College of Natural Sciences and Mathematics

10th Annual Student Research Symposium

April 9, 2004

TITLES

Biology

Does Early Exposure to Pain Alter Brain Function?
Brian Bowden, Julie Carter, Jason Fechter, Danny Glassman, Amanda Plummer, Debbie Soellner, Kate Street, and John Frank
Faculty Mentor: Barbara Clancy

Distribution and Connectivity Patterns of Persisting Cortical Subplate Cells in Aging Swiss Webster Mice
Jason Fechter, Bowman, B., Hyde, J., Isbell, S., Palmer, S. and Seballos, P.
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Acidification induced exocytic response in MCF-7 cells and correlating apoptosis
U. B. Haley
Faculty Mentor: Steve Runge

Role of Pedal Three Neuron in turning of *Tritonia diomedea*
Joshua Morrison
Faculty Mentor: James Murray

Proximate cue or ultimate cause: Why does myristicin trigger trenching?
Ken Pigue
Faculty Mentor: David Dussourd

Predicting the timing of neural and visual development across mammalian and non-mammalian species
Julie Staudinger, Danny Glassmann, and Jessica Harrison
Faculty Mentor: Barbara Clancy

Identification of the regulatory proteins controlling intracellular pH in cultured human breast cancer cells
Brandon Walser and Dana Strassle
Faculty Mentor: Steven W. Runge

Increased habitat heterogeneity: effects on macroinvertebrate biomass and distribution patterns in a shallow eutrophic reservoir
Bradley S. Williams
Faculty Mentor: Joseph Shostell (Penn State Fayette)

Chemistry

Chemical Switches: State-Specificity in the Gas Phase Reactions of Cu^+, Ag^+, and Au^+ with Halogenated Methanes
Cullen C. Matthews and Kristin S. Parkhill
Faculty Mentor: William S. Taylor

Computer Science

Computational Study of a Wire Tension Problem at Tokusen USA
Sze-Huan Chin
Faculty Mentor: Chenyi Hu

Automated Robot Guidance through Sonar Navigation and Color Recognition
Chad Miller, Josh Hight, Justin Michaels
Faculty Mentor: Han-Chieh Wei

Improving Efficiency for Latent Semantic Indexing of Large Dynamic Document Collections
Benjamin Severs
Faculty Mentor: Chenyi Hu

Mathematics

Parametric Symmetries of Ordinary Differential Equations
Yousuf Abbasi
Faculty Mentor: Danny Arrigo

Symmetry Analysis of the One-Dimensional Heat Equation with Variable Diffusivity
Joel Harris
Faculty Mentor: Danny Arrigo

Multigrid Numerical Solver
Garth Johnson
Faculty Mentor: Irene Livshits

Physics and Astronomy

Spectroscopic Observations of a Nova Outburst and Be Stars
Bart Dunlap
Faculty Mentor: Scott Austin

Particle Induced x-ray emission experiments (PIXE) to determine sample elemental composition and unknown sample thicknesses
C. Eric Easton and Chris A. McNeill
Faculty Mentor: Rahul Mehta and Stephen R. Addison

Rutherford and Non-Rutherford Scattering of 1.5 MeV Protons by $_{28}$Ni, $_{6}$C, and $_{8}$O Targets
Jason House and Bart Dunlap
Faculty Mentor: Rahul Mehta and Stephen R. Addison

Acoustic Properties of Porous Materials
Chris McNeill
Faculty Mentor: Carl Frederickson

Kinematics in Rutherford Scattering
Scott Sullivan and Angela Roper
*Faculty Mentor: Rahul Mehta and Stephen R. Addison**

ABSTRACTS

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Tritonia diomedea

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