department of Chemistry, University of Georgia
Room 140	**Chandler McClellan**	A Data Envelopment Analysis of the Efficiency of Georgia Politicians
	Faculty Mentor	Dr. David Mustard, Department of Economics, University of Georgia
	Jeffrey Pugh	Public Perception of "FONAG": An Ecuadorian Watershed Sustainability Program Case Study
	Faculty Mentor	Dr. Fausto Sarmiento, Center for Latin American and Caribbean Studies, University of Georgia
Room 141	**Julie Orlemanski**	In the Room: A Performative Text of Story, Poetics, and Criticism
	Faculty Mentor	Dr. Richard Menke, Department of English, University of Georgia
	Ben Emanuel	Shakespeare on Screen: Henry in Hollywood
	Faculty Mentor	Dr. Frances Teague, Department of English, University of Georgia
	John Stark	Friendship in the Age of Sensitivity: The Correspondence between Johann Wilhelm Ludwig Gleim and Johann Georg Jacobi
	Faculty Mentor	Dr. Mark Kagel, Department of Germanic and Slavic Languages, University of Georgia

Room 142 **Publishing as an Undergraduate Researcher: Editors of JURO@GA and The Undergraduate Science Bulletin (TSUB)**

2:30- 3:20 p.m. **6th Concurrent Session**

Room 138	**Marina Kozak**	Differential Glycosylation of Normal and Neoplastic hCG
	Faculty Mentor	Dr. J. David Puett, Department of Biochemistry and Molecular Biology, University of Georgia
	Eric Morishige	Transgenic Study of a Conserved Neuropeptide Network for Feeding Regulation in *Drosophila*
	Faculty Mentor	Dr. Ping Shen, Department of Cellular Biology, University of Georgia
	Alexandra Isabel Sahora	Cellular Tropism of an Undescribed Ehrlichia from White-Tailed Deer
	Faculty Mentors	Dr. William R. Davidson, Southeastern Cooperative Wildlife Disease Study (SCWDS), Dr. Elizabeth W. Howerth, Department of Pathology, Dr. David E. Stallknecht, Department of Medical Microbiology and Parasitology, College of Veterinary Medicine, Dr. Danny Mead, Southeastern Cooperative Wildlife Disease Study (SCWDS), University of Georgia
	Eric Wright	Isolation and Characterization of Novel Anaerobic Thermophilic Iron (III) - Reducing Bacteria
	Faculty Mentor	Dr. Juergen Wiegel, Department of Microbiology, University of Georgia
Room 139	**Vanessa Reynolds**	Cozaar Fails to Block Pressor Response in Cats
	Faculty Mentor	Dr. Scott Brown, Department of Physiology and Pharmacology, University of Georgia
	Amy Sexauer	Immunohistochemical Detection of Newcastle Disease Virus in Chickens Inoculated with Wild-Type and Infectious-Clone-Derived Newcastle Disease Virus
	Faculty Mentors	Dr. James Stanton and Dr. Corrie Brown, Department of Pathology, College of Veterinary Medicine, University of Georgia
	Julie Seale	Nitric Oxide Synthase mRNA Levels in *Trypanosoma cruzi* Infected iNOS Knockout and Wild Type Mice
	Faculty Mentor	Dr. Rick Tarleton, Department of Cellular Biology and Center for Tropical and Emerging Global Diseases, University of Georgia

Room 140	**Rodricus Ficklin**	The Multicultural Experience: Pre-Service Education Students in Early Childhood Education Related to Multicultural Beliefs and Attitudes
	Faculty Mentor	Dr. Judith Reiff, Department of Elementary Education, University of Georgia
	Cori Pelletier	Music Therapy with Premature Infants
	Faculty Mentor	Dr. Roy Grant, Music Therapy, School of Music, University of Georgia (Emeritus)
	Ryan Keen	Gender Differences in Internal and External Thought Focus among Prepubescent Children
	Faculty Mentor	Dr. Katherine Kipp, Department of Psychology, University of Georgia
Room 141	**Denny Aldridge**	Are We or Aren't We? Adorno and Aciman on Emigrant Identity
	Faculty Mentor	Dr. Katharina Wilson, Department of Comparative Literature, University of Georgia
	Drew Goldsmith	Received with Open Arms; A Study of the Parable of the Prodigal Son
	Faculty Mentor	Dr. Katharina Wilson, Department of Comparative Literature, University of Georgia
	Karen Viars	Joan of Arc: History's Conflicted Warrior
	Faculty Mentor	Dr. Katharina Wilson, Department of Comparative Literature, University of Georgia
Room 142	**Qualitative Research as a Method of Inquiry: A Panel –** Anne Ciccone, Ivo Ivanov, Matt Lerner, Julie Orlemanski, and Nadine Sumner	
	Faculty Mentor	Dr. Kathleen DeMarrais, Social Science Education, University of Georiga

Opening Session

Tate Student Center, Georgia Room A

4:00 p.m.	Welcome	Dr. Pamela B. Kleiber Associate Director, Honors Program and CURO
	Opening Remarks	Dr. Karen Holbrook, Senior Vice President for Academic Affairs and Provost
	Opening Presentation	Melissa Daniel Profiles of UGA Researchers
	Faculty Mentor	Dr. Carolina Acosta-Alzuru, Department of Public Relations, University of Georgia
Introduction of Dr. Steven Stice		Allison Mitchell, Humanities and Arts Editor of JURO@GA, English Major, and Biology Minor
	Keynote Address	Dr. Steven Stice Georgia Research Alliance Eminent Scholar Department of Animal and Dairy Science

A View from the Laboratory:
Scientific Possibilities and Ethical Restraint in Human Stem Cell Research

Announcement of the CURO 2002 Summer Research Fellowship Recipients	Dr. Harry Dailey, Department of Microbiology

5:00-7:00 p.m. Reception sponsored by the Honors Program (Georgia Room B) and Poster Presentations

Poster Presentations

Robert F. Adams Faculty Mentor	Daily Progeny Production and Sex Ratio in a Parasitoid Wasp Dr. Robert W. Matthews, Department of Entomology, University of Georgia
Laurie L. Barton Faculty Mentor	The Association of Service to Tolerance of Diversity: A Study of College Student Involvement in Community Service Dr. Lynda Henley Walters, Department of Child and Family Development, University of Georgia

Amanda Beggs, Matthew Jackson, Venus Jolly, Judith Niehuser, Ashley Pollock, Drew Prosser, Emily Toriani	Mate Preference and Offspring Fitness in *Drosophila pseudoobscura*
Faculty Mentors	Dr. Wyatt W. Anderson and Dr. Yong-Kyu Kim, Department of Genetics, and Dr. Patricia A. Gowaty, A & S Institue of Ecology, University of Georgia
Anna Biagi	Metamorphic History of the Shoulderbone Ultramafic Intrusion
Faculty Mentor	Dr. Michael Roden, Department of Geology, University of Georgia
Amanda M. Blackmon	Pain Factors Associated with a Strength and Power Training Program in Older Adults
Faculty Mentor	Dr. M. Elaine Cress, Department of Sports and Exercise Science and the Gerontology Center, University of Georgia
Amanda Casto	Analysis of the Role of the Protein Hfq in the Regulation of Polyadenylation in *Escherichia coli*
Faculty Mentor	Dr. Sidney Kushner, Department of Genetics, University of Georgia
Quyen Dam	Clones of Resistant *Enterococcus faecium* Found in Humans and in Their Pets
Faculty Mentor	Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia
Glorianne de Guzman and Joseph Moore	Application of Bioinformatics for Analysis of Sorghum ESTs
Faculty Mentors	Dr. Marie-Michèle Pratt and Dr. Lee Pratt, Department of Botany
Lawrence Dougherty	Exploring Olfactory Response in *Drosophila melanogaster* and Evolutionary Theory of Aging
Faculty Mentor	Dr. Daniel Promislow, Department of Genetics, University of Georgia
Joseph Kirk Edwards	Refining the Pig Cloning Process: The Effect of Ovarian Follicle Diameter and the Amount of Cumulus Cells on *In Vitro* Maturation of Porcine Oocytes
Faculty Mentor	Dr. Steven Stice, Department of Animal and Dairy Science, University of Georgia
Daniel Folkers, Jai Sikes Sam Utley	Characterization of Nonlinear Viscoelastic Properties of Biomaterials, through High-Speed Linear Based Transformation
Faculty Mentor	Dr. Guigen Zhang, Department of Biological and Agricultural Engineering, University of Georgia

Holly H. Garner	Effect of Fill Weight and Initial Temperature on Processing Time for a Home Pickled Jicama Relish
Faculty Mentor	Dr. Elizabeth L. Andress, Department of Foods and Nutrition, University of Georgia
Brian Gerwe	Structural Genomics Using a Model Microorganism
Faculty Mentor	Dr. Michael W.W. Adams, Department of Biochemistry and Molecular Biology, University of Georgia
Leah Givens	Relative Pathogenicity of Two Strains of Canine Distemper Virus Originally Isolated from Lions
Faculty Mentors	Dr. James Stanton and Dr. Corrie Brown, Department of Pathology, College of Veterinary Medicine, University of Georgia
Scott Harelik	Identification of the NDV-Fusion Protein and NDV-Phosphoprotein in Transgenic Soybean Plants
Faculty Mentor	Dr. Wayne Parrott, Department of Crop and Soil Sciences, University of Georgia
Jessie Hopkins	Comparison of Several DNA Extraction Methods in Conjunction with PCR for the Rapid Detection of *Rhodococcus equi* and *Steptococcis equi*
Faculty Mentor	Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia
Lindsay Hoskins	The Formation of Hirano Bodies in Mammalian Cell Culture
Faculty Mentors	Dr. Ruth Furukawa and Dr. Marcus Fechheimer, Department of Cellular Biology, University of Georgia
Jacoby Hudson Cassandra Kirkland and Crystal Oliver	Identifying Expressed Genes in Sorghum
Faculty Mentors	Dr. Marie-Michèle Pratt and Dr. Lee Pratt, Department of Botany, University of Georgia
Ryan Keen	Gender Differences in Internal and External Thought Focus among Prepubescent Children
Faculty Mentor	Dr. Katherine Kipp, Department of Psychology, University of Georgia
Dipinder Singh Keer	An Online Analytical Processing Approach to Single Nucleotide Polymorphism Discovery and Analysis
Faculty Mentors	Dr. Marie-Michèle Pratt, Dr. Chun Liang, and Dr. Lee Pratt, Department of Botany, and Dr. Mark Huber, Department of Management Information Systems, University of Georgia
Emily Kirk	The Stevens Clinic - A Sports Medicine Facility
Faculty Mentor	Dr. Jane Lily, Interior Design, University of Georgia

Heather Kling	Utilization of Cover-Boards by Eastern Tiger Salamander (*Ambystoma tigrinum tigrinum*) Metamorphs at Brookhaven National Laboratory
Faculty Mentor	Dr. Timothy Green, Brookhaven National Laboratory, Upton, NY, and Dr. Karl Espelie, Department of Entomology, University of Georiga
Dmitri Kolychev	Analysis of Microsatellites in Sorghum ESTs
Faculty Mentor	Dr. Marie-Michèle Pratt, Dr. Lee Pratt, and Dr. Suchendra M. Bhandarkar, Department of Botany, University of Georgia
Meenakshi Lambha	Development of Cognitive Inhibition in Preschool Children
Faculty Mentor	Dr. Katherine Kipp, Department of Psychology, University of Georgia
Shelley Ledford	The Colorfastness of an Interlock T-shirt Material Laundered with a Detergent Compared to Laundering with a Detergent Plus Enzyme
Faculty Mentor	Dr. Nolan Etters, Department of Textiles, Merchandising, and Interiors, University of Georgia
Rachel Lewis	Neuropeptide Y as a Factor in Ethanol Consumption in Zucher Rats
Faculty Mentor	Dr. Gaylen Edwards, Department of Physiology and Pharmacology, College of Veterinary Medicine, University of Georgia
Cliff McLeroy	An Analytical Study of Interfacial Stresses in Bonded Materials
Faculty Mentor	Dr. Guigen Zhang, Department of Agricultural and Biological Engineering, University of Georgia
Eric Morishige	Transgenic Study of a Conserved Neuropeptide Network for Feeding Regulation in *Drosophila*
Faculty Mentor	Dr. Ping Shen, Department of Cellular Biology, University of Georgia
Sara Morris	Fish Oil: The Effect on Insulin Sensitivity When Incorporated into a High-fat Diet
Faculty Mentor	Dr. Dorothy B. Hausman, Department of Foods and Nutrition, University of Georgia
Cori Pelletier	Music Therapy with Premature Infants
Faculty Mentor	Dr. Roy Grant, Music Therapy, School of Music, University of Georgia (Emeritus)
Linda Pierce **Christine Oshansky**	Chimpanzees' Manipulation of Objects within the Hand
Faculty Mentor	Dr. Dorothy M. Fragaszy, Department of Psychology, University of Georgia

Jennifer Reingold	The Relationship between Critical Flicker Fusion Thresholds and Resting Systolic Blood Pressure
Faculty Mentor	Dr. Billy R. Hammond, Department of Psychology, University of Georgia
Tricia Rodriguez	Amphibian Declines and the Frog Fungus Disease: Effects of Infection of Frog Eggs and Tadpoles
Faculty Mentor	Dr. David Porter, Department of Botany, University of Georgia
Shomari Ruffin	Polar Endemism in Archaea: A Comparison of Archael 16S rDNA Sequences from the Arctic and Southern Oceans
Faculty Mentors	Dr. James T. Hollibaugh and Dr. Nasreen Bano, Department of Marine Sciences, University of Georgia
Alexandra Isabel Sahora	Cellular Tropism of an Undescribed Ehrlichia from White-Tailed Deer
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Katrice Saudargas	Children's Friendship Groups: The Wannabes in the Clique Hierarchy
Faculty Mentor	Dr. Michele Lease, Department of Educational Psychology, Research and Measurement, University of Georgia
Amy Sexauer	Immunohistochemical Detection of Newcastle Disease Virus in Chickens Innoculated with Wild-Type and Infectious-Clone-Derived Newcastle Disease Virus
Faculty Mentor	Dr. Corrie Brown, Department of Pathology, University of Georgia
Sonbol Alexandria Shahid-Salles	Purification of Hirano Bodies in *Dictyostelium discoideum*
Faculty Mentors	Dr. Marcus Fechheimer and Dr. Ruth Furukawa, Department of Cellular Biology, University of Georgia
Jai Sikes	Developing a Sensor for Measuring Suspended-Sediment Concentration
Faculty Mentor	Dr. Bruce L. Upchurch, Department of Biological and Agricultural Engineering, University of Georgia
Lauren Stanchek	The Effect of Light Intensity on the Transformation Frequency of Soybean Somatic Embryos
Faculty Mentor	Dr. Wayne Parrott, Department of Crop and Soil Sciences, University of Georgia

Tracy K. Van Ells	The Use of Innunohistochemistry to Diagnose Chytridiomycosis in Frogs
Faculty Mentor	Dr. Corrie Brown, Department of Pathology, University of Georgia
Heidi Woessner	Cytoskeleton Induced Apoptosis of HeLa Cells
Faculty Mentors	Dr. Ruth Furukawa and Dr. Marcus Fechheimer, Department of Cellular Biology, University of Georgia
Amber Wright	The Effect of Genetic Background on Stress Resistance in Transgenic Fruit Flies
Faculty Mentor	Dr. Daniel Promislow, Department of Genetics, University of Georgia
Eric Wright	Isolation and Characterization of Novel Anaerobic Thermophilic Iron(III)-Reducing Bacteria
Faculty Mentor	Dr. Juergen Wiegel, Department of Microbiology, University of Georgia

Tuesday, April 16, 2002
Memorial Ballroom

Opening of CURO Art Exhibition

9:00 a.m.	Welcome	Dr. Betty Jean Craige, Director, Center for Humanities and Arts, and University Professor of Comparative Literature
	Breakfast Reception	
9:15 - 10:15 a.m.	Gallery Talks Introduction	Dr. Carmon Colangelo, Director, Lamar Dodd School of Art

Stephanie Anderson
Faculty Mentor — Professor Edward Lambert, Fabric Design, Lamar Dodd School of Art, University of Georgia

Antibiotic Art
Jeff Edwards
Faculty Mentor — Professor Robert Stackhouse, Lamar Dodd Professorial Chair, Lamar Dodd School of Art, University of Georgia

Caitlin Martell
Faculty Mentor — Professor Melissa Harshman, Printmaking, Lamar Dodd School of Art, University of Georgia

Amanda Gary
Faculty Mentor — Professor Edward Lambert, Fabric Design, Lamar Dodd School of Art, University of Georgia

"each morning I get up with one word in mind: plastik…"
Lorina Naci
Faculty Mentor — Professor William Paul, Jr., Drawing and Painting, Lamar Dodd School of Art, University of Georiga

Theresa Marie Sporer
Faculty Mentor — Professor Larry Millard, Sculpture, Lamar Dodd School of Art, University of Georgia

Art Exhibit arranged by Professor Edward Lambert

Performing Arts Presentations
Memorial Ballroom

10:15 – 10:30 a.m.	**Jennifer Srygley** Faculty Mentor	Poetry Reading Professor Judson Mitcham, Department of English, University of Georgia

10:45 – 11:45 a.m.	**Lynn Nguyen** Faculty Mentor	Chinese Classical Dance Dr. Mark Wheeler, Department of Dance, University of Georgia
	Elizabeth Lide Faculty Mentor	Improvisation in the Choreographic Process Dr. Bala Sarasvati, Department of Dance, University of Georgia

12:00 – 2:30 p.m. **Instrumental and Vocal Music Performances**

Performances arranged by Lisa Bartholow, School of Music

Closing Session

Memorial Ballroom

3:30 p.m. Reception sponsored by the Honors Program

4:00 – 6:00 p.m.	Awards Ceremony	Professor Jere W. Morehead, Associate Provost and Director, Honors Program Dr. Karen Holbrook Senior Vice President for Academic Affairs and Provost

Presentation of the Excellence in Undergraduate Research Mentoring Awards

Presentation of the Georgia Museum of Natural History Joshua Laerem Award for Undergraduate Research

Presentation of the Best Paper Awards in Science and Social Science

8:00 p.m. Evening Concert Hodgson Hall

The Excellence In Undergraduate Research Mentoring Award

The Office of the Senior Vice President for Academic Affairs and Provost and the Honors Program established the Excellence in Undergraduate Research Mentoring Award in 2000. This award recognizes faculty, departments, and programs devoted to outstanding research mentorship of undergraduate students. Awards are presented at the CURO Symposium Awards ceremony, Tuesday, April 16, 4:00 p.m. Memorial Hall Ballroom.

2002

Faculty Awards
Professor William D. Paul, Jr. Professor of Art
Dr. Katherine Kipp, Associate Professor of Psychology

Faculty Recognition
Dr. Susan Sanchez, Assistant Professor of Veterinary Medicine

Department Award
Department of Biochemistry and Molecular Biology,
Dr. J. David Puett, Department Head

Program Award
"Physics Beyond the Boundaries": National Science Foundation, REU Program
Dr. Loris Magnani, Principal Investigator, Professor, Physics and Astronomy

Dr. Heinz-Bernd Schuttler, Professor and Department Head, Physics and Astronomy
Dr. Jonathan Arnold, Professor, Genetics
Dr. Susmita Datta, Professor, Georgia State University
Dr. David Logan, Professor, Clark Atlanta University
Dr. William Steffans, Professor, Clark Atlanta University

2001 Selection Committee

Chair, Dr. Pamela B. Kleiber, Associate Director, Honors Program and CURO Coordinator
Dr. Marcus Fechheimer, Professor, Cell Biology
Dr. Sylvia Hutchinson, Professor, Institute of Higher Education
Dr. Katarzyna Jerzak, Assistant Professor, Comparative Literature
Dr. David MacIntosh, Associate Professor, Environmental Health Sciences
Dr. Vaun MacArthur, Research Scientist, Savannah River Ecology Laboratory
Dr. Dean Rojek, Associate Professor, Sociology

2001

Faculty Awards
Dr. Marcus Fechheimer, Professor of Cell Biology

Faculty Recognition
Dr. David MacIntosh, Associate Professor of Environmental Health Sciences
Dr. Dean Rojek, Associate Professor of Sociology

Department Award
Genetics Department,
Dr. John MacDonald, Department Head and Professor

Program Award
Savannah River Ecology Laboratory, Dr. Paul Bertsch, Director

Graduate Student Reviewers for CURO Symposium 2002

Julie Barfield	Department of English
Michael Bitzer	Department of Political Science
Michelle Verges	Department of Psychology
Peter Horanyi	Department of Biochemistry and Molecular Biology
Rebecca Ritter	Department of English
Rebecca Shubert	Biochemistry and Molecular Biology
Julie Dangremond Stanton	Department of Cellular Biology
Susan White	Department of Marine Sciences
Julie Wieczkowski	Department of Anthropology

Reviewers for Best Paper Awards

Dr. Meg Cramer	CURO Advisory Board, Physicien
Dr. Stuart Feldman	CURO Advisory Board, Professor of Pharmacy
Peter Horanyi	Department of Biochemistry and Molecular Biology
Dr. Pamela Kleiber	Associate Director, Honors Program and CURO
Susan White	Department of Marine Sciences
Julie Wieczkowski	Department of Anthropology

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Dr. Joseph Dominick, Jr.	Professor, Department of Journalism
Dr. William Eiland	Director, Georgia Museum of Art, Professor, Art History
Dr. Marcus Fechheimer	Professor, Department of Cellular Biology
Dr. Pamela Kleiber	Associate Director, Honors Program and CURO
Dr. Elizabeth Kraft	Professor, Department of English
Dr. Marc L. Lipson	Director, International Business
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Dr. Dean Rojek	Associate Professor, Department of Sociology
Dr. Paul Schroeder	Associate Professor, Department of Geology
Dr. Scott Shamp	Professor, Department of Telecommunications and Director, New Media Institute
Dr. Michael Terns	Associate Professor, Department of Biochemistry and Molecular Biology
Dr. Kecia Thomas	Associate Professor, Department of Psychology
Dr. Katharina Wilson	Professor, Department of Comparative Literature

Research Abstracts

Humanities
Physical and Biological Sciences
Social Sciences

Daily Progeny Production and Sex Ratio in a Parasitoid Wasp

Robert F. Adams
Dr. Robert W. Matthews, Department of Entomology, University of Georgia

The parasitic wasp *Melittobia digitata* (Hymenoptera: Eulophidae) parasitizes various insects. Progeny develop gregariously in groups of 100-800 (depending on host size). The extremely female biased sex ratio (95:5) is unusual among insects, and males develop from unfertilized eggs. The entire brood emerges over a period of two weeks, but males appear to develop on an accelerated schedule relative to females. The goals of this study were to determine (1) whether females lay unfertilized (male producing) eggs first or space male production over their entire tenure on a host, and (2) to determine the average daily progeny production and sex ratio. Fifty-six cultures were established using single females placed on mud dauber hosts. These cultures were divided into 14 groups of four replicates each. Beginning three days later, females were removed from four cultures; this was continued daily thereafter over the next 13 days until all females (four per day) had been removed from their hosts. In a parallel set of experiments, individual females were transferred to a new host each day over 17 days. All experiments were conducted at 25^{o} C. Progeny produced in both experiments were allowed to complete development, and the emerged adults were sexed and counted. Results showed that females space male production over their tenure on a host, averaging 4.2/day (range 1-8) and that daily egg production increased to about 63 over the first seven days, then tapered off as the host became fully exploited. Results are interpreted in the context of the wasp's natural history.

Are We or Aren't We? Adorno and Aciman on Emigrant Identity

Denny Aldridge
Dr. Katharina Wilson, Department of Comparative Literature, University of Georgia

Theodor Adorno fills his *Minima Moralia* with his stance on topics ranging from Snow White to Proust to the demise of communication. Of particular interest to Adorno is the plight of the intellectual in emigration. In his scathingly truthful tone, Adorno asserts that "every intellectual in emigration is, without exception, mutilated, and does well to acknowledge it himself." Adorno's philosophy struck me particularly while reading Andre Aciman's *Out of Egypt*, in which Aciman details his Jewish family's identity struggle as exiles living in Alexandria, Egypt. I therefore undertook the task of methodically applying Adorno's abstract ideas on emigrant identity to Aciman's autobiographical account. The more I read into the texts, the more strikingly parallel they became. More important than my literary analysis, however, is the insight that both authors offer into the psychological and social processes that all emigrants go through in order to assert their rightful place in their new "homeland." Adorno states that "for a man who no longer has a homeland, writing becomes a place to live." In writing *Out of Egypt*, Aciman escapes the shackles of emigrant alienation prescribed by Adorno. He breaks the cycle in his family and becomes an American citizen. In my comparative analysis, I shed light on the oftentimes overlooked status of emigrants, many of which, like Aciman, find refuge within America's borders.

Bumblebee and Wildflower Species Associations
Sharon Ballew
Dr. John Pickering, A & S Institute of Ecology, University of Georgia

The Internet is a means to improve teaching and research. It provides a powerful tool to enable citizen scientists and children to study nature and report their observations. In February 2002, for example, over 40,000 participants in the Great Backyard Bird Count reported observations of birds throughout North America via the Web www.birdsource.org. Research is needed to assess the quality of data reported by non-experts. Nature Days is a program in which students and other citizens establish ecological study sites and collect data to better understand and conserve nature. Participants will be assigned to a group with a designated leader who has natural history expertise. In 2002, these leaders will serve as mentors and monitors of groups studying pollination associations among bumblebees, butterflies, and flowers. The presentation will demonstrate how Web users can identify species and report their observations via their browser using online identification guides. These guides are primarily image-based and minimize technical terms. They have the potential to allow anyone anywhere to contribute to our understanding of all living things. More information can be found under Idnature Guides at www.discoverlife.org.

The Association of Service to Tolerance of Diversity: A Study of College Student Involvement in Community Service
Laurie L. Barton
Dr. Lynda Henley Walters, Department of Child and Family Development, University of Georgia

Community service has become an increasingly important factor in institutions of higher education for the personal development of college and university students. This research concerns the association of participation in community service with the personal development of university students. I am also interested in how exposure to diverse populations through community service affects tolerance of diversity. Data (psychosocial maturity such as identity development and commitment to community attitudes; attitudes toward community service, and involvement in community service) will be collected from students in large classes at the University of Georgia through the use of a questionnaire. The questionnaire will include inquiries based on the three scales: the community service attitude scale, the tolerance scale, and the developmental measure of personal maturity. The questionnaire will be distributed to approximately 300 students. Results will yield information about motivation for community service, the intrinsic and extrinsic benefits of participation in community service, and the tolerance of diversity that results from one's participation. With these results, it will be possible to begin to discriminate between the effects of developmental maturity, prior attitudes, and experience. The results will be helpful to researchers and practitioners whose interest is the personal development of college students.

Progress toward the Partial Purification of a Pectin Biosynthetic Gene
Siobahn Beaton, CURO Summer Research Fellow
Dr. Debra Mohnen, Complex Carbohydrate Research Center, University of Georgia

Cellulose, hemicellulose, and pectin are the major types of polysaccharides that comprise the primary plant cell wall. Homogalacturonan (HGA) is one of the pectic polysaccharides. HGA accounts for 60% of pectin. HGA is a linear polymer of 1,4-linked α-D-galactosyluronic acid residues (GalA). The transfer of GalA from UDP-GalA onto HGA is catalyzed by a galacturonosyltransferase (GalAT) that has its catalytic site facing the lumen of the Golgi. The goal of my research was to facilitate the purification of GalAT from *Arabidopsis thaliana*. Specifically, I fractionated partially purified *Arabidopsis* cell extract over ten different dye affinity resins and characterized those fractions enriched for GalAT activity. I used column chromatography followed by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) of the column fractions to analyze the complexity of proteins present in the different fractions. Based on the SDS-PAGE and GalAT activity results, one of the dye affinity resins, RY3, was shown to effectively enrich for GalAT activity. This resin is currently being used for the further purification of GalAT.

Mate Preference and Offspring Fitness in *Drosophila pseudoobscura*

Amanda Beggs, Matthew Jackson, Venus Jolly, Judith Niehuser, Ashley Pollock, Drew Prosser, and Emily Toriani
Dr. Patricia A. Gowaty, A & S Institute of Ecology, Dr. Wyatt W. Anderson, Dr. Yong-Kyu Kim, and Kyungsun Kim, Department of Genetics, University of Georgia

Natural selection is expected to adjust behavior to increase fitness. We tested this hypothesis with *Drosophila pseudoobscura* while observing the relationships between mate preference and fitness. Mate preference was determined in small arenas where a single fly was allowed to choose between two flies of the opposite sex eliminating all possibilities for male-male competition, female-female competition and male coercion or manipulation of females which were involved in ordinary mate choice studies. Matings were arranged with preferred (P) and non-preferred (NP) partners. We measured fecundity of females (number of eggs laid daily) and egg-to-adult viability of offspring. Our early studies have demonstrated that fecundity was higher in NP matings but not statistically significantly different from in P matings. However, offspring viability was significantly higher in P matings. Subsequently, we measured fitness of males while counting number of sperm delivered to females during copulation. In both male and female choice situations, NP matings delivered significantly more sperm to females than P matings. These results suggest that 1) freely expressed mate choice affects the fitness of offspring; and 2) the increase in fecundity and sperm observed in NP matings may be compensatory behavior for a low viability of offspring from these matings. As attempts to pinpoint the proximate cues for choosing partners in mate preference trials, we measured wing length of flies, which was proportional to their body size. We also measured quantities of cuticular hydrocarbons extracted from individual flies using gas chromatography/mass spectrometry (GC/MS). Preferred partners, regardless of sexes, were significantly bigger than NP partners. There was a nonsignificant tendency that NP partners produced more cuticular hydrocarbons than P partners did. Overall, our data provide evidence that social constraints are important in mate preference and offspring fitness.

Metamorphic History of the Shoulderbone Ultramafic Intrusion

Anna Biagi
Dr. Michael Roden, Department of Geology, University of Georgia

Georgia's Piedmont is underlain primarily by igneous and metamorphic rocks. These rocks formed throughout the Paleozoic during events coinciding with the Appalachian orogeny. Isolated bodies of ultramafic rocks may represent fragments of oceanic crust emplaced in the continental crust during the orogeny. The Shoulderbone schist, located northwest of Sparta, Georgia, is one such ultramafic body, and I hypothesize that it is a fragment of ocean crust. Seven samples have been taken from where the schist runs along Georgia Highway 16 and Centennial Road in Hancock County. Their mineralogy has and will be noted using a binocular-scope, a light microscope, and an electron microprobe. Preliminary research has found the mineralogy to include chlorite, olivene, amphiboles, and oxides. Further work with the microprobe will help determine which amphiboles and oxides are present, as well as the composition of the olivene. The major elements in the schists are SiO_2, MgO, and Fe_2O_3 (determined by the microprobe). The bulk chemical composition of these ultramafics will then be compared to those found in the ocean crust. The relationship of the minerals to each other and the presence of foliations also will be noted and compared between samples. Research of the Shoulderbone ultramafics will elucidate the metamorphic and tectonic history of the outcrop. Although this research only focuses on one small outcrop, it will be a step towards understanding the evolution of the Appalachians, which has been a mystery for nearly a century.

Pain Factors Associated with a Strength and Power Training Program in Older Adults

Amanda M. Blackmon
Tanya A. Miszko, Dr. M. Elaine Cress, Department of Sports and Exercise Science and the Gerontology Center, University of Georgia

Pain is often cited as a barrier to participation in an exercise program among older adult populations. Yet, once in an exercise program, research shows that exercise can have an analgesic effect, especially in those older adults with osteoarthritis. We know that exercise is necessary to maintain health and function, and inactivity can lead to declines in the neurological, musculoskeletal, and metabolic systems. Despite the known benefits of exercise, more than 60% of older adults are physically inactive. Therefore we asked the question: Does pain affect compliance and adherence to a strength and power training program with sessions 3 times/week for 16 weeks? The study included 25 older adults, with ages ranging from 65 to 82, with a mean age of 73.36. The participants reported the intensity, unpleasantness, and anatomical site of any pain. We are comparing the change in strength and physical function in those with chronic pain (CP; n=8) with the remainder of the group, that we considered the non-pain group (NP; n = 17). CP did not alter compliance or adherence. We found that the CP group realized a 28% increase in strength compared to a 20% increase in the NP group. Functional performance in the CP group increased 11-14%, which was similar or higher than the NP group. NP and CP did not differ in adherence or compliance. The CP group's gain in strength and function may represent an analgesic effect of exercise allowing those in chronic pain to improve function.

Lack of Utility of Creatinine Concentration for the Diagnosis of Feline Chronic Renal Insufficiency

Lindsay Boozer
Leslie Cartier, Susanne Sheldon, Sheerin Mathur, and Dr. Scott Brown, Department of Physiology and Pharmacology, University of Georgia

Clinically, mild to moderate chronic renal insufficiency is a frequent problem in cats. While serum creatinine is most often used to assess renal function in cats, each laboratory traditionally establishes its own normal ranges and the utility of these normal ranges to diagnose early chronic renal insufficiency has been challenged. To assess the utility of measurement of serum creatinine concentration in the diagnosis of renal insufficiency in cats, serum samples were taken from 15 cats with various levels of kidney function and submitted to laboratories located at academic institutions (n=8) or commercial facilities (n=4). The laboratories used various blood chemistry analyzers to assay for serum creatinine levels. While the study was not control-based, the subjects measured were both affected and unaffected by renal infarction or dysfunction. There was substantial variation among laboratories for serum samples obtained simultaneously from the same cat. Results were analyzed statistically for coefficient of variation and standard deviation calculations in order to adjust the values for comparison. When reported results were compared to established "normal" ranges at each laboratory, diagnostic errors were noted, such as false negative and false positive diagnoses. Using these laboratory "normal" ranges, some cats with normal kidney function were incorrectly diagnosed as having renal insufficiency while other cats with proven renal insufficiency were diagnosed as normal. Our results indicate that a reference range individualized to each laboratory is needed and that results from different laboratories cannot be directly compared. Critically, veterinarians relying upon currently published laboratory "normal" ranges for serum creatinine concentration for identifying the presence of chronic renal insufficiency in cats will experience a high probability of both false negative AND false positive results.

Reaching Across Cultures: An International Teaching Experience

Carrie Brooks
Dr. Carole Henry, Art Education, University of Georgia

The purpose of this research project was to investigate the potential success and possible benefits of art education students having practical classroom experience teaching art to non-English speaking students in another culture. During Spring Break 2001, I was one of three art education students who traveled to Cortona, Italy as part of a pilot program designed to explore the possibilities of teaching art in the Italian elementary school. We prepared lesson plans and taught in the Italian language to the students. Our project's goal was to make it possible in the future for Art Education classes to be offered as part of the UGA Studies Abroad Program in Cortona. Each of us had previously studied in Cortona as art students. I used my familiarity with the Italian language to help translate throughout the project and learned much about teaching in the process. We gathered data after each lesson through audio taped interview sessions and had these tapes transcribed. I analyzed the data to determine what I learned about working with non-English speaking students in another culture, what suggestions I had for other students attempting to do this in the future, and what I learned about myself as a teacher. I learned that it is possible to communicate depth of content despite language barriers. What was so unique about this project was that the nature of children and of visual art transcended verbal language. Recommendations based on the data were also developed for teachers teaching non-English speaking students in this country. These recommendations will be presented.

Risk/Resilience Systems and Child Behavioral Development

Robert Brown, CURO Apprentice
Dr. R. W. Kamphaus, Department of Educational Psychology, University of Georgia

This study tested Ann Masten's (2001) theory that most children develop adaptive behavioral repertoires. Masten proposed that three risk/resilience systems are responsible for the typical behavioral adjustment of children: relationships with parents, intelligence, and socioeconomic status. This pilot investigation tested part of her theory with a sample drawn from a larger longitudinal investigation of 800 children. This study assessed a sample of 58 children from grades 3 through 5 in three Athens/Clarke County elementary schools. Three groups were formed: 1) "well adapted" (children rated by two consecutive teachers as having few behavior problems in comparison to a national normative sample), 2) "disruptive behavior problems" (children rated by two consecutive teachers as having significant behavior problems), and 3) "changers" (children rated as having disruptive behavior problems in year one, but as having fewer behavior problems as rated by a new teacher in the following academic year). Dependent variables included parent/teacher relationship and intellectual/academic achievement, thus allowing for a preliminary test of two risk/resilience systems from Masten's theory. Analyses of variance were conducted comparing the three groups on each of six dependent variables. The results supported Masten's theory. Children who either were well adapted or were changers had better indicators of parent/teacher relationships and intellectual/academic development than children who remained in the disruptive behavior problems group. Teacher/child relationships were also found to be important for promoting adaptive behavioral development.

Rapid Detection of *Salmonella* Using Three DNA Extraction Methods in Conjunction with Polymerase Chain Reaction

Kristen Bryant
Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia

Controlling outbreaks of *Salmonella enterica* in horses when they arise can be extremely challenging; therefore, it is crucial to have a quick, very sensitive method that allows for rapid detection of this bacteria in asymptomatic horses so these animals are not put in contact with others. The primary objective of this study was to determine which DNA extraction method yields more DNA for prompt detection of *Salmonella*. Three DNA extraction methods were employed: the boding method, Ultra Clean ™ Fecal DNA Isolation Kit (Mo Bio Laboratories, Inc., Solana Beach, CA) and QIAamp DNA Stool mini kit (Qiagen Inc., Valencia, CA). The boiling method and the Ultra Clean ™ kit were used on duplicate logarithmic dilutions of a selenite broth containing over night growth of *Salmonella*. These DNA extractions were followed by amplification by polymerase chain reaction of a 475bp fragment of the *InvA* gene present only in *Salmonella*. The dilution method was able to detect only 10^6 bacteria, while Ultra Clean ™ was able to detect $3.6x10^3$ bacteria. In addition to the logarithmic serial dilutions, six selenite broths and three fecal samples from real clinical cases were also tested. These samples were extracted using Ultra Clean ™ and Q1Aamp DNA, always in duplicate Ultra Clean detected 6 positive selenites in comparison two only two by QIAamp. Three fecal samples were tested directly; two were negative by both test and one sample positive for both tests. Although the Ultra Clean ™ kit is the most time consuming, it appears to be the most effective in extracting the most DNA in both the quantitative serial dilutions, as well as in the clinical samples.

An Assessment of Judicial Review and Judicial Behavior: The Factors That Influence the Supreme Court Decision Making Process

Jennifer Byrne
Dr. Stefanie Lindquist, Department of Political Science, University of Georgia

In this study, I propose to develop an integrated case-related model, using a multivariate time series analysis to explain United States Supreme Court decisions in judicial review cases. In order to ascertain why the Supreme Court decides to uphold or strike down a piece of legislation in a given case, I examine eight factors that have been previously identified by scholars as contributing to the Court's decision in these cases. Specifically, I intend to test the impact of five different models that encompass the independent variables that I hypothesize will influence the Supreme Court's decision to strike down a federal statute as unconstitutional. The attitudinal model addresses the impact of justice ideology, measured by the criteria set forth by Segal and Spaeth (1993), including past voting behavior to predict votes in subsequent cases, facts from the lower court records of cases decided by the Supreme Court and editorials published in advance of nominee confirmation of the justices. The institutional model examines the impact that the solicitor general, congress, and interest groups have on the Supreme Court decision-making process. The issues model looks at the type of statute challenged and controls for the lower court decision, while the party capability model examines the impact of the type of litigant in a given case. Finally, the role of public opinion is examined through the use of the Stimson Public Mood Indicator, compared to how liberal the Supreme Court is in a given session. By combining several factors into a comprehensive multivariate model, a greater understanding of the judicial decision-making process can be achieved.

Analysis of the Role of the Protein Hfq in the Regulation of Polyadenylation in *Escherichia coli*
Amanda Casto
Dr. Sidney Kushner, Department of Genetics, University of Georgia

Polyadenylation is a term that refers to the enzymatic addition of adenine residues to the 3' end of mRNA transcripts. In prokaryotes, poly(A) tails are believed to promote the decay of mRNA transcripts by serving as binding sites for ribonucleases that degrade them. The purpose of this research is to investigate the effects of a protein known as Hfq on polyadenylation in *Escherichia coli*. Previous studies have indicated that poly(A) tails found in Hfq^- strains are significantly shorter than those found in wild type strains, presumably because Hfq either protects poly(A) tails from enzymatic degradation or aids in the action of poly(A) polymerase I (PAP I), the enzyme primarily responsible for poly(A) tail synthesis in *E. coli*. This hypothesis was initially tested by sequencing poly(A) tails from an Hfq^- strain. These tails were found to be of normal length, but contained non-A residues and were attached to the mRNA transcripts at positions where tails are not typically observed in wild type strains. The next step in this project will be to clone and sequence poly(A) tails from an *E. coli* strain deficient in both Hfq and polynucleotide phosphorylase (PNPase), an enzyme that is known to synthesize poly(A) tails containing non-A residues. Thus, the tails in this double mutant are expected to be homopolymeric and attached to the transcripts in positions where tails are usually observed in wild type strains.

Qualitative Research as a Method of Inquiry: A Panel
Anne Ciccone, Ivo Ivanov, Matt Lerner, Julie Orlemanski, Nadine Sumner
Dr. Kathleen DeMarrais, Social Science Education, University of Georgia

In the quest to understand the world around us, questions inevitably arise that cannot be addressed by quantitative research alone. Instead, a discipline of inquiry that probes individual and non-quantifiable issues is needed; in a word, certain questions demand qualitative research for their answering. Through our CURO research seminar, we explored the specific strengths, techniques, and limitations of qualitative research in their application to our own pilot projects. This panel will focus on our individual experiences of learning through qualitative research, learning not just about our chosen subjects but also about the research process in general. Each student will speak briefly about his or her experience and findings, and the panel will then accept questions from the audience. We intend to focus on the organic demands for a qualitative approach inherent in our research questions, on the actual process and techniques that we used, and on the final conclusions and evaluations to which our pilot projects lead us. Qualitative research experience on the undergraduate level is rare; thus we feel it is important that we share our insights and experiences of using qualitative research in hopes of stimulating more interest in and employment of this valuable mode of inquiry.

Differences in Cognitive Content between Propositions with Equivalent Referential Truth Conditions
Adam Cureton
Dr. Yuri Balashov, Department of Philosophy, University of Georgia

In everyday language, we often assert that two things are identical. We assert that 'the Morning Star is the Evening Star' or that 'Clark Kent is Superman' and intuitively understand the content of such statements. When we attempt to provide a philosophical underpinning for our intuitions, however, we arrive at a problem: When we assert that two things are identical, what exactly are these 'things.' Frege famously suggested that when we assert an identity, we assert that the names refer to the same objects. 'Morning Star' is the name we use to refer to the planet Venus, and 'Evening Star' is also used to refer to that same planet. Therefore, when we say that 'the Morning Star is the Evening Star' we mean that the terms 'Morning Star' and 'Evening Star' refer to the same object, Venus. If this is the case, however, how are we to differentiate between statements like 'Clark Kent is Clark Kent' and 'Clark Kent is Superman,' since both sets of names refer to the same object? The two statements appear to communicate different ideas, whereby the former is an uninteresting tautology, while the latter provides interesting information. I suggest that the difference in cognitive content between these classes of statements consists of differences in meta-linguistic facts and differences in ability to perform cognitive housekeeping functions. When I learn that 'Clark Kent is Superman,' I learn facts about how the terms 'Clark Kent' and 'Superman' are used in our language that I do not learn when I am told that 'Clark Kent is Clark Kent.' Also, when I learn that 'Clark Kent is Superman,' I am able to adjust some of my other beliefs given the new information that I would not be able to perform if I only learned that 'Clark Kent is Clark Kent.'

Privacy as Autonomous Control of Personal Information
Adam Cureton
Dr. Clark Wolf, Department of Philosophy, University of Georgia

Most of us have little trouble identifying cases in which we take our privacy to have been violated. Privacy violations seem to be clear-cut, and we consider other people as morally wrong if they participate in such actions. Once we examine our intuitions more closely, we find that our concept of privacy seems to be intimately connected with individual autonomy. I take up such an analysis in this project. I attempt to provide necessary and sufficient conditions for privacy infringements so that we are clearly able to identify such cases. Understood in the way I suggest, privacy interests amount to the range of autonomous actions an individual takes which concern the protection of self-regarding information. A violation of a person's privacy therefore amounts to a failure to respect that person's autonomy. Since most attribute a great deal of moral value to autonomy, analyzing privacy in terms of autonomy helps ground the moral value that most attribute to privacy, and thereby helps to justify the status of privacy as a moral right rather than merely an interest.

Development of an *In Vitro* Packaging System for a *Streptomyces* Bacteriophage

David Cureton, CURO Summer Research Fellow
Dr. Janet Westpheling, Department of Genetics, University of Georgia

Streptomyces are gram-positive, soil bacteria that produce most of the natural product antibiotics used in human and animal health care. *Streptomyces* have an unusual cycle of cellular differentiation and synthesize these antibiotics as part of their normal development. The stereochemistry of the compounds produced by *Streptomyces* is extremely complex, making them impossible to produce synthetically. Consequently, the genetic manipulation of commercially valuable species of *Streptomyces* may provide a means of generating novel antibiotics. The ability to transfer DNA from one *Streptomyces* species to another is crucial for generating recipient cells with recombinant genotypes. Recently, generalized transduction, a common method of transferring DNA between cells using bacterial viruses, or phage, was adapted for use in *Streptomyces* in the Westpheling lab. An extension of this technique is to use components of the phage to package DNA *in vitro* for the transduction of specific DNA sequences. The procedures for generating phage particles *in vitro* were adapted from similar systems developed for phages λ, P22, and ϕ29. The protocol includes the establishment of a growth curve to determine the time at which immature (empty) phage heads can be isolated and the conditions under which the nascent particles will mature after the incorporation of exogenous DNA. An important application of this technology will be the use of *in vitro* packaging to transduce antibiotic biosynthesis genes between species of *Streptomyces* to facilitate recombinatorial biosynthesis of novel antibiotics.

Clones of Resistant *Enterococcus faecium* Found in Humans and in Their Pets

Quyen Dam
Dr. Susan Sanchez, Athens Diagnostic Laboratory, College of Veterinary Medicine, University of Georgia

By phenotypically and genotypically characterizing enterococci isolated from the feces of humans and their pets, this project examined whether enterococci can be transferred between hosts. *E. faecalis*, *E. faecium*, *E. avium*, and *E. hirae* were the species identified in a total of 199 isolates from eight households both from owners and their pets. Genotypic characterization by three PCR methods allowed identification of two households where the same *E. faecium* clones were carried in the feces of a human and their pet. *Enterococcus* resides in the intestinal tract of humans and animals without normally causing disease. Recently, infections caused by *Enterococcus* spp., particularly in hospitals, have become a major problem due to the trend in increasing antibiotic resistance. As a result, the manner and facility with which enterococci acquire resistance is of great importance. Transmission of resistant bacteria can take place through various routes and has raised concerns as to the possibility transmission through animals. Much study has been undertaken to investigate feed animals as a source of resistant bacteria; however, there has been little study on household pets as another source. In human medicine, administration of antibiotics is heavily scrutinized. In veterinary medicine, which employs many of the same antibiotics, administration is not as closely monitored. While the clones that we found common between humans and their pets might only be indicative of transient colonization, horizontal gene transfer could take place with other bacterial species within the intestinal tract resulting in a higher degree of antibiotic resistance in the normal flora *Enterococcus* spp. of humans.

Identifying the Risks of China's Nuclear Weapons Command-and-Control System in the Event of Political Crisis

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The purpose of this study is to assess, as far as possible, the exact nature of China's nuclear command-and-control system in the hopes of identifying possible areas of risk of unauthorized or accidental launch in times of crisis. A qualitative case study will examine past weaknesses in China's nuclear weapons command-and-control structure; the current state of civil-military relations with regard to China's Strategic Missile Force (SMF); China's current strategic forces modernization program and its implications; the SMF's chain of command and leadership structure; and whether or not China's nuclear weapons contain use-control devices. The present study will be conducted in close conjunction with experts on nuclear security and nuclear weapons command-and-control at the Center for International Trade and Security/UGA. The study will utilize a variety academic publications, Chinese language newspapers and periodicals, and interviews of specialists on China's strategic forces and military affairs. Much like with the Soviet system over a decade ago, arms control experts have expressed concern about the reliability of China's command-and-control system in times of upheaval. A variety of centrifugal forces undermine the stability and continuity of the current regime. Rapid economic change, a weakening communist regime, growing numbers of riots and protests, and the political succession next year may contribute to potential future crises. Such crises could increase risks that China's nuclear controls could weaken or that these weapons could be used. This study identifies the weakest links in China's command-and-control system during crises, providing a useful framework for analysis of nuclear risks in China.

The Progress and Modernization of Former East German Healthcare after Communism

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It is almost accepted fact that healthcare standards and methods of treatment in the developed world are relatively uniform. However, after the fall of the Iron Curtain, many distinct contrasts emerged both in the conditions of the facilities and the attitudes toward medical care. This study focuses on the efforts of the former East German sector to standardize healthcare services with the West from the perspective of healthcare professionals, public health officials, and objective health reports from various German cities. All subjective information was acquired through interviews and questionnaires with attending physicians (of various medical subspecialties) and spokespeople of health departments of six large cities in former East Germany. The interviews and surveys for physicians centered around, but were not restricted to, patient volume since 1991, the advances in technology, the frequency of continuing medical education, hospital funding for research, and their philosophy on modern patient care. Public health officials answered the same questions and also described trends in immunization, infant mortality, and public sanitation before and after 1991. The results of the interviews addressed a broad spectrum of opinions; however, a definite division of ideologies existed between older physicians educated under the communist system and younger physicians, who were raised during the communist regime, but educated after the fall of the Berlin Wall. The evidence seems to indicate a shift towards Westernization (i.e. capitalism) throughout the healthcare system, from the higher ranks of government and hospital administration to the patients.

Application of Bioinformatics for Analysis of Sorghum ESTs

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At the Laboratory of Genomics and Bioinformatics at the University of Georgia, 117,924 high quality expressed sequence tags (ESTs) of sorghum that have been entered into the GenBank database. Bioinformatics has been used to analyze these ESTs for the discovery of Single Nucleotide Polymorphisms (SNPs), a variation in the genetic code at a specific point on the DNA. The location of SNPs serves as place markers in the sorghum genome allowing regions of gene expression to be identified. Although the majority of the SNPs may not affect the biology of the plant, they provide distinctions between individual genes. SNP analysis using bioinformatics has helped describe and create a detailed map to the genome of the sorghum plant. Bioinformatics, the science of using computers for organizing and processing biological data, allows scientists to decipher wet lab results in an ordered and systematic way. Computer programs such as Phrap, Phred, Polyphred, and Consed assign a numerical quality value to each nucleotide, align the sequences based on overlapping DNA regions, identify SNPs, and display the information in a logical presentation, respectively. These programs serve as tools of the bioinformaticist. The combination of these computer programs with a relational database makes it possible to analyze the massive amounts of data to compare DNA sequences and discover SNPs. After running Phred and Phrap, 10,697 gene clusters were identified by comparing high quality sequences to each other to look for homology. Ploy phred was then run on the gene clusters to detect SNPs by looking for high quality discrepancies in the same location in different contigs. Out of the 10,697 gene clusters, 625 sequences were assembled into 135 contigs and manually viewed to verify Polyphred results. 17 SNPs were confirmed in 5 of these contigs, resulting in 3.7% of the contigs viewed containing a SNP; therefore, by applying this percentage to the entire data set 396 contigs of the 10,697 contigs are hypothesized to contain at least one SNP. New techniques and data mining are being explored to find more efficient and economical means by which to locate and study SNPs. Success in this endeavor could provide a blueprint to mapping out other, more extensive genomes, such as the human genome.

Exploring Olfactory Response in *Drosophila melanogaster* and Evolutionary Theory of Aging

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Experiments in biodemography have shown there is a genetic basis to aging. Aging is typically measured as the increase in probability of mortality. Many think that the cause of this increase is physiological decline. Experiments in gerontology have shown that genetically based physiological/behavioral traits of organisms change with age. The purpose of the current study is to incorporate approaches from both fields to more clearly understand the aging process. We hope to investigate the correlation between experimentally observed variation in aging and genetically based rates of change in physiological/behavioral traits. Genetically different lines of *Drosophila melanogaster* were studied by implementing experimental approaches from both fields. For demography, mortality data was collected. Olfactory response, a genetically controlled physiological trait, was examined for genetic variation at various ages to investigate age-related decline. Flies from each line were placed in a vial with a Q-tip treated with a fly repelling odor. The average number of flies located in the region of the vial farthest from the scent at time intervals was recorded to give an "avoidance score." The purpose of the study was to confirm that the test was sensitive enough to detect response differences and to see if results changed within lines as flies aged. For inbred female lines, significant genetic variation was detected in olfactory ability at an early age, and the rate at which the ability deteriorated showed variation as well. There is evidence to support continued study of genetic variation for physiological decline and eventually attempt to correlate olfactory response data with mortality data.

Refining the Pig Cloning Process: The Effect of Ovarian Follicle Diameter and the Amount of Cumulus Cells on *In Vitro* Maturation of Porcine Oocytes

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In cloning procedures, there is considerable need for oocytes with superior ability to mature *in vitro*; however, the collection efficiency of such oocytes is hindered by the lack of evidence attributing maturation rates to any physical discriminating factors. It has been speculated, though, that ovarian follicle diameter and cumulus oocyte complex (COC) size may affect oocyte maturation rates, and thus, in this experiment, these factors are analyzed for such correlations. COCs collected from pig ovaries were separated into groups based on the diameter of the follicle they originated from (follicle diameter $<$ or $\geq$ 3mm) and the amount of cumulus cells surrounding the oocyte (COC size $<$ or $\geq$ 2x the diameter of the oocyte). The COCs were then cultured for a period of time, after which cumulus cells were removed and the oocyte's chromatin was examined under UV microscope to determine the maturity of each oocyte. Results of repeated tests showed that follicle diameter and COC size were not a factor in maturation progress after 24 hours, but rather were important at the 42 hours time span (the final stage of *in vitro* maturation); specifically, large follicles and large growths of cumulus cells favored an oocyte to reach nuclear maturity. In conclusion, oocytes derived from big follicles and having large cumulus cells investment exhibited superior ability for nuclear maturation. Therefore, these experiments showed that the tested criteria for aspiration and selection of COCs are crucial for obtaining high quality oocytes; these criteria can now be implemented in cloning procedures.

Evaluating the Moscow Center for Export Control's Role as a Non-Proliferation Epistemic Community Member

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The Moscow Center for Export Control (CEC) is a nongovernmental organization in Russia that runs seminars to teach private Russian firms proper export control compliance procedures. In order to understand whether the CEC may play a significant role in promoting export control compliance, it is necessary to understand what role the CEC plays *vis a vis* the targeted firms. Preliminary research indicates that an "epistemic community" is a *de facto* group of individuals and organizations that shares values, policy goals, and ideas of causal models. These groups may influence the actions of policy actors under conditions of uncertainty and ignorance. For the purposes of this research, the CEC is regarded as the epistemic community member, while private firms are treated as "policy actors." Information on the CEC was collected from four main sources. First, information on the "conditions of uncertainty" was collected from literature published by the CEC and other organizations. Second, witness accounts of the actual CEC seminars showed what information was presented to the "policy actors," and how it was presented. Third, interviews of individuals with extensive firsthand experience with the CEC provided insights on how effectively the CEC was providing this information. Fourth, the Center for International Trade and Security's (CITS) report to the U.S. government was used to determine the effectiveness of these seminars. Research indicates that where private firms are uncertain of export control compliance, the CEC can provide information that alters the rational calculations that businesses make. The CEC-provided information introduces new parameters into the decision-making process, decreases the costs, and increases the benefits associated with compliance. The theory predicts that under these conditions, the "policy actors" can be expected to behave differently after attending the seminars. The CITS report indicates that firms will behave differently after absorbing the CEC information, which supports the theory.

Shakespeare on Screen: Henry in Hollywood
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Part of a larger paper on the presence of William Shakespeare's canon in cinema, my presentation at the CURO Symposium would use video clips to explore the intertextual relations among two films deriving mainly from Shakespeare's *Henry IV, Part One* and *Henry IV, Part Two*: Orson Welles' *Chimes at Midnight* (1965) and Gus van Sant's *My Own Private Idaho* (1991). Implicit in this pairing is a double issue of adaptation: both filmmakers are interpreting Shakespeare's plays, but van Sant came upon the plays only through Welles' film and he alludes directly and extensively (despite his statements to the contrary) to his cinematic predecessor. The generation gap between the two directors, of course, makes for important contrasts between the two films. Thus, these two removals from the original texts sharpen the basic question of whether Shakespeare is still Shakespeare in productions on screen instead of on stage. In addition, they display the different approaches taken to adapting Shakespeare by two filmmakers of very different generations and traditions, one who spent a good bit of his career on Shakespeare (Welles produced and acted in stage productions and directed three Shakespearean films throughout his career), and one who has dealt with Shakespearean material only in the film at hand. The use of video clips in my presentation will allow me to detail the intertextual visual and cinematic relationships between these films in hopes of exploring their relationships to and removal from Shakespeare, keeping in mind the intertextual network of English chronicle histories and Elizabethan drama out of which the plays were originally born.

The Multicultural Experience: Pre-Service Education Students in Early Childhood Education Related to Multicultural Beliefs and Attitudes
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Given the increase of diversity in the United States public schools, all educators and students must face the reality of cultural diversity. This diversity takes place in and outside of the classroom. Often times, teachers are not trained in a diverse or multicultural environment. Introducing a multicultural curriculum or multicultural courses will provide pre-service teachers with the experience and knowledge that they need to be successful in teaching in a multicultural classroom. Information about various learning styles and concepts will be incorporated in this process. This investigation is an analysis of pre-service education students, and their multicultural beliefs and attitudes based on several administered instruments. Some of these instruments will include case studies, internet searches, readings related to diversity, and surveys.

Characterization of Nonlinear Viscoelastic Properties of Biomaterials through High-Speed Linear Based Transformation
Daniel Folkers, Jai Sikes, and Sam Utley
Dr. Guigen Zhang, Department of Biological and Agricultural Engineering, University of Georgia

This paper demonstrates how engineering principles can be applied to solve biomedical problems, such as characterizing the behavior of nonlinear viscoelastic materials. Viscoelastic materials exhibit stress/strain performance that is frequency, history, and path dependent. Likewise, a general mathematical expression is not available to describe nonlinear viscoelastic behavior. Characterization of the complex dynamic stiffness/modulus properties of nonlinear viscoelastic materials will help lead to optimization of biomedical and industrial products that utilize these materials. Common examples include medical devices, such as prosthetic limbs and orthopedic implants, manufacturing equipment, and consumer products. A new method to characterize nonlinear viscoelastic behavior has been developed. The new method employs analyzing the stress/strain response of a nonlinear viscoelastic material with Fast Fourier Transformation and high-speed data acquisition. With the new method, we demonstrate that nonlinear viscoelastic behavior can be characterized by our high-speed linear based transformation technique. These current findings are being used to design a physical apparatus to determine material characteristics of nonlinear and viscoelastic materials using both dynamic and static loading. It is our objective to produce such a device that is also highly accurate, user-friendly, and inexpensive for the public.

The Effects of Exercise on Brain Derived Neurotrophic Factor

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Brain derived neurotrophic factor (BDNF) is associated with depression. Exercise has been shown to increase BDNF in the hippocampus, similar to the antidepressant pharmacotherapy. This may provide insight into the biological mechanisms of the therapeutic effects of exercise on depression. The purpose of the study was to investigate the effects of exercise and antidepressant drugs on BDNF messenger ribonucleic acid (mRNA) in the olfactory bulbectomy animal model of depression. Male Long-Evans Rats (N=80) were randomly assigned using a 2 x 2 x 2 factorial design to the following conditions: 1) Sedentary (SED) vs. Activity Wheel (AW); 2) Saline (SAL) vs. Imipramine (IMP); 3) Sham (SHAM) vs. Olfactory Bulbectomy (OBX). All animals underwent either sham or OBX surgery, which requires bilateral removal of the olfactory bulbs. Rats were given daily injections (i.p.) of imipramine (10 mg/kg) or saline. One-half of the rats remained sedentary while the other half received an activity wheel in the cage. The entire experiment lasted 21 days. *In-situ* hybridization histochemistry with autoradiography was used to examine levels of BDNF in the hippocampus and dentate gyrus. There was a significant drug (SAL vs. IMP) x exercise (SED vs. AW) interaction ($p < .005$) in the dentate gyrus, and CA1, and CA3 regions of the hipppocampus. Chronic exercise elevated levels of BDNF mRNA in the saline but not the imipramine treatment groups. These results may help to examine the biological adaptations made in the brain following chronic exercise, which may help with the treatment and prevention of depression.

Effect of Fill Weight and Initial Temperature on Processing Time for a Home Pickled Jicama Relish

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The objective of this study was to determine the effects that typical consumer procedural variations have on heat penetration when processing pint glass jars of an acidified jicama relish recipe in boiling water. It is necessary to use thermal processing methods when making pickled products in order to prevent mold, yeast, and/or bacterial growth that produce spoilage when the product is stored. It was hypothesized that (1) as fill weight increases, required processing time will increase and (2) as initial fill temperature of jars decreases, required processing time will increase. To locate the cold spot for processing this product in pint canning jars, heating curve slopes (f_h values) were determined for each of five potential cold spots in each of 10 canner loads. Product temperatures were then measured at the cold spot throughout a 35-minute boiling water canning process for three treatments: control (standard canning procedure), high fill weight (HFW), and low initial temperature (IT). HFW resulted in decreased maximum jar temperature and a longer process requirement. A decrease of 5°C (64.5 vs. 69.7) in IT had no effect on either maximum jar temperature reached at the end of come-up (time to bring canner to boiling) or the 35-minute process at boiling. The major conclusion to be drawn from this study is that overfills should be avoided to insure expected heating rates and final maximum temperatures. Publishing a minimum number of jars to fill with a home canning recipe is one way to achieve this.

Structural Genomics Using a Model Microorganism

Brian Gerwe
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The genome of *Pyrococcus furiosus,* a hyperthermophilic Archaeon, has been completely sequenced. The genome size is 1.908 Mbp and contains 2197 putative open reading frames (ORFs). The long-term objective in our laboratory is to develop a high-throughput cloning and protein expression system for use on a genome-wide scale. An analysis of the *P. furiosus* genome suggests that only about 23 % of the ORFs encode single subunit cytosolic proteins with no complex cofactors. It is evident that no single protocol will be able to accommodate expression of all proteins in the genome. The initial approach involves cloning each ORF into a modified *Escherichia coli* expression vector (pET-24d) such that the protein contains a N-terminal His-tag, $MA[H]_6GS$, used for affinity chromatography purification. Initial expression utilizes a range of standard growth protocols that are amenable to a high throughput procedure (i.e. temperature, growth media and inducer concentration) using commercial robotics. ORFs that do not yield soluble proteins in this protocol will enter alternative protocols that utilize conditions of increasing complexity. This will require the development of novel protocols to express genes that encode multisubunit proteins (mORFs), proteins that are membrane-associated, contain complex cofactors or a combination of all three. I will be presenting preliminary data on the cloning and expression of *P. furiosus* genes. Our initial results demonstrate a high success rate for both cloning and expression. Systematic variation of simple growth conditions greatly influences protein expression. This approach allows multiple conditions to be analyzed to optimize expression.

Relative Pathogenicity of Two Strains of Canine Distemper Virus Originally Isolated from Lions

Leah Givens
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Canine distemper virus (CDV) caused a 1994 epizootic among a population of lions in Tanzania's Serengeti National Park through contact of these lions with infected wild dogs. A similar outbreak occurred in 1991 and 1992 in captive felids at the Wildlife Waystation in San Fernando, California, resulting in the deaths of 17 cats, including leopards, tigers, lions, and jaguars. In this study, a post-mortem analysis compared ferrets infected with the African strain of the virus to those infected with the California strain, with an emphasis on the relative virulence and biology in each group after two, three, and four weeks post-infection. Immunohistochemical techniques revealed that the African strain tended to follow a stable course of infection with a less consistently fatal outcome when compared to the California strain. While ferrets infected with the California strain showed less viral load in the early stage of infection, the virus proved fatal for all such ferrets by four weeks post-infection. Some of the ferrets infected with the African strain, in contrast, developed only mild clinical signs and seemed to have recovered. However, at four weeks post-infection, viral antigen from the African isolate was detected in brain and salivary tissues. The significance of these particular findings lies in the discovery that the chronic nature of the African strain allows for increased viral transmission via salivary secretion, but may ultimately still prove fatal due to infection of the central nervous system.

Received with Open Arms; A Study of the Parable of the Prodigal Son
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Simply stated by both professors and critics alike, a parable is a story used to illustrate an idea. While the underlying concept of the parable as a form of teaching remains simple, its relativity to all people regardless of age, education, gender, or nationality has held steadfast through the ages. Because of his effectiveness and passion, a carpenter named Jesus drew large audiences of men, women, and children who were eager to listen to his parables. For example, all of society could emotionally identify with the themes and even with the characters within Jesus' parable of the prodigal son. Of utmost significance, the parable is still the perfect teaching tool, because the parable applies to all ages, influences all classes, and universalizes all themes. As I look at the effectiveness of the parable, my research includes interpretive, historical, as well as biblical influences. These three influences are critical to understanding the parable's continued use and impact upon varied societies and cultures.

Cell Wall-Degrading Enzymes from the Fungus That Causes the Devastating Rice Blast Disease
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The fungus *Magnaporthe grisea* is the pathogen responsible for the devastating Rice Blast disease. After entry into the rice plant, the fungus begins releasing xylanases that degrade xylan, an important component of rice cell walls. Six different xylanases have been discovered in *M. grisea*, and despite their importance, very little is known about how these enzymes function in *M. grisea*'s attack on the host. Because these enzymes are difficult to obtain they have yet to be studied in depth. Using genetic engineering technologies, we are now able to produce these enzymes in sufficient quantities for kinetic, structural, and biological studies. The heterologous organism we are investigating for xylanase production is *Pichia pastoris*, a eukaryotic fungus. We have shown that the *Pichia* cells transformed with each of the *M. grisea* xylanase genes result in the production of the enzyme under inductive conditions. Therefore, we are one major step closer to understanding precisely what role xylanases play in Rice Blast disease.

Identification of the NDV-Fusion Protein and NDV-Phosphoprotein in Transgenic Soybean Plants

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Newcastle Disease Virus (NDV) is one of the most serious problems affecting the poultry industry. The virus causes a major decline in the number of chickens produced for both commercial and economic purposes. For example, in 1971, the poultry industry in California suffered an outbreak of NDV. Eradication cost $56 million in federal funds and resulted in the destruction of 12 million birds. Preventive measures require the use of vaccines, achieved by inoculating chickens with either inactivated or live-forms of the virus. An extension of this method is the production of an oral vaccine using transgenic plants. Previous studies have demonstrated the effectiveness of using transgenic plants in the production of edible vaccines against a variety of other pathogenic antigens. In each of these studies, transgenic plants expressing pathogenic antigens induced an immune response in the host organism. The main objective of this project is to determine if NDV proteins produced in genetically engineered soybean (*Glycine max* L. Merr.) plants elicit an immune response in chickens (*Gallus gallus*). DNA sequences encoding two of the viral proteins, the phosphoprotein (P) and fusion (F) protein, were transformed into soybean plants by gene bombardment. This research will primarily investigate the immunogenicity of P. Although P has been shown to have a high amount of antigenicity, no research has been reported to show that P is immunogenic. If P is found to be immunogenic, then it could be used as an edible vaccine for NDV. DNA from transgenic plants will be analyzed for the presence of the transgene through Southern blotting. Thus far, eight lines have tested Southern positive: two containing the F gene and six containing the P gene. Lines testing Southern positive will be tested for the expression of the phosphoprotein and fusion protein through Western blotting. The immunogenicity properties of the plant lines expressing the P and F proteins will be determined through an immunoblot. An affinity-purified rabbit polyclonal antibody will be used as the primary antibody and a goat antirabbit-horseradish peroxidase will be used as the secondary antibody. Soybean lines producing an immune response in vitro will be tested in vivo.

Expression of Putative *Arabidopsis* UDP-Glucuronic Acid 4-Epimerase Genes

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Pectin is an abundant polysaccharide found in the primary cell wall of all plants. Pectin is comprised of the complex polysaccharides homogalacturonan (HGA), rhamnogalacturonan I (RG-I), and rhamnogalacturonan II (RG-II). Each of these pectic polysaccharides contains large amounts of galacturonic acid (GalA). UDP-GalA is the activated form of GalA that is required for pectin synthesis. Thus, the enzymes that produce UDP-GalA are essential for pectin synthesis. In plants UDP-GlcA is converted to UDP-GalA by UDP-glucuronic acid 4-epimerase (UDP-GlcA 4-EP). We have identified and cloned several *Arabidopsis* cDNAs that likely encode several isoforms of this epimerase. The goal of the research was to express these putative *Arabidopsis* UDP-GlcA 4-EP genes and confirm their activity. Two experimental approaches were used. First, we transiently expressed the genes of interest in *Nicotiana benthamiana* plants using a tobacco mosaic virus (TMV) expression system. Whereas a control green fluorescent protein (GFP) construct did yield tobacco plants that produced GFP and fluoresced, the TMV:UDP-GlcA 4-EP infected plants expressed neither the putative UDP-GlcA epimerase mRNA nor the epimerase activity. We do not know why the TMV infected plants did not express the UDP-GlcA 4-EP genes. However, we propose that the TMV:UDP-GlcA 4-EP construct was unstable in the *Nicotiana benthamiana* plants. Our second strategy is to over-express the genes in *Arabidopsis*. Currently we are constructing plant binary expression vectors that contain the various UDP-GlcA 4-EP isoforms. *Arabidopsis* transgenic plants that over-express the putative epimerase will be generated and used to test for UDP-GlcA epimerase activity. The recovery of higher than background levels of UDP-GlcA-epimerase activity in the transgenic plants would be the first conclusive evidence that these genes do indeed encode functional UDP-GlcA-epimerases and would provide essential tools to study pectin synthesis.

Gene Expression in *Leishmania*: Control of Protein Synthesis in *Leishmania* 5' Untranslated Regions

Peter Harri, CURO Summer Research Fellow
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Efficient protein synthesis in prokaryotes and eukaryotes calls for different sequences upstream of coding regions. In the parasitic protist *Leishmania*, the 5'-untranslated regions (UTR) that promote prolific translation have not been defined. We have found that a 15-base sequence, termed Leishmania Translation Enhancer (LTE), positioned upstream of a reporter gene can influence protein synthesis 30-fold. We are interested in determining the essential sequences in *Leishmania* translational enhancer. Our experiments were designed to test if different sequences of the 5'-UTR of a reporter can affect translation in either *Leishmania tropica* or *Eschericha coli*. Using high fidelity PCR-mediated mutagenesis, mutant 5'-UTRs were linked to the coding region of a glycosyl phosphatidylinositol phospholipase C (GPI-PLC) gene from *Trypanosoma brucei*. We focused on a polypurine sequence AGGAGG, and produced related sequences TCCTCC, AGAAGA, GAAGAA, and GGGGAA. The AGGAGG was also deleted entirely from one 5'-UTR. DNA fragments were ligated into pBluescript II SK (+) for testing in *E. coli* and pUTK, a *Leishmania* expression vector, for expression in the parasite. After selection with ampicillin for *E. coli* and G418 for *L. tropica*, the cells will be assayed for the GPI-PLC enzyme activity, and specific activity of the enzyme will be determined. The results of this research are still pending. Currently, only 5 of the 10 desired mutations have been ligated into the desired plasmids, so no transformation or transfection has been performed. More cloning is needed to construct all of the desired plasmids. These studies will make contributions to our understanding of how *Leishmania* ribosomes decipher information in mRNA for the purpose of protein synthesis, which is important because gene expression is regulated post-transcriptionally in Leishmania.

Experimental Study of Male-Male Combat in a Parasitoid Wasp

Chris Hartley
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The parasitic wasp *Melittobia digitata* (Hymenoptera: Eulophidae) is a gregarious external parasite of various insects, including the common organ pipe mud dauber wasp. Sexual dimorphism in this species is extreme, and the males possess greatly enlarged mandibles. Males commonly engage in fierce, often fatal, fights with other males. The mandibles are the main weapons used, and injuries inflicted vary greatly in severity. This study had three objectives. The first objective was to determine whether engaging in fights was so energetically costly as to shorten a male's lifespan. The results supported this hypothesis. Males that had engaged in fights lived on average 9.65 days compared to isolated male lifespan of 12.3 days. The second objective was to determine whether fighting behavior changed with age. The hypothesis was that older males whose energy reserves would be nearly depleted would be more subdued fighters relative to young males. Isolated one-day-old and five-day-old inexperienced males were paired in observation arenas, and outcomes were recorded. Results supported the hypothesis; young males fought quickly and violently compared to older males. Older males fought less often and inflicted fewer and less severe injuries. The incidence of fatal fights, however, remained the same among young and old males. The final objective was to investigate whether males can learn to be more efficient fighters as a result of experience. It was predicted that winners of fights should, in subsequent battles, display more stereotyped fighting behavior and go for the "quick kill." Results are currently being analyzed.

Comparison of Several DNA Extraction Methods in Conjunction with PCR for the Rapid Detection of *Rhodococcus equi* and *Steptococcis equi*

Jessie Hopkins
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Rhodococcus equi and *Streptococcus equi* are bacteria that cause severe disease in horses. Using traditional bacteriology culture the isolation and identification of this organisms typically takes 48 to 72 hours. Polymerase chain reaction can facilitate the diagnosis of these bacterial infections. Bacteria can be detected within hours of sampling, and it is more sensitive and theoretically can detect fewer bacterial cells. Choosing the right DNA extraction method is crucial for diagnostic PCR. Our aim was to choose a reliable, rapid, and simple method for routine DNA purification from trans-tracheal washes, lymph node aspirates and swabs. Three different DNA extraction methods were examined namely, MasterPure ™, QIAamp® DNA kit, and guanidium thiocyanate DNA extraction. These protocols were compared quantitatively by using each method to extract DNA from three logarithmic serial dilutions of reference bacteria and three trans-tracheal washes and using these extractions for amplification using PCR, and visualization by gel electrophoresis. The MasterPure DNA purification kit allows for the detection of $2x10^2$ cfu/ml for *S. equi* and $6x10^2$ cfu/ml for *R. equi*. In contrast, QIAamp purification only allowed for the detection of $1.5x\ 10^4$ cfu/ml for *S. equi* and 10^4 cfu/ml for *R. equi*. Finally, guanidium thiocyanate extraction was as good as MasterPure for the extraction of *S. equi,* but only allowed for the detection of 10^5 cfu/ml for *R. equi.* All known positive clinical samples for either of the microorganisms were positive when extracted by the chosen method and amplified by PCR.

Formation of Hirano Bodies in Mammalian Cell Culture

Lindsay Hoskins
Rich Davis, Dr. Ruth Furukawa, and Dr. Marcus Fechheimer, Department of Cellular Biology, University of Georgia

Hirano bodies are paracrystalline, intracellular, actin-rich inclusions discovered in the brain specimens of patients stricken by neurodegenerative diseases such as Alzheimer's. Hirano bodies are present in several regions of the brain but most commonly found within the hippocampus. The role of Hirano bodies in the progression of disease is unknown. Recent findings have demonstrated that the expression of a mutated form of the 34kDa actin cross-linking protein in *Dictyostelium discoidum* induces the formation of Hirano bodies. This is the first *in vivo* model of Hirano body formation. The goal of this project is to develop a cultured cell model for studies of Hirano bodies in mammalian cells. Transiently transfected fibroblasts exhibited significant actin rearrangement to form large aggregations. Scanning electron microscopy demonstrated a significant alteration in the topography of the transfected cells. There are atypical cellular protrusions that are consistent in size and dimension with the Hirano bodies visualized by fluorescence microscopy. Cofilin, but not tubulin, is localized with these aggregations. These results support the interpretation that a model for formation of Hirano bodies in mammalian cells has been developed. This model can now be employed for studies of the cell type specificity of the response and the effects of Hirano bodies on cell function.

Use of a Non-Radioactive Gel Assay to Assess whether Protein Purification Separates a Pectin Degradative Activity from the Pectin Biosynthetic Enzyme Alpha-1, 4-Galacturonosyltransferase

Donte Howard
Dr. Debra Mohnen, Complex Carbohydrate Research Center, University of Georgia

The plant cell wall is composed of approximately 90% polysaccharide. About 30% of the polysaccharide in the cell wall of dicots and nongraminaceous monocots is pectin. Pectin is a polysaccharide with many biological activities and uses. It is a major component of fiber that has beneficial effects on human health. Pectin is also essential for plant growth, development, and defense against pathogenic attack. Homogalacturon (HGA) is the most abundant pectic polysaccharide accounting for 60% of pectin. HGA is a linear polysaccharide of a 1,4-linked alpha-D galactopyranosyluronic acid (GalA) residues that maybe methyl esterfied at C6. The enzyme that synthesizes HGA is galacturonosyltransferase (GalAT). The goal of my research was to use a non-radioactive polyacrylamide gel electrophoresis assay (GalAT PAGE assay) to study reaction products produced by partially purified GalAT. During efforts to purify GalAT in plant tissue extracts, it was previously found that an HGA degradative activity was also present. The activity degraded the GalAT reaction product and thus interfered with the analysis of GalAT activity during protein purification. Prior analysis of the degradative activity suggested that it was a putative exopolygalacturonase, an enzyme that degrades HGA. In this presentation, we use the GalAT PAGE assay to show that the HGA degradative activity present in *Arabidopsis thaliana* tissue extracts can be separated from GalAT during protein purification. The GalAT PAGE assay is also being used to determine if the degradative activity can be inhibited by high concentrations of galacturonic acid or digalacturonic acid, reaction products of the degradative enzyme. The results of these experiments will also be presented.

Ceramic Analysis at Lake Springs (9Cb22): A Late Archaic Site of the Savannah River Valley

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In 1951, Joseph Caldwell excavated the Lake Springs site (9Cb22) as the waters of the Clark Hill Reservoir on the Savannah River rose around him. While more than 10,000 artifacts had been recovered by him before the site was flooded, that collection had been lost for most of the last 50 years. In September 2001, the 23 boxes of artifacts from the site were discovered unlabeled at the Southeast Archaeological Center of the U.S. National Park Service in Tallahassee, and were transferred to the University of Georgia Laboratory of Archaeology in Athens. Caldwell never published a site report for Lake Springs, thus the overall objective of my project is to produce a final site report using his field notes, illustrations, and the recently discovered artifacts. In this specific paper I will present an analysis of the ceramic collection from Lake Springs. The majority of ceramics are Stallings Island Fiber Tempered bowls of plain and drag-and-jab varieties. These varieties suggest that the main occupation of the site was during the Mill Branch and Lover's Lane phases of the Late Archaic, between 2200 and 1350 B.C.

Screening Mutant Yeast Strains for Abnormalities in the Localization of snoRNA

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The small nucleolar RNAs (snoRNAs) are located in the eukaryotic nucleolus. These RNAs are essential for the production of rRNA, which is involved in protein synthesis. The transport and localization of these snoRNAs to the nucleolus is not well understood. My project this summer was to participate in a screen of mutant *Saccharomyces cerevisiae* yeast strains, looking for phenotypic abnormalities in the localization of the U3 snoRNA. Each one of these mutant yeast strains contains a gene that has been mutated in a yeast genome. Thus, isolating the mutant yeast, that displays an abnormal localization phenotype, can identify the gene responsible for snoRNA localization. A collection of ~1,000 thermosensitive (t.s.) strains were screened. Using FISH (fluorescence in situ hybridization), the subcellular localization of the U3 snoRNA in wildtype and mutant yeast strains was determined using a DNA probe complementary to the U3 snoRNA with an attached fluorescent molecule, cy3. The concentrated DNA in the nucleus was stained with DAPI, a fluorescent stain. The normal and abnormal localization of the snoRNA could then be analyzed by fluorescence microscopy. The results from this screen identified 46 possible gene mutations involved in snoRNA localization. Of these 46 mutants, those that are found with outstanding abnormalities at the nonpermissive temperature (37°C) but not the permissive temperature (22°C) will aid in confirming the genes responsible for this localization. Ultimately, these genes will be studied further to understand the role of the identified gene product in the proper (functional) localization of the snoRNA.

Identifying Expressed Genes in Sorghum

Jacoby Hudson, Crystal Oliver, and Cassandra Kirkland, CURO Apprentices
Mrs. Aynsley Eastman, Mrs. Vickie Wentzel, Dr. Marie-Michèle Pratt, and Dr. Lee Pratt, Department of Botany, University of Georgia

Sorghum, a plant closely related to sugarcane and maize, is scientifically interesting due to its small genome size and ability to tolerate stress. The purpose of this sorghum EST, or expressed sequence tag, project is to identify expressed genes under various environmental stresses and from different tissues. 2,304 plasmids containing EST inserts were purified and sequenced to potentially allow for the identification and characterization of expressed genes. These plasmids contain DNA inserts which when sequenced allow for the identification and characterization of expressed genes. These plasmid DNA were first amplified in *E. coli,* and then lysed. The plasmid DNA was then purified by precipitating the bacterial membrane, proteins, and genomic DNA and then precipitating the plasmid DNA. The pure plasmid DNA was then thermal cycled to add fluorescent tags to each nucleotide in the DNA sequence, and sequenced via a 96 sample capillary electrophoresis machine. This machine produces images representing DNA sequences of expressed genes. Each side of the plasmid was sequenced to try and cover the entire length of the unknown EST sequence. This raw data from the sequences will be uploaded into a database where various computer programs analyze it for quality, *E. coli* contamination, and vector presence. Sequences passing quality control will be compared to public databases of other sequences for possible identification. Functional assignments could be made to other sequences hitting with a high homology to other sequences with a known function. Because these ESTs are sequences that come from expressed genes in sorghum, any sequences not hitting to known gene sequences could be potentially identified as a new gene.

It Was Broken, but They Did Not Fix It: Italian Election Reform in the Nineties

Eirin Kallestad
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The purpose of this study is to investigate the Italian electoral reforms implemented over the last decade. In the early nineties, the Italian electoral system changed quite drastically. Reformers sought to create a stable, bi-polar political arena similar to the American one, but the Italians now resort to large coalitions consisting of parties or groups with differing foci. The new system created new problems without really solving the old ones. The reforms also caused the established parties to loose ground and new "parties" like Silvio Berlusconi's *Forza Italia* to prosper. This paper explores different aspects related to the electoral reforms. First, why were the reforms necessary? Secondly, how did the reforms fail? The reforms were crucial in a time of corruption scandals and little faith in the government. However, the party structure was falling apart *before* the reforms, due to a general decline in political culture. My study shows that while the reforms certainly contributed to the destruction of the established parties, they were not solely responsible. Therefore, political reorganizers must remember that officially implemented laws and reforms can only be successful if the environment they are inserted into is receptive.

Gender Differences in Internal and External Thought Focus among Prepubescent Children

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Gender differences in cognitive response patterns to depression have been theoretically and empirically linked to the disproportionate numbers of women and adolescent girls experiencing depression (e.g., Nolen-Hoeksema, 1994, 1987; Ingram, 1990). Butler and Nolen-Hoeksema (1994) found that women tend to respond to depression by ruminating about their difficulties (i.e., internal focus), whereas men tend to distract themselves by focusing their thoughts on sports or other activities (i.e., external focus). This paper examines the developmental history of gender differences in internal and external focus by examining focus differences in third graders and a sample of college students. We posit that gender differences in internal and external focus might exist prior to the onset of gender differences in depression. Participants were drawn from 3rd grade classes at an elementary school and a large university, both in the southeastern United States. Each group included 40 students (20 males, 20 females) for a total of 80 participants. Focus of thought is being assessed using two free-thought measures. During six data collection sessions, individuals will either write their thoughts or draw for 10 minutes. Participant's writing transcripts are analyzed for focus of thought by first identifying all thought units and the coding each thought unit as being either internally or externally focused. The drawings are analyzed for thematic content. Correlations among tasks will examine the feasibility of using drawings as a metric of thought focus in younger children who are unable to complete written or verbal measures. Data analysis is underway, and no results are available at this time.

An Online Analytical Processing Approach to Single Nucleotide Polymorphism Discovery and Analysis

Dipinder Singh Keer
Dr. Marie-Michèle Pratt, Mr. Manish Shah, Dr. Chun Liang, Mr. Robert Sullivan, Mrs. Aynsley Eastman, and Dr. Lee Pratt, Department of Botany, and Dr. Mark Huber Department of Management Information Systems, University of Georgia

A Single Nucleotide Polymorphism (SNP) represents an alternate nucleotide in a given and defined genetic location at a frequency exceeding 1% in a given population. SNPs are considered to be a major source of phenotypic variability leading to differences in individuals within a given species. A variety of SNP analysis tools are available for detecting SNPs in the large volumes of data produced in high-throughput sequencing projects. The variation in the output format of these SNP detection programs and the need for further screening of the SNPs that are detected prompt the need for a data management process to standardize this data and make it available for aggregate analysis. This process involves the parsing of relevant data from these outputs, conversion to a standardized format, and storage of the data in a database designed for efficient mining, confirmation, and analysis. The relational database is designed to support ad-hoc querying and data mining of SNP data. A supporting query interface will be developed as an Online Analytical Processing (OLAP) tool for mining of SNPs from the data gathered. This approach will be demonstrated by accurate SNP identifications in sorghum and horse ESTs (Expressed Sequence Tags), which are representative data sets typical of sequence-based SNP discovery.

The Stevens Clinic – A Sports Medicine Facility

Emily Kirk
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The design of a sports medicine clinic can play an important role in a patient's recovery from injury. Research indicates that an effective facility provides its patients with a comfortable, stimulating environment for treatment and exercise. The Stevens Clinic, a 21,000 square foot orthopedic and physical therapy suite, demonstrates how an interior can facilitate healing. This project investigates common solutions in sports medicine space planning. Interviews with a health care design specialist, a clinic manager, and a patient present key concepts in programming the space. A floor plan and rendered illustrations display conceptual design solutions for the practice. Written explanations accompany and clarify these drawings. The Stevens Clinic displays innovative space planning for recovering athletes and their physicians.

Utilization of Cover-Boards by Eastern Tiger Salamander (*Ambystoma tigrinum tigrinum*) Metamorphs at Brookhaven National Laboratory

Heather Kling
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The eastern tiger salamander has been designated an endangered species in New York State, and loss of habitat has been the primary factor contributing to its extirpation from heavily developed western Long Island. The intention of this investigation is to determine whether tiger salamanders demonstrate a propensity for use of artificial cover, and whether they exhibit any preference regarding board choice. The results of this experiment will contribute a basis for all future studies to better divulge salamander behavior relating to migration patterns immediately following emergence. For the cover-boards, half sheets of plywood were arranged around two ponds, determined by relative salamander population size, on the Brookhaven National Laboratory (BNL) site. Larval sampling was done by seining, carried out in approximately fifteen-minute sessions using a ten-foot minnow seine with quarter inch mesh. At only two of the ponds on site, one with a sample size just over 30 individuals and the other just under 30 individuals, were there significant larval salamander populations to warrant the placement of cover-boards. Measurements, including snout-vent length, total length, and weight, were taken on all salamanders sampled, both larvae and adults; these helped contribute to the hypothesized existence of age cohorts. There is difference between the ponds concerning numbers of adults sampled, totaling thirty-seven at one and eight at the other, as well as average sizes of individuals, notably larger at one than the other. Regardless of any difference between the two ponds, the salamanders demonstrated use of the artificial cover-boards showed little preference regarding specific board choice.

Analysis of Microsatellites in Sorghum ESTs

Dmitri Kolychev
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Finding SNPs, microsatellites, and other certain patterns in ESTs provides a key to understanding the genetic data. A database of ESTs provides the ability not only to find the microsatellites, but also gives a tremendous amount of ancillary information about the genes in which the microsatellites are found. Microsatellites, or simple sequence repeats, are genetic loci where several nucleotide bases are repeated in tandem. The utility of microsatellites is mostly due to slipped-strand mispairing during DNA replication, repair, or recombination; this makes them exhibit extreme length polymorphism, and they occur rather frequently in coding regions of DNA. Furthermore, since they can be easily analyzed by PCR using unique flanking primers, they are considered excellent genetic markers in making genetic linkage maps. This project involves not only building a database of high quality microsatellites found in sorghum ESTs but also searching for the effect these microsatellites have in different genotypes. An extra repeat within the microsatellite could have tremendous effect on the phenotype of an organism; likewise, a mutation within a microsatellite locus could have either disastrous or beneficial consequences for the organism that carries it. A careful analysis of obtained data will yield the stochastic link between the occurrence of certain microsatellites in different genotypes; however, final results are not yet known since extensive review is still under progress.

Differential Glycosylation of Normal and Neoplastic hCG

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Human chorionic gonadotropin (hCG), one of four related heterodimeric glycoprotein hormones involved in reproduction and metabolism, is produced by the trophoblastic cells of the placenta during pregnancy. Some malignant cells also produce hCG with a glycosylation pattern different from that of normal cells. Previous glycosylation studies required purification of large quantities of hCG, restricting the analysis of many transformed cell lines. The goal of this study was to develop an ELISA to rapidly examine the differences in glycosylation profiles between hCG produced during pregnancy and malignancy, concentrating mainly on trophoblastic disease. An antibody fragment, devoid of oligosaccharides, with affinity for the hormone-specific β subunit was coated onto polystyrene 96-well plates in order to capture the hormone from the cell media. The glycosylation pattern of the hormone was then probed by a series of 11 biotinylated lectins. Lectin binding was indirectly quantified by subsequently binding sptrepavidin-HRP and measuring colored substrate production on a plate reader. It was determined in 3 independent experiments that hCG from a human choriocarcinoma cell line (JAR) contains increased fucosylation based upon increased binding of an *Aleuria aurantia* lectin, as well as the presence of O-linked galactose β(1-3) N-acetyl galactose and triatennary branching determined by the lectins *Amaranthus caudatus* and *Phaseolus vulgaris* leukoagglutinin, respectively. If the glycosylation signatures of hCG derived from transformed cells of many tumors, e.g. reproductive tract, lung, colon, etc., can be determined and distinguished through an easily performed assay, the role of hCG as an early marker of cancer will expand to provide information on the localization of the tumor.

Development of Cognitive Inhibition in Preschool Children

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Cognitive inhibition is a theoretical construct explaining the suppression of cognitive contents or processes which had been previously activated; in addition, it is thought to develop during early and middle childhood. Cognitive inhibition is important in developing efficient memory skills; being able to inhibit the maintenance of irrelevant information in working memory allows one to use more of the memory store for remembering relevant information and performing other cognitive processes. Previous research indicates that school-aged children (first through fifth graders) are able to inhibit irrelevant information in various memory tasks. However, considerable frontal lobe development occurs during the preschool years, which has been implicated in cognitive inhibition abilities. The purpose of our study is to test 40 preschoolers' (ages 3-6) abilities to inhibit prepotent responses, as well as assess construct validity, in three cognitive inhibition tasks (modified Stroop task, picture naming task, and directed-forgetting task) and one vocabulary test (Peabody Picture Vocabulary Test-Revised). We will also test 20 adults for a comparison control group. We hypothesize that there will be differences in responses among the 3-4.5 year-old group and the 4.5-6 year-old group, such that the older preschoolers will exhibit higher levels of cognitive inhibition than the younger preschoolers. Independent t tests will be used to compare performances of the two preschool groups on our tasks. Findings from this study will enhance our knowledge of cognitive inhibition development in young children. Currently we are beginning data collection on our research.

Motivations of U.S. Southern Homegardeners: Preserving the Past in a Modern World

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The purpose of this study was to discover the different motivations that homegardeners and farmers in the Southeastern United States have for growing heirloom, or traditional varieties of crops. Through the content analysis of interviews, this paper examines the motivations that prompt gardeners to persist in cultivating heirloom varieties with no institutional support. It compares the motivations of women and men, as well as older and younger growers. My research found that older growers were more likely to grow heirlooms because of tradition and utilitarian reasons, and younger growers grow heirlooms because of personal preferences and as a conscious effort to conserve biodiversity. Since the adoption of industrial agriculture and the Green Revolution, farmers and even homegardeners have replaced their local varieties with high yielding and high input hybrid crops. Local varieties are disappearing at an alarming rate, contributing to the worldwide decrease in crop biodiversity. However, many people in the U.S. among other places refuse to conform to these trends and continue to cultivate heirloom varieties.

The Colorfastness of an Interlock T-shirt Material Laundered with a Detergent Compared to Laundering with a Detergent Plus Enzyme

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The purpose of this study was to see if adding enzymes to the home laundering would prevent the color loss on T-shirts. I used AATCC Test Method 124-2001 Appearance of Fabrics after Repeated Home Launderings, Standardization of Home Laundry Test Conditions developed by AATCC Committee RA88, 1993 AATCC Standard Reference Detergent and Laundry Detergents in General developed by AATCC Committee RA88, Instrumental Color Measurement developed by AATCC Committee RA36, Instrumental Assessment of the Change in Color of a Test Specimen developed by AATCC Committee RA36. I bought six yards of purple, red and orange t-shirt material. I cut a swatch out of each of the original materials as a controlled sample. Then I cut the purple fabric into two equal sized pieces and labeled the left piece A and the right piece B. Piece A was only laundered in the detergent while piece B was laundered in the detergent plus 1g of cellulase enzyme. I used cellulase because it is a natural catalyst that accelerates the hydrolysis. I dried the fabric and then cut a swatch and took a reflectance reading on the spectrophotometer. I measured the color range for piece A and for piece B after the first, the fifth, the tenth, the fifteenth, and the twentieth washings. The expected results should reveal that the material washed with detergent plus cellulase will appear vivid, while the material washed with just detergent will have pills. The pills will make the light scatter rather than absorbed, making the color dull and shaded. Many Americans use t-shirts as their own personal billboard to the world. I want my t-shirt's color to be as brilliant as my message. This project has taught me how to preserve the color quality of new t-shirts.

Neuropeptide Y as a Factor in Ethanol Consumption in Zucher Rats

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Past studies have shown that neuropeptide Y (NPY) injected intracerebroventricularly (ICV) increases feeding behavior while decreasing measures of anxiety. One study found that consumption of a sucrose solution increased while the amount of ethanol solution consumed did not change following ICV injections of NPY. It was hypothesized that ICV injections of NPY could be affecting receptors in both the hypothalamus (increasing feeding behavior) and the amygdala (resulting in decreased anxiety). Additionally, NPY and ethanol have similar anxiolytic effects. The present study hypothesized that NPY or NPY antagonists injected into the amygdala of Zucker Lean (ZL) or Zucker Obese (ZO) rats would decrease or increase consumption of a 5% ethanol solution (5%EtOH) respectively. The ZL (N=3) and ZO (N=5) rats were housed in separate cages with ad libitum access to 5%EtOH and water. The amount of 5%EtOH consumed was recorded daily prior to injections, during vehicle injections, injections of NPY (.5 μg for 3 days), during injections of NPY antagonist (1 μg for the first 3 days and then 2.5 μg for 2 days-day 3 was lost), and for 1 week after injections were complete. All doses were based on doses reported in the literature. Results showed that NPY suppressed intake and NPY antagonist increased intake in both strains when compared to amount of ethanol consumed prior to and during vehicle injections. Therefore, each animal serves as its own control. Future studies will examine methods to alter NPY levels and test whether these are useful in the treatment of alcoholism.

Improvisation in the Choreographic Process

Elizabeth Lide
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This study will explore approaches and use of improvisation in creating contemporary modern dance choreography. An overview of the history of improvisation in the United States since the 1960's will provide a contextual base for this study, which will proceed to examine the choreographic processes of three selected prominent postmodern choreographers who use improvisation as a base for developing movement vocabulary. I will compare and contrast their methods, and through experimentation, develop my own approach. In the process, I will conduct rehearsal labs to develop a choreographic project. This project will be presented in both live and edited film versions at the CURO Symposium.

Ferdinand Warren: Artist, Craftsman, American Aristocrat
Andrew Littlejohn
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When speaking with Ferdinand Warren's dealer, Ann Jacob, she described him as "an American aristocrat." Perhaps there is no better way to sum up this handsome, humble, hardworking, and creative artist, for he was the epitome of old world American class. Born in Independence, Missouri, in 1899, Ferdinand Earl Warren traveled to New York City on a Tiffany Fellowship in 1926 where he established himself among the likes of the American Eight and other notable expatriate artists. Lamar Dodd brought Warren to the University of Georgia in 1951 as an artist-in-residence. A mature 52-years-old, Warren's works of art were already displayed in notable venues such as the Metropolitan and Brooklyn Museums of Art. After a successful year at the University of Georgia, Warren attained a faculty position at Agnes Scott College as head of the art department. During his eighteen-year tenure at Agnes Scott, Warren settled into a southern groove and continued to develop his disparate style. He never ceased to try any and every artistic method, exemplary in his oeuvre of oil paintings, encaustics, enamels, jigsaw puzzles, and woodblock Christmas cards. The purpose of my research is to resurrect an interest in Ferdinand Warren with a catalogue raisonne and a potential exhibition at the Georgia Museum of Art. However, I believe my research is more important than merely to induce interest in a virtually unknown artist. Little to no research has been conducted on Ferdinand Warren, and this is historically irresponsible and quite unfortunate. During my examination of Warren, I have visited numerous private and public collections, which have taken me as far as Houston, Texas. Additionally, I have consulted the Hargrett Rare Books Library, the Georgia Museum of Art's collection and files, Agnes Scott College's resources, and I have corresponded with various museums and Warren's acquaintances all across the United States and Canada. Ferdinand Warren was a benevolent and loving friend, family man, and teacher, and for these reasons, not to mention his excellence as an artist, it will be an honor to enlighten the public on Ferdinand Warren's art through my efforts and those who have helped me discover this true "American aristocrat."

A Data Envelopment Analysis of the Efficiency of Georgia Politicians
Chandler McClellan
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Previous studies have proven that sheer spending in elections is not statistically significant. Therefore, this study examined if the efficiency with which a candidate spends money can affect electoral outcomes. To accomplish this goal, this study used Data Envelopment Analysis to measure the technical efficiency of candidates for the 2000 Georgia House of Representatives. However, there are many factors in an election that a candidate has no influence over but are included in this measure of candidate technical efficiency. Such factors include the candidate's personal characteristics, his opponent's level of spending, and district characteristics. A second stage regression is used to factor out the influences of these variables that a candidate cannot influence, thereby yielding the candidate's pure efficiency. When compared with the technical efficiency scores, these pure efficiency scores show which candidates do well because they are efficient and which do well because they run in a favorable district. Therefore, the pure efficiency measures can be used in allocation of scarce campaign resources or as a proxy for candidate quality in other studies on campaign spending. In nearly all races studied, the candidate with the more efficient scores won. In races in which the less efficient candidate won, the winner significantly outspent his opponent. The results of this study are consistent with the results of a similar study by Dennis Coates, leading to the conclusion that the efficiency with which a candidate spends his campaign money will affect the outcome of the election. Though this study's results are compelling, additional observations and regression variables could improve the accuracy of the pure efficiency scores.

An Analytical Study of Interfacial Stresses in Bonded Materials
Cliff McLeroy
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The goal of this project was to develop an analytical solution for the interfacial stress distribution of bonded materials as a function of force, deflection, and material properties. Currently the evaluation of the bonding strength of adhesives for possible dental crown applications is performed with a three point bending test. The specimen consists of a thin metal strip supported on its ends with a ceramic material bonded to the bottom. The two quantities obtained through this type of experiment are the deflection of the strip and the load applied. The difficulty was to obtain an accurate measurement of the bonding strength based on the load-deflection curve without knowing the interfacial stress distribution. Since the stress incurred by the bond is due to the tendency of the strip to bend and change shape, it is not constant. There are normal and shear stresses that occur at the bond which both vary along the length of the bond. In this study, solutions of the interfacial stress distributions were developed through the use of an advanced engineering technique called the Theory of Elasticity. This technique provides a high level of accuracy that is not obtainable through other methods such as Mechanics of Materials. Following this, parametric studies were performed which provided graphs, charts, and computer code for the stress distribution along the bond interface. The uniqueness of this study is that it allows dentists and non-engineers to accurately interpret test results based on the load-deflection curve.

Synthesis and Use of Caged Compounds to Explore Cellular Processes
Kenneth Miller, CURO Summer Research Fellow
Dr. Timothy Dore, Department of Chemistry, University of Georgia

Caged compounds are drugs or other biological effectors that are rendered biologically inactive through coupling to a light sensitive molecule known as a caging group. The caged compound can easily be converted to the biologically active, uncaged form by pulsing the caged molecule with either IR or UV radiation. Such a drug delivery system is advantageous in that a dramatic increase in drug concentration can be achieved in the very short time period of a light pulse. However, in order to obtain tight spatial as well as temporal control of drug release, multi-photon excitation can be employed. Multi-photon excitation occurs when a molecular cage absorbs two or more photons simultaneously and subsequently releases the effector; the process is limited to the focus of a pulsed IR laser due to the necessity of a large photon flux. Therefore, one can achieve an excellent level of three-dimensional selectivity of the release of a biological effector by focusing the laser on an area of interest such a dendrite in a single neuron. Bromohydroxycoumarin (Bhc) is a biologically useful caging group that undergoes two-photon excitation using a 740 nm laser, and others have used Bhc caged glutamate to study glutamate sensitivity in neurons. Utilizing a Pechman condensation of 2,7-dihydroxynaphthalene and ethyl acetoactetate and a number of other synthetic steps, a new series of caging groups were synthesized, which absorb higher wavelengths of light compared to Bhc. Such “extended coumarins” contain an additional conjugated ring facilitating the absorption of longer wavelengths of light, which are less energetic and cause less damage to living cells. Tribromo-, dinitro-, and monofluoro- extended coumarins were synthesized, and the tribromo product shows two photon uncaging at 800 nm.

Transgenic Study of a Conserved Neuropeptide Network for Feeding Regulation in *Drosophila*
Eric Morishige
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Hypothalamic neuropeptide Y (NPY) stimulates the appetite. Leptin-deficient mice, which are obese due to excessive appetite, show over-expression of NPY in the hypothalamus. Furthermore, mice deficient in both leptin and NPY show attenuated obesity symptoms, indicating a role of NPY in body weight control. Neuropeptide F (dNPF), the *Drosophila* homologue of NPY, has been identified. This study aims to use dNPF as a model to understand the mechanism and role of NPY signaling in regulating feeding behavior. Transgenic flies were used to analyze the effects of over-expression of dNPF on the nutritional levels of the flies. Glucose, glycogen, and lipid levels of the individual flies were analyzed according to the protocol described by Van Handel and Day (1988, J.Am. Mosquito Control Association, pp549-550). Each Fly was homogenized and the Glycogen was precipitated into a pellet, while the glucose, and lipids were dissolved into solution. Colored reactions were then carried out, and a spectrophotometer quantified the results. Preliminary experiments tested male and female flies of wild type, and over-expression lines (between 6 to 12 flies each). Initial results suggest that flies with an excess of dNPF may contain significantly more fat than their wild type counterparts, and appear to convert glucose into glycogen at a much slower rate. These results suggest that *Drosophila* can be a good model for studying the molecular mechanism of the signaling pathways involved in obesity and diabetes. Verification of the results is currently being carried out.

Fish Oil: The Effect on Insulin Sensitivity When Incorporated into a High-fat Diet
Sara Morris
Dr. Dorothy B. Hausman, Department of Foods and Nutrition, University of Georgia

This research project tests the hypothesis that the inclusion of fish oil in a high-fat diet will increase insulin sensitivity and lower insulin resistance. Three groups of 10 male Swiss mice have been assigned either to a low-fat control diet (10% calories from fat) or to one of two high-fat diets. The high-fat control diet consists of 39.39% lard and 5.54% soybean oil; the high-fat experimental diet consists of 29.40% lard, 5.54% soybean oil, and 9.98% fish oil. The mice are being fed ad libitum for approximately eight weeks with food intake and body weight measured weekly. At four weeks the effectiveness of these diets on inducing insulin resistance was assessed *in vivo* using insulin sensitivity tests by fasting the mice for five-seven hours and collecting tail blood samples prior to and at 15, 30, 45 and 60 minutes after administration of insulin (0.75 U per kg). Blood glucose concentration was analyzed at all time points and serum insulin at 0 and 15 minutes only. The data were analyzed one-way by ANOVA with post hoc Duncan's multiple range test. Results after four weeks indicate a significant increase ($P<0.05$) in food intake and body weight in the fish oil group as compared to both control groups. Insulin sensitivity tended to be decreased in the control high-fat group but not in the fish oil high-fat group, although the difference was not statistically significant ($P=0.058$ vs. low fat). Thus, inclusion of fish oil in a high fat diet may have a protective effect against the development of insulin resistance.

“each morning I get up with one word in mind: plastik…”
Lorina Naci, CURO Summer Research Fellow
Professor William Paul, Jr., School of Art, University of Georgia

From 1945-1989 Central and Eastern European countries adopted Communism as an economic, political, and social system. The Communist radical ideological and physical culture, characterized by the lack of material goods, changed the cultural traditions of the Eastern European countries, as it was superimposed on all facets of human life. After twelve years of shifting towards democratic systems, the citizens of these countries are feverishly anticipating the harvest of this transition: full integration into the capitalistic global village. Homogenization with Western European structures affords these countries unprecedented opportunities. Scholars perceive that the political-economical phenomena of multiculturalism and globalization are manifestations of the dominance of the western cultures, and that by colonizing the rest of the world equally as its place of origin, globalization causes social and cultural uniformity. The cultural threats and the ethical dilemmas caused by globalization, such as the suspension of the personal and the native in the face of the industrially and technologically advanced other, are the focus of my current research and artistic work.

Chinese Classical Dance
Lynn Nguyen, CURO Summer Research Fellow
Dr. Mark Wheeler, Department of Dance, University of Georgia

As it is understood in the field of dance research, ethnography is the writing of people to discover the cultural knowledge they are using to organize their behavior and interpret their experience. This research uses an ethnographic approach to study the culture of the Chinese-Americans through the understanding and knowledge of Chinese dance. The approach relies on the method of participant observation, which included thirty-two hours of Chinese classical dance instruction over an eight-week period plus interviews with students, teachers, and choreographers, and observations of classical, folk, minority, and contemporary Chinese dance performances. The research gives not only an introduction to the role of Chinese dance within the Chinese-American culture, but it also makes connections between Chinese classical dance elements and Chinese contemporary dance themes. Three individual classical dances—the feather fan, long sleeve, and sword—will be demonstrated, followed by a short oral report presenting the conclusions drawn from this research.

Factors Affecting Male Longevity in a Parasitoid Wasp
Matthew David Oliver
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Melittobia digitata parasitoid wasps develop gregariously in groups of 100 to 800 (depending on host size). They are unusual among insects in that the sex ratio is extremely female biased (95:5). Furthermore, males engage in lethal combat and survivors mate only with their sisters, never leaving their host's cocoon. Because fighting, courtship, and mating are energetically costly, males may exhaust their energy reserves before mating with all their sisters, potentially reducing their fitness. Some previous researchers have claimed that males obtain all their nourishment as larvae and do not feed as adults. Others suggest that males opportunistically feed on defeated males or other females. This study used male longevity as an indirect measure to assess whether males may obtain supplemental nutrition. The overall hypothesis was that if males are provided opportunity to obtain food, then they will live longer than controls. Potential food variables present in nature include hosts, other adults, and pupae of both sexes. These variables were experimentally manipulated in the laboratory. Ten Experimental treatments in which individual males were given direct or indirect access to various combinations of potential food were replicated 20 times at 25^{o}C and male longevity was recorded. Results are still incomplete but will be analyzed in time for presentation. They will be interpreted in the context of the natural history of this unusual insect.

In the Room: a Performative Text of Story, Poetics, and Criticism
Julie Orlemanski
Dr. Richard Menke, Department of English, University of Georgia

This project will demonstrate some of the ways language performs narrative, narrative not limited to a single identifiable plot but working in a number of intersecting discourses. In this text, an original short story entitled "In the Room," the aleatory, the temporal, the spatial, and the visual emerge from a place formerly perceived as static and transparent – the page. The text literally becomes multi-dimensional and interactive. "In the Room" contains three distinct but codependent narratives – the subject of the story, an account of its structuring, and the response of the reader. The narrative plotline will thus give rise to the two meta-narratives, one of the writer's creation and one of the readers' experiences. How one balances all these in the making of and responding to literature will be the synthesis of the three elements of the project. Each time another reader enters the room of the text, another performance begins. This is your invitation to come in.

Music Therapy with Premature Infants

Cori Pelletier, CURO Summer Research Fellow
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Premature infants experience many complications after birth, including, but not limited to, low oxygen saturation levels, low birth weight, apnea or bradycardia episodes, and a lack of nutritive sucking skills, all of which may increase the length of hospitalization. Researchers have shown that music, contingent on nonnutritive sucking, may help develop nutritive sucking skills resulting in increased weight gain and oxygen saturation levels, decreased apnea or bradycardia episodes, and shortened length of hospital stay. Still data are inconclusive as to when to administer music therapy, such as the time of day, time in relationship to infant's feeding schedule, consecutive versus nonconsecutive days of music, and the best gestational age at which to begin. As part of my summer research fellowship I participated in studies addressing some of these concerns. The first involved 69 trials by 10 randomly selected premature infants to determine the effect of time of day, morning vs. afternoon (8:00am and 2:00pm), on the amount of time engaged in nonnutritive sucking during contingent music. Our hypothesis was that there would be no significant difference due to the controlled environment of the Special Care Nursery. The results of a t-test approached .10 so the hypothesis was accepted. Next we analyzed the relationship of the infants' feeding schedules on the amount of time spent in nonnutritive sucking during the contingent music, as some researchers have suggested that music therapy best occur during the hour post feeding during a typical three-hour feeding schedule. We divided the three-hour feeding schedule into five blocks: 30 minutes during feeding, 31 to 60 minutes post feeding, 61 to 120 minutes post feeding (deep sleep), 121 to 150 minutes, and the fifth block 151 to 180 minutes. Results were: Block One -78%, Block Two -57%, Block Three -54%, Block Four -73%, and Block Five -71 %. Contrary to previous research those babies in Block One produced 78% music during feeding, but our nurses frown on this time because of the frequency of reflux. Block Four produced 73%, Block Five 71 %, Block Two 57%, and Block Three 54%. Therefore, results indicate that more babies suck longer without ill effects during nonnutritive sucking with contingent music prior to feeding. At a later date attention will be given to the effects of the feeding schedule as the number of subjects increase. In the third statistical analysis we measured the percent of music and the average segment of music on the third consecutive day vs. the third nonconsecutive day of music therapy for 26 and 20 infants, respectively. Our hypotheses were that infants with a third consecutive day of music would have higher scores; the hypotheses were accepted. Infants with three consecutive days of music averaged two and one half times larger segments of music, $p < .05$. Those infants having music three consecutive days had significantly greater overall percentage of music, $p < .01$. Data are still being compiled as part of a regional study to determine the best gestational age to begin music therapy, the length of stay in the Special Care Nursery, days until first successful bottle feeding (PO), and weight gain, all with control and experimental groups.

Chimpanzees' Manipulation of Objects within the Hand

Linda Pierce and Christine Oshansky
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Are humans unique in how we use our hands to manipulate objects? To move an object held in one hand, humans use individuated movements of the digits in simple synergies, reciprocal synergies, sequential patterns, and palmar combinations. Simple synergies are movements in which all the digits are converging simultaneously. Reciprocal synergies include digit flexion and extension. Movements that involve multiple digits performing the same pattern at different times are termed sequential patterns. Palmar combinations are hand movements in which the object is held stationary in the palm while manipulated with the digits. To determine if chimpanzees could use their hands in the same way as humans, we analyzed three adult female chimpanzees' actions with objects held in one hand. Each subject inserted five differently shaped objects through corresponding holes in a vertical panel. The chimpanzees were encouraged to complete three insertions with each shape on each of three observation sessions. We scored the seven to 36 actions per individual that were clearly visible on videotape. We identified every class of movement described for humans at least once in our sample from the chimpanzees. Chimpanzees evidently have the ability to move objects held in one hand using individuated digital movements in the same way as humans. The next challenge is to determine if any species of monkey has similar abilities to control the digits of the hand while manipulating an object.

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Georgian Computer Usage

Charlie Pitts, CURO Apprentice
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This research will examine the relationship between computer usages, choice of computer operating system, and demographic characteristics (age, income, education, and gender) of Georgia residents. Previous research has indicated that increasing levels of education and income are positively associated with computer usage. The present study will examine those relationships among Georgians. Additionally, this research will examine the incidence of operating systems and office software packages. Both Microsoft's Office suite and Windows operating system command a substantial portion of the world's share in their respective markets. This research will examine these findings in the context of Georgia residents. Data for the study was collected utilizing the annual Georgia Poll survey done by the Survey Research Center of the University of Georgia. For the Georgia Poll, 400 randomly selected Georgia households were contacted and interviewed about a variety of questions including those related to the research. Descriptive statistics univariate frequency distributions will be presented and bivariate analyses will be conducted to test for statistically significant differences among sub-groups in the population. Findings from the present study will be compared and contrasted with national and international data.

Public Perception of "FONAG:" An Ecuadorian Watershed Sustainability Program Case Study
Jeffrey Pugh
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In 2000, the city of Quito, Ecuador began working toward protecting the ecologically fragile watershed area from which its drinking water was drawn. In order to do this, the independent Fund for the Conservation of Watersheds (FONAG) was launched to finance sustainability projects designed to ensure that the Papallacta watershed could remain a long-term source of drinking water for Quito. FONAG is funded in part through startup grants from several organizations and a 1% fee on all Quito water bills, but it has been unable to build an endowment comfortable enough to begin implementing projects. The present research measures perceptions of the fund by 41 Quito citizens from two universities. It also evaluates the quality of the fund's proposed communication campaign based on existing communication theory and attempts to explain the findings in terms of an adapted environmental education model. Hydrological protection measures, such as erosion controls in the watershed, should be implemented quickly as they were supported by 76 percent of those surveyed. Indeed, their absence was cited as a reason for the U.S. Agency for International Development (USAID) withholding assistance from the project. These measures would result in tangible improvements in watershed quality and would be useful in attaining international funding, which FONAG desperately needs to build its endowment. In order to motivate Ecuadorians and foreigners to support the FONAG project politically and financially, communication theory suggests that the communication plan must be more focused on showing direct economic benefits of the proposed projects.

The Relationship between Critical Flicker Fusion Thresholds and Resting Systolic Blood Pressure
Jennifer Reingold
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Many visual diseases involve vascular complications. Consequently, understanding the interactions between the visual and cardiovascular system is important. In the present study, the relationship between critical flicker fusion thresholds (CFF) and resting systolic blood pressure (SBP) in 82 males and 113 females recruited from the UGA student population was assessed. CFF was measured as a holistic index of visual function using a 1-deg, 570 nm test stimulus. Flicker thresholds were determined using an ascending method of limits (beginning supra-threshold at approximately 12 Hz). Fusion thresholds were determined using a descending method of limits (beginning at around 30 Hz for most subjects). Critical flicker fusion thresholds were calculated as the average of the flicker and fusion thresholds. SBP was measured using an automated sphygmomanometer. The overall relationship between SBP and CFF was highly significant ($Y = 18.0 + 0.04X$, $r = 0.26$ $p<0.0002$). A positive relationship between SBP and CFF indicated that changes in cardiovascular function are directly related to changes in visual function in normal, non-diseased individuals.

Cozaar Fails to Block Pressor Response in Cats

Vanessa Reynolds (with Sheerin Mathur, Su Sheldon, and Leslie Cartier)
Dr. Scott Brown, Department of Physiology and Pharmacology, University of Georgia

Systemic hypertension is a problem that occurs in one of five cats over the age of fifteen. Cozaar, a human antihypertensive drug, contains losartan, the active ingredient that serves as a competitive antagonist for the Angiotensin II type-1 (AT-1) receptor. By blocking this receptor, Angiotensin II (AII) mediated hypertensive effects such as vasoconstriction and increased blood volume are lessened – thereby decreasing blood pressure. We evaluated the efficacy of this competitive antagonist as an antihypertensive agent in cats. Angiotensin I (AI) is converted to AII in the body. In preliminary studies, we determined the optimum dosage of AI that produced a pressor response of an approximate 50 mmHg rise in systolic blood pressure. Subsequently, AI was delivered intravenously following varying dosages of Cozaar (0 mg, 5 mg, 10 mg, 50 mg, 75 mg, and 125 mg) to five cats implanted with radio telemetry blood pressure monitoring devices to determine if Cozaar could effectively block the pressor response. Conscious cats were dosed orally with Cozaar daily and then given a 1μg intravenous injection of AI four to six hours after dosing. In conscious, restrained cats given 0 mg of Cozaar, the AI injection resulted in an average 36.7 mmHg rise in systolic blood pressure. Cats dosed with 5 mg Cozaar and injected with AI averaged a 39 mmHg rise in blood pressure. Cats dosed at 10 mg, 50 mg, 75 mg, and 125 mg of Cozaar demonstrated a similar average increase in systolic blood pressure. The standard human daily dose of Cozaar is 50 mg. Even when the cats were dosed at 250% human dose and experienced the additive effect of high Cozaar dosages delivered on successive days, their baseline blood pressure and pressor response to AI administration did not significantly change. The results indicate that Cozaar does not hold potential as an antihypertensive treatment for felines. Future studies may determine why Cozaar / losartan is not metabolized by cats.

Amphibian Declines and the Frog Fungus Disease: Effects of Infection of Frog Eggs and Tadpoles

Tricia Rodriguez
Dr. Peter Daszak, Consortium for Conservation Medicine, Palisades, NY, Dr. Joyce Longcore, Department of Biology, University of Maine, and Dr. David Porter, Department of Botany, University of Georgia

Chytridiomycosis is a recently emerged fungal disease causing mass mortality and population declines in amphibians on a global scale. The disease is fatal to post-metamorphic frogs, although it does not cause mortality in tadpoles. Little else is known of its effect on these anuran larvae. The fungus infects only the keratinized mouthparts of tadpoles, but can result in the loss of a large proportion of their "teeth." Because tadpoles feed by scraping algae from a substrate with their teeth, tooth loss may inhibit their growth and development. I tested the hypothesis that infection with chytridiomycosis affects tadpole feeding abilities. I inoculated 25 *Rana pipiens* tadpoles with the fungal pathogen *Batrachochytrium dendrobatidis*; another 25 tadpoles served as controls. Tadpoles were weighed, measured and their developmental stage determined twice weekly. Growth parameters over five weeks showed no significant differences between infected and control groups. These data demonstrate that chytridiomycosis does not affect the feeding efficiency of tadpoles in early stages of development. Currently I am testing the role of amphibian eggs as a substrate for chytrid growth and means by which the disease increases its impact through different infection strategies. In addition, I am looking into possible mechanisms of disease transmission between life stages (vertical transmission) as well as infection from outside sources (horizontal transmission). These studies will aid our understanding of the ecology of this disease and help predict future patterns of disease outbreak.

Polar Endemism in Archaea: A Comparison of Archael 16S rDNA Sequences from the Arctic and Southern Oceans

Shomari Ruffin, CURO Apprentice
Dr. James T. Hollibaugh and Dr. Nasreen Bano, Department of Marine Sciences, University of Georgia

Cold polar oceans are relatively new features of the Earth, originating about 25 million years ago when the continents of Antarctica and Australia separated on the one hand, and the mid-Atlantic Ridge propagated into the Arctic Ocean basin, connecting it to the Atlantic Ocean. This was accompanied by a shift in global climate and both oceans cooled rapidly, forcing Arctic and Antarctic organisms to adapt independently to the new conditions. This led to the evolution of endemic species in the two oceans, for instance Polar Bears are endemic to the Arctic Ocean while penguins are endemic to the Southern Ocean. This study focuses on determining whether endemism applied to members of the Archaea Domain. To address this question we constructed a clone library of Archaea 16S rDNA sequences from five samples collected at a depth of 55m, 133m, and 235m during 1995, 96, 97 from the Central Artic Ocean. Each library was screened with denaturing gradient gel electrophoresis. The sequences of 25 clones with unique inserts were determined. All sequences were grouped within Euryarchaeota (Group II) and Crenarchaeota (Group I), the two major phylogenetic archeal groups. Within the Euryarchaeota there were two main clusters: one representing most of the 55m samples and the other was mostly composed of the deeper water samples. With a few exceptions, most of the sequences were distinct from southern ocean sequences. We concluded that polar Archael populations were composed primarily of endemic species. This study will provide information about the biogeography and biogeochemistry.

Cellular Tropism of an Undescribed Ehrlichia from White-Tailed Deer

Alexandra Isabel Sahora
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Prior studies on white-tailed deer have confirmed the presence of infection with at least three zoonotic *Ehrlichia* in the blood. An additional undescribed *Ehrlichia* was found to be common in white-tailed deer and the 16S DNA sequence of this organism was closest to *Ehrlichia platys*, a canine *Ehrlichia* that infects platelets. The objectives of this study were to visualize and determine the cellular tropism of this undescribed *Ehrlichia* agent. Antibody-coated magnetic beads were used to obtain high purity preparations of platelets free from other cellular components of blood, which were tested through polymerase chain reaction (PCR) and electron microscopy (EM) for ehrlichial infection. Blood from both naturally wild white-tailed deer and experimental wild deer was processed using two sets of Dynabeads® coated with either CD62P antibodies or M-M9 antibodies to obtain pure platelet and monocyte preparations, respectively. These preparations were then subjected to nested PCR using primers specific for this *Ehrlichia* and processed for transmission electron microscopy (TEM). PCR assays on platelet preparations consistently gave a strong, definite band correlating with the expected product size for this *Ehrlichia*. Positive PCR results were also produced for the monocyte preparations. Electron microscopy revealed characteristic *Ehrlichia*-like morula within platelets. These results strongly suggest that this undescribed *Ehrlichia* infects platelets. *In situ* hybridization assays to confirm the genetic identity of the morula in the platelets are in progress.

Children's Friendship Groups: The Wannabes in the Clique Hierarchy

Katrice Saudargas
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Friendship and peer acceptance are important for social development and self-esteem in children. According to the ethnographic research of Adler and Adler (1998), children's peer groups are organized along a continuum of popularity (i.e. visibility, social power, and control) into distinct groups including the popular clique, the wannabes, the middle group, and the social isolates. The "wannabes" were the focus of the current study. These children long to be friends with those in the popular clique but are denied inclusion. Adler and Adler (1998) describe the wannabes as being higher in popularity than the middle friendship children but having few, if any, friends. Adler and Adler (1998) hypothesize that due to a lack of secure friendships the wannabes have lower self-esteems and self-perceptions than those in the middle friendship groups despite their second highest ranking in the clique hierarchy. The current study tested this by comparing the number of best friend reciprocations of wannabes to those in other cliques as well as comparing scores on self-reported measures of self-esteem and self-perceptions. Participants were 222 students from four 4th, four 5th, and two 6th grade classrooms (51% female; 73% "white"/25% "black"). These children completed questionnaires in which they nominated peers for various descriptors and nominated three children who were their friends. The children also completed a range of self-report scales. A coding system was developed to classify children as belonging to the popular leader, popular, popular follower, wannabe, top middle friendship, middle friendship, bottom middle friendship, or social isolate level of the popularity hierarchy, as described in the ethnographic research reported by Adler and Adler (1998). The coding system used the following information: (a) perceived popularity (Parkhurst & Hopmeyer, 1998) and social preference (Coie et al, 1982) scores, (b) mutual friendship nominations as well as one-way nomination patterns, and (c) number of social influence nominations from peers (i.e., leadership, social control, admiration, and influence; Lease et al, in press). Interrater reliability was adequate (Kappa = .88). Because all children needed to be classified, all disagreements between the two coders were discussed and resolved. Children at the eight levels of the popularity hierarchy were compared on self-reported measures of loneliness and social dissatisfaction (Asher & Wheeler, 1985), social self-concept and self-esteem (Dubois et al, 1996), self-perception (Harter, 1985) and 3 BASC-SRP (Reynolds & Kamphaus, 1992) scales (i.e., social stress, interpersonal relations, and self-esteem). Preliminary findings show that wannabes do have fewer best friend reciprocations than those in middle friendship groups. Planned contrasts (wannabes vs. top middle friendship) revealed no significant differences in the self-report measures between these two groups, contrary to expectations.

New Balance Athens: "Endorsed by No One but Our Valued Customers"

Robin Seagraves
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The New Balance Athletic Shoe Corporation began a new retailing idea in 1996 with the opening of the first New Balance Concept Store. In an effort to increase distribution, the corporation began entering into agreements with local independent retailers, granting them the right to sell New Balance products exclusively. These stores are based on the concepts of "brand equity," the value added to a product by virtue of its name, and "brand loyalty," the ability of a particular brand to attract and retain customers, and they stock only New Balance footwear, apparel, and accessories. To date, there have been forty-one stores opened across North America. These stores have proved to be very profitable for both the retailer and the New Balance Corporation, with each store averaging between $600,000 and $800,000 in sales per year and showing an annual growth of approximately 40% (Wheeler, 2001). Therefore, it is my intention to capitalize on this market niche for the New Balance brand and open my own concept store, New Balance Athens. This paper will outline my proposal for the store's opening in four sections. First, the operations plan will provide a brief overview of the New Balance Corporation and will describe the basic interior and exterior set-up of the store, as well as the store location. Second, the marketing plan will identify the store's three target consumer groups. This section will also outline the store's first year marketing plan and budget. Third, the organizational plan will describe the managerial set-up and provide information regarding the tentative employee training program. Finally, the financial plan will analyze the total capital required for the store's opening.

Nitric Oxide Synthase mRNA Levels in *Trypanosoma cruzi* Infected iNOS Knockout and Wild Type Mice

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In vitro studies suggest that nitric oxide (NO) is an important killing mechanism of the intracellular pathogen *Trypanosoma cruzi*, the causative agent of human Chagas disease. Better understanding of the role of NO in immune control of *T. cruzi* has been obtained through the study of knockout mice lacking the enzyme nitric oxide synthase (NOS) needed for NO synthesis. Of the three NOS isoforms; inducible NOS (iNOS), endothelial NOS (eNOS) and neuronal NOS (nNOS), iNOS is thought to be most important for production of NO in response to pathogens. However, our lab has observed that wild type mice and mice with induced genetic defects in iNOS production (iNOS knockout mice) are equally resistant to *T. cruzi* infection. We hypothesize that mice lacking iNOS may compensate through higher production of eNOS and nNOS, explaining their resistance to *T. cruzi*. To address this question the levels of nNOS and eNOS mRNA in iNOS knockout mice infected with *T. cruzi* will be determined using a quantitative real-time PCR. The results will lead to a better understanding of the role of NOS in immune control of *T. cruzi*.

The Construction of the Lesbian Identity in the Undergraduate Classroom

Lotus Seeley
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As the gay and lesbian rights movement has worked to increase the civil rights of sexual minorities, within the academy there has been a parallel rise of the field of gay and lesbian studies, which has sought to understand and theorize the experience of sexual minorities. Some researchers have concerned themselves with the experience of sexual minorities in schools, predominantly heteronormative institutions. Little attention, however, has been paid to the experiences of undergraduate sexual minorities. My project is concerned with elucidating the classroom experiences of undergraduate lesbians. Specifically, I focus on how women's construction and performance of a recognizable lesbian identity is constrained by how comfortable they feel in disclosing their sexual identity with in a classroom setting. Special attention is paid to the multiple ways, including more and less overt verbal statements and nonverbal means, women attempt to communicate their sexual identity to other individuals in the classroom. Variables such as class size, subject matter, discipline, gender/sexuality of the teacher, and class level are also examined to understand how each may constrain or permit disclosure in their own way. The data for this project comes from open-ended interviews conducted with twenty-two undergraduate women at the University of Georgia who self-identify as lesbian. The women are aged 18-24 and 28.5% of the sample are minorities. Hopefully, the knowledge gained from this project will serve to better the experiences of sexual minorities by allowing a greater understanding of the factors that allow individuals the greatest control in revelation of sexual identity.

Immunohistochemical Detection of Newcastle Disease Virus in Chickens Inoculated with Wild-Type and Infectious-Clone-Derived Newcastle Disease Virus

Amy Sexauer,
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The U.S. poultry industry is a thriving economic entity, thanks in part to the exclusion of devastating diseases. Velogenic Newcastle disease is a viral problem causing significant mortality for chickens. The Newcastle disease virus (NDV) circulates in many parts of the world, and incursion into the U.S. would have serious consequences. Understanding what makes these velogenic strains of Newcastle disease virulent would help greatly in devising control methodologies. In this study, four groups of White Leghorn chickens (eight per group) were inoculated with four different viruses – E13-1 (nonpathogenic strain), NDFL+ (infectious clone made from E13-1), NDFL+F (NDFL with fusion virulence gene inserted), and KRC 139 (virulent strain). The birds were monitored clinically and two birds euthanized, with tissues collected at two, five, 10, and 14 days post infection (dpi). Those given the virulent strain succumbed rapidly, dying by 4 dpi. Mild depression was noted in the NDFL+ group. Immunohistochemistry, using an antibody specific for NDV, was employed to follow the path of the virus throughout the body. With the virulent KRC 139 strain, there was extensive viral replication throughout the body. With the other three strains, presence of the virus was very limited. The "F" gene may not play a big role in virulence.

Induction of Apoptosis by Rabies Virus Proteins

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Although rabies is one of the oldest recorded infections, it still causes more than 70,000 human deaths each year. The mechanisms by which rabies virus infection causes diseases and death are not completely understood, particularly with regard to the scarcity of neuronal damage associated with rabies virus infection. Recently, apoptosis was reported in experimentally infected animals. To further investigate if apoptosis is a pathogenic mechanism for rabies, we have compared the induction of apoptosis in animals infected with different rabies virus. Groups (10) of mice were infected with 10^6 focus-forming unit (ffu) of either laboratory-adapted or wild type rabies virus. Brains from four mice in each group were used histopathology, and brains from other mice were used for detection of apoptosis using terminal deoxynucleotidyl transferase-mediated dUTP-digoxigenin nick end-labeling (TENEL) assay. Surprisingly, only laboratory-adapted virus induced apoptosis in the brains of infected animals whereas the wild type rabies virus did not, indicating that apoptosis may not be a pathogenic mechanism for rabies, particularly for wild type rabies virus infections. To further investigate the mechanism by which rabies virus infection induces apoptosis, we expressed rabies virus nucleoprotein (N), phosphoprotein (P), and glycoprotein (G) proteins from laboratory-adapted virus individually in insect cells via recombinant baculoviruses and monitored for the induction of apoptosis in insect cells by DNA laddering. Preliminary studies revealed that apoptosis is induced only in cells infected with recombinant baculovirus expressing rabies virus G, indicating that rabies virus G is capable of inducing apoptosis.

Purification of Hirano Bodies from *Dictyostelium discoideum*

Sonbol Alexandria Shahid-Salles
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During the past three decades, Hirano bodies have been described in post mortem examination of brain tissue from patients with neurodegenerative diseases, muscle diseases, diabetes, alcoholism, and cancer. The Hirano body is composed of highly ordered paracrystalline actin filaments, actin binding proteins, and other components that have not been definitively elucidated. Recent studies demonstrate that Hirano bodies similar to those described in humans can form in the model organism *Dictyostelium discoideum.* The goal of this project is the biochemical purification of Hirano bodies to define their primary constituents. First, an assay to detect the presence and stability of Hirano bodies was developed using fluorescence microscopy. Second, it was found that Hirano bodies were stabilized in solutions containing 5 mM EGTA, 1 mM $MgCl_2$, 1 mM ATP, at pH 6.5 at room temperature. Third, release of intact Hirano bodies was observed to be optimal with lysis of *Dictyostelium* cells by Dounce homogenization in the presence of 0.5% Brij detergent. Fourth, Hirano bodies were collected by low speed sedimentation following cell lysis, and further enriched by density gradient fractionation in step gradients of iodixanol to remove nuclei. Protein separation by two dimensional gel electrophoresis with subsequent identification utilizing mass spectroscopy will be performed to identify the primary constituents of Hirano bodies. Future studies will also assess the role of these proteins in the formation of Hirano bodies by creating *Dictyostelium* cells lacking specific components. In addition, the presence of these proteins in Hirano bodies in autopsy specimens will be assessed.

Developing a Sensor for Measuring Suspended-Sediment Concentrations

Jai Sikes
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Stream sediment degrades water supplies for human use, acts as a carrier for pollutants, and may adversely affect fluvial ecosystems. Recently, a densimetric instrument or "densimeter" for *in situ* monitoring of suspended sediments was developed. This densimeter offers advantages over commonly used samplers by continuously measuring suspended-sediment concentrations on site and allowing for longer sampling periods. Laboratory tests provided accurate results for concentrations from 10mg/L to 1000mg/L; however, field measurements contained several artifacts in the output signal. There was a ±30mV ($0.0024 in H_20$) fluctuation in the output signal when the transducer was placed in the field that corresponded to an 88mg/L (8.8% error F.S.) change in sediment concentration. Variations in the measurement could be caused by noise or dynamics of fluid flow around the ports. The objective of this project was to investigate the effects of port vibrations on the pressure measurements. A scaled version of the densimeter was constructed and tested by mounting a differential pressure transducer to an inverted pendulum and inducing vibration through a rotating cam. During three repetitions, differential pressure changes were monitored for a vibration range of 2-6 Hz and displacement angle range of 0.52-4.2 degrees in standing water. Generally, the differential pressure increased as displacement and frequency increased. A linear offset in the data was observed and contributed to a 50%-300% error; however, after subtracting the offsets, the results closely tracked the theoretical model. Further study will use these initial findings to develop an accurate measuring protocol for application of the densimeter in the field.

Immunohistochemical (IHC) Detection of Natural Killer Cells in Fish

Kate Smith, CURO Summer Research Fellow
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Immunohistochemistry (IHC) is the use of antibodies to detect specific antigens in cells of various tissues and organs. Sections of paraffin embedded tissues are cut at 3µm thickness and placed on glass slides. Following dewaxing, application of the IHC technique, and appropriate counterstaining, specific cells can be identified microscopically based upon their surface antigen expression. In this study, an IgM primary monoclonal antibody was used to identify natural killer (NK) cells in tissues of black sea bass (*Centropristis striata*). The specific IHC procedure was the avidin-biotin immunoperoxidase complex method. Sites of primary IgM antibody binding were identified using a biotinylated secondary antibody, an avidin-biotin peroxidase complex, and a diaminobenzidine chromagen. The slides subsequently were counterstained with hematoxylin, dehydrated, coverslipped, and examined microscopically. Natural killer cells are critical for effective innate and adaptive immunity in teleost fishes. The purpose of this study was to develop the IHC procedure to detect natural killer (NK) cells in formalin-fixed, paraffin embedded tissue sections from black sea bass, an important marine fish species along the Georgia Atlantic Coast. The significance of this initial research accomplishment is that the IHC staining protocol that was developed developed can now be applied to investigations of specific facets of cell-mediated immunity in fish. The technique will be used to investigate NK cell populations in histologic sections of lymphoreticular tissues from clinically normal black sea bass to understand the dynamics of this cell population in the constitution of the cell-mediated immune system. Expectations are that this technique will be used to expand basic knowledge of an important facet of immunity in black sea bass and other telost fishes. The information obtained will be useful in evaluating the health status of cultured black sea bass stocks before costly mortality events occur.

Optimization of Textural and Structural Properties of a Refrigerated Soy Based Dessert

Sara Smith, CURO Apprentice
Dr. Milena Corredig, Department of Food Science and Technology, University of Georgia

Soybeans have been used for many years in the production of soybean products and soy enriched products. In recent years scientist have found more nutritional value in the soybean. Due to these new discoveries industries have begun to increase the amount of and invent new soybean or soy-enriched products. Products ranging from soymilk to soy-enriched cereal have flooded the health food market. With the U.S. focusing more on health issues a demand for new soy products is growing. The objective of this project was to develop a sugar free soy based refrigerated dessert with the texture, taste, and feel of a mousse- type product. The texture was fundamental to the quality and the challenge is to maintain the textures at refrigeration temperatures. Grittiness was a characteristic typical of soy-based products. These textual properties were the focus of the formulation development. These textual properties derive mainly by fat globules, ice crystals, and air bubbles all in a protein network. All of these in an optimal equilibrium will result in acceptable physiochemical and organoleptic qualities. Preliminary work on a small scale (1 kg batches) and then larger batches (2 kg batches) were prepared in the pilot plant. Each of the eleven batches were characterized by a different formulation and were prepared by mixing, pasteurization, homogenization, freezing, and refrigeration. Formulations were optimized in the pilot plant and the best combinations were tested for texture and the microstructure was observed. Texture was tested with the TA-XT2 texture analyzer. The effect of various concentrations of soy protein and the ratio of soy to milk protein (used because of its functional properties) was studied. If starch was added to the formulation the texture was highly creamy but not stable enough to hold its structure in refrigerated temperatures and therefore not acceptable. The addition of soy protein strengthened the texture and stability but added to its grittiness. The grittiness increased when the amount of soy protein increased. To improve stability at refrigeration temperatures a stabilizer was added. Two types of stabilizers were tested. Stabilizer one contained gelatin (Degussa) and the other did not contain gelatin (Cpkelco). The gelatin-containing stabilizer was used successfully in many different formulations and resulted in acceptable texture. The non-gelatin stabilizer was successful in only a few formulations.

The Effect of Light Intensity on the Transformation Frequency of Soybean Somatic Embryos

Lauren Stanchek
Dr. Wayne Parrott, Department of Crop and Soil Sciences, University of Georgia

The effects of light intensity on the embryogenesis of numerous plant species have been well-characterized. However, the effects of varied light intensities on the transformation frequency of embryos have been largely unexplored. This experiment sought to determine the influence of light intensity on the frequency and efficiency of soybean somatic embryo transformation. Embryos were generated from immature cotyledons under either high light [46 $\mu E/m^2$ /s] or low light [10 $\mu E/m^2/s$] and bombarded with the pCAMBIA 1305.2 construct, which contains two genes—one that confers resistance to the antibiotic hygromycin and the other the GUS Plus reporter gene. Both treatments consisted of four replicates of approximately 100 mg of tissue/replicate. After bombardment all embryos were placed into liquid 25 μg/ml hygromycin selection for two months. The resultant hygromycin resistant embryos were tested for expression of the GUS Plus gene. PCR was performed to determine the presence of the hygromycin resistance gene and to exclude the possibility of "escapes." Stable transformants and copy number of the lines were assessed by Southern blot hybridization analysis. The total transformation frequency, based on hygromycin positive PCR results, was 5 lines/bombardment for the low light treatment and 1.1 lines/bombardment for the high light treatment. Therefore embryos grown under the low light treatment appear to be more amenable to transformation than those generated under high light. The expression transformation frequency was based on the expression of the GUS Plus reporter gene. In general the expression transformation frequency was approximately half of the total transformation frequency for both treatments. Student's t-test showed the results to be significant at the one percent level.

Friendship in the Age of Sensitivity: The Correspondence between Johann Wilhelm Ludwig Gleim and Johann Georg Jacobi

John Stark
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Sensitivity, or *Empfindsamkeit* in German, is a term that refers to a period of the German Enlightenment and is characterized by the frequent and often excessive expression of emotion. Sensitivity writing often examines the relationship between the head and heart as well as those things that disrupt this balance, such as enthusiasm and melancholy. Letter writing as a medium for communicating emotions is an integral part of the literary writing during the Age of Sensitivity. The letters help to establish a community of minds, serving not only as a medium between friends, but also as a form of introspection, by which writers could better discover themselves. An examination of an extended correspondence between Johann Wilhelm Ludwig Gleim and Johann Georg Jacobi, published in 1768, offers insight into the fashion of the period: to express oneself emotionally and not to veil or rationalize one's feelings. It also shows how friendship is established and expressed between two educated men in the middle of the eighteenth century. The language of the correspondence shows that Gleim and Jacobi prefer a language of emotion to a language of reason in their friendship correspondences with one another. Gleim and Jacobi's correspondence reflects the deep labyrinth-like intricacies of their complex friendship. The correspondence between Gleim and Jacobi reflects the feelings of many members in the educated population of Germany during the period of Sensitivity.

Time and Myth: Literary/Philosophical Accounts/Representations

Joshua Striker
Dr. Thomas Cerbu, Department of Comparative Literature, University of Georgia

In the research paper, "Time and Myth: Literary/Philosophical Accounts/Representations", I investigate the anthropological significance of time and myth within, broadly speaking, the contexts of philosophy as well as of literature. Concentrating primarily on Frank Kermode's *The Sense of an Ending*, Jean-Paul Sartre's *Nausea*, and Robert Musil's *The Man Without Qualities*, the essay also discusses Augustine's definition of time, the way in which Paul Ricoeur understands the relationship between literature and the self's temporality, and Michel Tournier's mythical, timeless Abel Tiffauges. While to some degree a work connected inextricably to particular texts, this paper attempts as well to summarize and consolidate the fundamental, or perennial, aspects of those texts' theses in order to present a relatively independent construal of myth and time. Balancing delicately basic categories like philosophy and literature, time and myth, the essay follows the lead of many of its textual foci in retaining categorical distinctions without indiscriminately accepting their accuracy. In this vein, the essay will explore those ontological and epistemological commitments that myth-making entails, such as the commitment to personhood, or interpersonal communication, as well as the communicative form(s) and presentations of the self that mythologizing contains. Ultimately, "Time and Myth: Literary/Philosophical Accounts/Representations" construes myth as an extreme form of man's endeavor to explain and portray himself within time.

Biometric Differences between Otoliths of Two Species of Sea Catfish

Kathleen Teeples
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This study defined differences between the otoliths of two species of sea catfish using biometric analyses. Vertebrate remains from archaeological sites are identified using a comparative skeletal collection. The results are interpreted in terms of human/environmental relationships. Otoliths, the inner ear stones of fish, are commonly found in coastal assemblages dominated by sharks, rays, and bony fishes. The morphology of these skeletal elements are species-specific. However, it is difficult to distinguish between two species in the family Ariidae (sea catfishes) based solely on otolith morphology. Distinguishing between the hardhead catfish *(Arius felis)* and the gafftopsail catfish *(Bagre marinus)* is critical to a broad range of zooarchaeological research problems, especially those based on habitat differences, such as stable isotope analysis. Members of these two genera once grew to a much larger size, and stable isotopes may identify the causes for this, but first we must be able to distinguish between the otoliths of the two species. The length, width, and thickness of 80 otoliths from the two species were measured and mathematical equations applied to define differences between them. These otoliths were from the comparative collection at the zooarchaeologicallab, Georgia Museum of Natural History. The results of this study are significantly different from those of previous studies whose results could not be duplicated. Stable isotope protocols will be adjusted to take the difficulty of distinguishing between these species into account.

Parameter Development and Application of the Glycam Force Field for Sialic Acid Derivatives

Buudoan V. Tran, CURO Summer Research Fellow
Dr. Karl N. Kirschner and Dr. Robert J. Woods, Complex Carbohydrate Research Center, University of Georgia

Glycerol and glycerol derivatives are ubiquitous in biological systems, from fatty acids to polysaccharides. Understanding the interplay of intra- and inter-molecular forces in glycerol and the effect these forces have on the conformation is critical in understanding the role and behavior of compounds that contain glycerol. Molecular modeling systems can provide valuable insight into the behavior of complicated systems. The GLYCAM parameters for molecular mechanics (MM) and dynamics simulations of carbohydrates with the AMBER force field have been extended to include parameters for acyclic polyhydroxy compounds. The parameters were developed for 1,2-ethanediol using quantum mechanical (QM) calculations of its potential energy using HF/6-31 G* and B3LYP/6-31++G(2d,2p) levels of theory in the Gaussian98 program suite. The conformational energies for the various rotamer populations of 1,2-ethanediol were compared to energies given by MM calculations in the GLYCAM force field, yielding parameters for the OCCO torsion angle based on an analysis of the effect of non-bonded interactions. Once parameterized, the QM and MM results were in good agreement. These parameters are particularly relevant for simulations of sialic acids, which contain glycerol sidechains. The behavior of these sidechains and, consequently, the conformation of sialic acid depend directly on the influence of the OCCO torsion system. Molecular dynamics simulations were performed on 5-N-acetylneuraminic acid and glycerol and the results compared to solution-phase NMR data. The computed solution structures and rotamer populations are in good agreement with the experimental data. The conformational properties are discussed in terms of internal hydrogen bonding versus solute-solvent interactions.

The Use of Immunohistochemistry to Diagnose Chytridiomycosis in Frogs

Tracy K. Van Ells
Dr. Corrie Brown, Department of Pathology, University of Georgia

Chytridiomycosis, caused by *Batrochochytrium dendrobatidis*, is an emerging disease of frogs, posing a threat to their survival in many parts of the world. Because the disease can be difficult to diagnose on routine pathologic sections, the purpose of this study was to develop a standardized method for identification. To accomplish this, immunohistochemical staining was applied to histologic skin sections from four experimentally infected frogs of the species *Dendrobates tinctorius*. The primary antibody was anti-chytrid, made in rabbit, followed by biotinylated anti-rabbit, made in goat. The detection system was avidin-biotin alkaline phosphatase and the substrate used was Vector Red. Antibody dilutions were titrated to optimize the signal. A dilution factor of 1:2500 for the primary antibody was found to maximize visualization of the fungus while producing very little background staining. Negative serum and tissue samples were also included, as were four non-chytrid fungal controls, to ensure the specificity of the primary antibody. Staining of the positive tissue sections was distinct and readily visualized, making this technique a valuable ancillary diagnostic test for the presence of this important disease.

The Genomic Study of Multigene Families of *Pneumocystis carinii* for Potential Drug Targets

Claudia Vargas
Dr. Jonathan Arnold, Department of Genetics, University of Georgia

Pneumocystis, a genus of opportunistic fungi, is a serious threat to immune deficient patients, particularly those who are HIV positive. *Pneumocystis* causes thousands of deaths each year by infecting the lungs of immunocompromised individuals, leading to acute pneumonia. An estimated eighty-five percent of patients diagnosed with AIDS will develop pneumonia caused by *Pneumocystis*. Efforts to expand therapeutic options against this pathogen are essential, as increased use of antibiotics has lead to drug resistant fungal strains. Due to the obligate parasitic nature of *Pneumocystis*, it has been difficult to traditionally culture and study this organism; thus, genomic methods have been utilized to produce the most informative research. This multi-institutional research project among the University of Cincinnati College of Medicine, University of Kentucky, Indiana University Medical School, and University of Georgia aims to produce a genomic map of *Pneumocystis carinii f. sp. carinii*. Several genetic methods have been employed including generation of multiple *Pneumocystis* libraries, sequencing through subcloning of related contig DNA, and hybridization by P-dCTP pWEB DNAs against a known *Pneumocystis* cDNA library. Presently, over fifty percent of the genome map has been constructed with an average of thirteen contigs per chromosome. Several significant protein-coding sequences were identified, such as the major surface glycoprotein family (MSG), which is hypothesized to be responsible for the pathogenic nature of *Pneumocystis*. Other findings include the discovery of only a single copy of rDNA in *Pneumocystis*, which is a possible genome conservation strategy.

Joan of Arc: History's Conflicted Warrior

Karen Viars
Dr. Katharina Wilson, Department of Comparative Literature, University of Georgia

Since before her death in 1431, Joan of Arc has been a fascinating subject for writers. The first of these was Christine de Pizan in 1429 and they continue into the present day. Each author, while usually expressing great respect for Joan and her accomplishments, almost always uses her as a historical example to influence contemporary politics. Because Joan was a political figure inextricably part of France's role in the Hundred Years War, it is not surprising that authors and propagandists use her in this way. Politics is not the only arena in which Joan's story appears as a didactic tale; portrayals of her vary as widely as the causes writers cite her to support. These different and often conflicting images have much to do with Joan's rehabilitation trial and canonization as a saint in 1920, with her usefulness as a propaganda figure, and with modern ideas of her nature. Using various texts spanning from the original trial documents to modern works, I intend to assess images of Joan of Arc in literature and culture, and discern how authors use her as an icon to further their own agendas.

Cytoskeleton Induced Apoptosis of HeLa Cells

Heidi Woessner
Rich Davis, Dr. Ruth Furukawa, and Dr. Marcus Fechheimer, Department of Cellular Biology, University of Georgia

Cells die from diverse processes such as senescence (old age), necrosis (disease), and apoptosis (programmed cell death). Apoptosis is characterized by a series of cellular events including activation of caspases, mitochondrial membrane depolarization, blebbing at the plasma membrane, and fragmentation of DNA in the nucleus. Apoptosis occurs in association with a variety of normal and pathological conditions. The initial goal of this project was to study formation of Hirano bodies in HeLa cells, an immortalized epithelial cell line, following expression of an altered form of the *Dictyostelium discoideum* 34 kDa actin bundling protein. Hirano bodies are paracrystalline actin structures associated with a variety of diseases. Formation of Hirano bodies in HeLa cells was not observed. Surprisingly, HeLa cells were stimulated to undergo apoptosis. The following evidence supports this conclusion: 1) an increase in cell death was observed by staining the cells with trypan blue; 2) membrane blebbing was detected by light and scanning electron microscopy; 3) DNA fragmentation was demonstrated using a TUNEL assay that detects free ends on DNA; and 4) loss of energized mitochondria was demonstrated using a fluorescence assay. These findings were unexpected, since the actin cytoskeleton in not known to participate in initiation of apoptotic signaling. Future studies will attempt to unravel the pathways of apoptosis initiated by perturbation of the actin cytoskeleton. Moreover, additional investigation is needed to elucidate the relationship between formation of Hirano bodies and initiation of apoptosis in different cell types.

The Generation of Mutations in the N-Terminal Region of the Protoporphyrinogen Oxidase of *Bacillus subtilis* to Create a Protein Capable of Mitochondrial Targeting in Mammalian Cells

John Woodruff, CURO Summer Research Fellow
Dr. Harry Dailey, Department of Microbiology, University of Georgia

Protoporphyrinogen oxidase (E.C.1.3.3.4) (PPO) is the penultimate enzyme of the heme biosynthesis pathway. Given the mitochondrial location of both its substrate and the subsequent enzyme of the eukaryotic heme biosynthesis pathway, PPO must be effectively targeted to the mitochondria to function properly. Human PPO contains a N-terminal mitochondrial targeting sequence that is atypical in a number of its characteristics, including the fact that this leader is not cleaved following its import into mitochondria. This is significant because the leader sequence is also involved in PPO functionality. Because the leader is required for PPO to function, it has been highly conserved throughout evolution, and a homologous region occurs in the PPO of *Bacillus subtilis*. The current study demonstrates that the prokaryotic *B. subtilis* leader does not target Green Fluorescent Protein (GFP) fusions to the mitochondria of hepatoma cells. It is shown that it is possible to introduce mutations to the *B. subtilis* leader that confer certain putative characteristics of the human PPO N-terminal targeting sequence, including its hydrophobic-hydrophilic amphiphilic alpha helix with a basic region at its far end, transforming it into a leader that induces translocation. In doing so, this study has identified the characteristics of the N-terminal region of PPO that are responsible for its ability to function as a leader sequence.

The Effect of Genetic Background on Stress Resistance in Transgenic Fruit Flies
Amber Wright
Dr. Daniel Promislow, Department of Genetics, University of Georgia

Attempts to identify genes that extend life span in fruit flies have used short-lived lab strains. We hypothesize that these 'longevity' genes may simply cure short-lived flies. The experiment described below attempts to determine if longevity genes also increase fitness in longer-lived wild-caught flies. Previous research has demonstrated that resistance to oxidative stress plays an important role in the aging process. Antioxidant genes such as superoxide dismutase (SOD) fight aging scavenging free radicals. In the fruit fly, *Drosophila melanogaster*, mutants that over-express SOD live substantially longer than control flies. Unfortunately, these mutants, and others like them, are produced by inserting novel genes into relatively short-lived laboratory strains. To determine whether SOD can extend life span in natural genetic backgrounds, we crossed SOD males with strains of fruit fly recently derived from wild populations. Previous studies have shown that longevity is genetically correlated with stress resistance. Accordingly, offspring from each SOD x wild line cross were tested for resistance to the paraquat, which generates oxygen radicals, and to a 38° C heat shock, which denatures proteins and increases mortality rates. We found that over-expression of SOD generally increased stress resistance, though in some genotypes SOD had no effect, or even decreased stress resistance. These results indicate that while mutant genes identified in the lab might be important in natural populations, not all genotypes will respond to such genetic manipulations. Future studies will attempt to identify specific genes that interact with SOD to modify its effect on longevity.

Isolation and Characterization of Novel Anaerobic Thermophilic Iron(III)-Reducing Bacteria
Eric Wright, CURO Apprentice
Dr. Juergen Wiegel, Department of Microbiology, University of Georgia

This research focused on discovering and studying novel species of anaerobic, thermophilic, iron(III)-reducing bacteria from volcanic areas and hot springs in Russia and the United States. Iron-reducing bacteria are important to several geochemical processes around the globe. Isolation of the bacteria involved anaerobic techniques using sophisticated gassing equipment and atmospheric controls to produce pure, single-species colonies in media incubated under high temperatures. Two samples were used in the isolation process and were transferred to cultures containing differing media and concentrations of gases. From there, single strains were isolated. Characterization of the isolated specimens will be accomplished through RNA sequencing. Since anaerobic, thermophilic iron-reducers survive under conditions similar to those of the early earth, the study of these bacteria will shed light on the biological and chemical processes and pathways that were probably present in early unicellular life, and perhaps on the evolutionary process itself.

Adintern.com: A Website to Assist Advertising Focused Students in Finding, Getting, Keeping, and Leaving an Internship
Margaret Young
Dr. Kirsten L. Strausbaugh, Department of Advertising/Public Relations, University of Georgia

Adintern.com is a website to assist advertising & design focused students in finding, getting, keeping, and leaving an internship. Adintern is a practical application of research while at the same time a new medium to fill a niche in the online and career services arena that has in the past been overlooked in the field of advertising. Internships are a vital part of the advertising curriculum and are an essential prerequisite to an entry-level position in the competitive field of advertising. Advertising agencies do not recruit like many business corporations; it is therefore upon the advertising students to create opportunity. Adintern creates this opportunity. The site consists of various facets helpful to the advertising student, the main of which are advertising focused career advice, advertising industry information and trends, agency profiles, internship postings, advice from advertising experts, access to previous interns for advice, and links to industry publications and relevant information. Aside from the site itself, the written thesis examines the motivations and reasoning behind the site, influences of the site, methods used to prepare the site, and a formative evaluation of the site's design and usability. Adintern.com is proactive, prolific, and progressive. The site is viewable from the World Wide Web at http://www.adintern.com.

Artist Statements
Visual Arts
Creative Writing

Stephanie Anderson
Professor Edward Lambert, Fabric Design, Lamar Dodd School of Art, University of Georgia

"The body is not a thing; it is a situation." – Simone De Beauvoir
In this body of work the subjects are the keys. They are first but not primary. Their forms are constructed only of shadows yet they embody their surroundings. The shadows act as boundaries in a state of flux as there are no true borders beyond one's own construction. My interest is in the relationship between the subject and its environment. Does the environment act upon the individual or is it the individual's perspective which shapes their surroundings? Which shapes their surroundings? These works allow insight into the mutability of perspective. The subjects are not symbols but are symptoms of the intermixing of place and sensation. Color is that language by which the situations are told. Transparent pigments are applied in layers on loose woven linen to build perceptual depth of hue. The additive process allows many colors to be present at once within each area.

Antibiotic Art
Jeff Edwards
Professor Robert Stackhouse, Lamar Dodd Professorial Chair, Lamar Dodd School of Art, University of Georgia

I am not a troublemaker, I swear! My recent sculpture has been about creating staged social conflict within the viewer. My goal is to allow the viewer to interpret her or his reaction as psycho-visual incongruities in her or his social thought. Each piece is designed to create emotional action or reaction. Over time, I hope to develop a catalog of human emotional experience, with each sculpture cataloging the greater metaphors of existence. I wish to inspire dialog about creating experience-based social change. Being a professional artist is one of the most self-glorifying careers one could choose. It stands to reason that an artist should cultivate her or his true understanding of the self. "One is never more attractive than when one is being one's true self." Note to self – Rent costume! Never should it be said that an artist "does not know what her or his work means." Neither should it be said that the artist created a work "for no reason." Wasting opportunity makes your work not worth a footnote. The artist has the responsibility to defend and promote her or his work. Talking about projects is an opportunity – a platform. This movement will likely be bisected by a hypocrite movement with "similar principals," likely from advertising or insurance interests, unless YOU, as artists defend, promote, and explain your work. Ancient Egyptians used pictures to represent words. Modern Americans use words to create pictures, metaphors. My art uses visual metaphors to create emotion.

Caitlin Martell
Professor Melissa Harshman, Printmaking, Lamar Dodd School of Art, University of Georgia

My current body of work stems from an exploration of the beauty of repetition and the language of the body. Working in an unmediated and ritualistic method, I make prints of my body, building up the surface through repetition, documenting the texture and markmaking of my own skin. I seek to visually communicate the experience of the soul by developing a language through the repetition of my own bodily forms. The work is both simple in execution and yet visceral. It draws from the influence of artists such as Kiki Smith and Leslie Dill as well as more direct studio exposure to the etchings of Jennifer Anderson.

Amanda Gary
Professor Edward Lambert, Fabric Design, Lamar Dodd School of Art, University of Georgia

Utilizing the designs of primitive artists as a point of departure, my work revolves around the simple, contemporary processes that reflect a combination of primal and modern sensibilities. Creating layer fabric allows for the exploration of shape, color, and line in a very direct and innovative manner. From simplistic design and technique, I attempt to show complex and multi-layered images with fabric.

"each morning I get up with one word in mind: plastik…"
Lorina Naci, CURO Summer Research Fellow
Professor William Paul, Jr. Drawing and Painting, Lamar Dodd School of Art, University of Georgia

My artistic work is concerned with two encroaching phenomena that address the legitimacy of my Albanian heritage: Post Communism and globalization. I am interested in the quintessential values of Albanian natives and how some of these values are threatened by the advent of better technologies, faster information flow, and faster lifestyles brought by globalization in my country as well as elsewhere in the world.

By focusing on facial close-ups and on the physiognomy of natives of Albania and of Western Europeans in painting, in film, and in sculptural work, I seek to investigate the identities produced by the different economical, political, and social systems expressed visually in the body as the physical site of the human interaction with the governing system.

Theresa Marie Sporer
Professor Larry Millard, Sculpture, Lamar Dodd School of Art, University of Georgia

Using a dichotomy of materials, my sculptures express experiences from my life. I am really attracted to the interaction of contrasting materials (such as fibers, steel, and ceramics) inter-laced and working together to create an overall mood. I incorporate my ceramics background into my sculpture by utilizing techniques from both disciplines. The endless capabilities of sculpture enable me to develop themes in my work, which I was unable to accomplish with just ceramics. Reoccurring themes in my work include marriage, anticipation of becoming pregnant, and the trauma I experienced after being bitten by a venomous snake. These ideas and experiences are expressed conceptually rather than through direct imagery.

Jennifer Srygley
Professor Judson Mitcham, Department of English, University of Georgia

In writing poetry for my Honor's thesis this semester, I am exploring the effect of sounds and rhythm on the writing of the lyric. Perhaps this exploration can best be explained in the words of poet Richard Hugo, "all truth must conform to music." My thesis is comprised of a collection of poems written in various workshops. In writing poetry, I have found that it is impossible to completely separate my work from the rich tradition of American poetry. Poets whose work has influenced my own include Frank O'Hara, Richard Hugo, Kenneth Koch and Ellen Bryant Voight. If one thinks about poetry as a kind of music, it is possible to gain a new level of understanding of poems that is based on aural expression and often belies the content of the words. In writing and reading my poems, I hope that I am able to convey a sense of sounds and the musical quality of language.

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