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Funded Projects

The Following Projects were funded for the 2007/2008 Academic Year

The mentoring Mentoring Committee Resources Committee received a total of 11 requests for Mentoring Project Funds for the summer and fall of 2007. Ten of the 11 proposals were approved for funding by the Mentoring Task Force.

Proposals for Spring 2008 are due by October 1, 2007.

Proposals funded from this round of submissions include:

Department: Biology
Title: Making Sense of Antisense at Yale
Contact: Dr. William Terzaghi
Grant Award: \$9485
Summary: Two Wilkes students will spend the summer at Yale University working with Dr. Terzaghi in one of the world's best plant labs, here he will mentor them to a fruitful experience participating in the rice genome project. One of the surprises of this project has been that many rice genes are copied in both sense and antisense directions. The sense copies encode proteins, but the function of the antisense RNA is unknown. The students will test the hypothesis that they help regulate the expression of the sense copies. To do so they will study the structure and function of antisense copies of light-regulated genes using cutting-edge techniques. This project will allow the students to perform sophisticated research and to participate in the plethora of cultural and scientific events that occur at Yale. They will then present their results at international meetings, and, with luck, in top-rated scientific journals. This experience will enhance their research capabilities and their abilities to mentor other students upon returning to Wilkes, where both will TA Bio 121 labs and lead student research teams in the Terzaghi lab. In the long term, a productive summer may lead to an enduring collaboration with the Yale lab, which is keen on establishing relationships with undergraduate institutions.

Department: Biology
Title: Research for Undergraduates: Animal-mediated Oak Dispersal
Contact: Dr. Michael Steele
Grant Award: \$13,704
Summary: Funds will support three student researchers in the laboratory of Dr. Michael Steele. Objectives for the grant include: 1) intimately involving students in all phases of the scientific process; 2) providing

students with valuable research skills related to the study of animal behavior and ecology; and 3) having students participate in a research training workshop at Purdue University.

Department: Biology
Title: Investigations into the regulation of settlement and metamorphosis metatrochophore larvae of the marine polychaete annelid *Capitella*
Contact: Dr. William Biggers
Grant Award: \$5000
Summary: With the help of Wilkes University undergraduate students, I would like to carry out more investigations into the biochemical regulation of settlement and metamorphosis of the *Capitella* larvae over the summer. The objectives I have for the summer are to: 1.) Determine chemosensory receptor binding sites on the larvae using a naturally fluorescent fatty acid which is parinaric acid. Larvae will be cultured with this fatty acid, and then receptors will be visualized by fluorescence microscopy. We will also try to determine when during development that the larvae develop these receptors; 2.) Investigate the involvement of protein kinase C in the regulation of spontaneous settlement and metamorphosis of the larvae. I have previously found that chemically induced settlement of these larvae can occur through activation of protein kinase C (Biggers and Laufer, 1992, 1996, 1997). I have done one experiment indicating that PKC activation may also be involved in regulating spontaneous settlement and Metamorphosis in the absence of a chemical cue. I would now like to do more experiments to see if the PKC inhibitor, bisindolylmaleimide, can inhibit spontaneous settlement and metamorphosis; 3.) Determine the biochemical causes for inhibition of settlement and metamorphosis of these larvae when cultured at higher larval densities. Our results over the past year indicate that this inhibition is due to continued high nitric oxide levels, since inhibitors of nitric oxide synthase are able to overcome dependent inhibition (data unpublished). I would like to carry out more experiments to directly examine levels of nitric oxide synthase (NOS) in these larvae cultured at high larval densities. The presence of nitric oxide synthase, which makes nitric oxide, will be detected in these larvae using immunofluorescence with a universal antibody to NOS, and visualization by fluorescence microscopy. We will also assess the affects of nitric oxide donors, such as s-n-acetylpenicillamine (SNAP), on rates of spontaneous settlement and metamorphosis. We will also if density dependent inhibition of settlement and metamorphosis is reversible. 4.) Determine if the induction of settlement and metamorphosis of the larvae by juvenile hormones involves activation of mitogen determine if an inhibitor of MAP kinase, PD can inhibit settlement and metamorphosis induced by the juvenile hormone methyl farnesoate.

Department: Chemistry
Title: Summer Research Program in Chemistry
Contact: Dr. Terese Wignot

Grant Award: \$23,000

Summary: The funds will be used for collaborative summer student research. The participating chemistry and biochemistry majors will interact closely with their faculty mentors on chemical research projects. The students will also interact closely with each other in both research and social settings. This interaction will expand their horizons by exposing them to each other's projects, and will foster a sense of identity among the chemistry and biochemistry majors.

Department: Mathematics and Computer Science

Title: Mentoring at the Center for Computational Intelligence

Contact: Dr. Anthony Kapolka

Grant Award: \$7200

Summary: The Center for Computational Intelligence, Intelligent Systems and Applied Mathematics provides interdisciplinary support for undergraduate education and research into those problem areas whose solutions may be found in the construction of intelligent systems or which utilize the techniques of computational intelligence. The Center also cultivates cooperative relationships with external institutions and agencies, and endeavors to create appropriate funding opportunities. One of the primary goals of the Center for Computational Intelligence is to mentor students in a way that affords novel research opportunities to undergraduates and showcase a venue of interdisciplinary projects.

Department: Mathematics and Computer Science

Title: CS 115 Learning Community/ SI Pilot

Contact: Dr. Anthony Kapolka

Grant Award: \$1260

Summary: Two peer-mentors will be hired to participate in an FYF 101/CS 115 learning community during the fall semester 2007. In addition to FYF-style peer-mentoring, they will provide supplemental instruction for CS 115.

Department: Writing Center

Title: Writing Mentor Program

Contact: Dr. Chad Stanley

Grant Award: \$17, 128

Summary: The purpose of this mentoring program is to continue and expand the placement of Writing Mentors, experienced student writing consultants, within sections of writing-based courses: as a priority, English 101 courses; secondarily, ENG 120 courses; and also key Political Science courses, such as PS 261 and possibly PS 260. For this program's second year of operation, our primary intent is to increase the number of Writing Mentors providing academic support to students in ENG 101 courses—increasing the number of participants in this program through a comparatively minimal increase in financial input. Additional goals regard the attainment of both process and product objectives, and to further develop short, medium, and long term professional outcomes for students.

Department: Business and Accounting
 Title: Undergraduate Research in Finance
 Contact: Dr. Nandita Das
 Grant Award: \$12,000
 Summary:

The project will help fill the gap for students interested in exploring and learning special topics in the field of finance.

The two subtopics that will be explored by the students are: 1) Weather Derivatives--This project asks an important question that has been identified this year with the mild winter we have had. Can the weather affect the profitability of certain businesses for better or for worse?

The students will learn the basics of derivative market and then concentrate on one specific area: the weather derivatives. The project will analyze the attendance data from different industries and compare it to the Heating Degree Days (HDD) and Cooling Degree Days (CDD) levels of that particular region. The goal is to see if there is any correlation between the two data sets. The project aims to explore this correlation and study the weather derivatives market to see if some of the losses that occur can be partially offset by making investments in the weather derivatives market; and 2). Mortgage Meltdown --Mortgage Market Meltdown is the collapse of the mortgage market, that leads to a rise in interest rates, millions of foreclosures, and possibly an economic recession. The mortgage market would "meltdown" due to many defaults on loans and mortgages. Mortgage brokers and lenders were contently giving money to borrowers due to the high rate of returns they were getting. This did not do much damage to the economy in the last decade where housing prices were booming and defaults in mortgage market were minimal. Now those sub-prime mortgage loans make up close to 24% of the market rather than a decade ago which was only a small niche of 5%. Moreover, housing prices have leveled off or even tail spun in some areas. Due to the large hold of the market and the unpredictability of home prices, the mortgage market and the economy could suffer major damages on defaults. And it has begun, loans made to people with weak credit or low incomes during the housing boom have pushed more than 20 companies into bankruptcy.

Department: Pharmacy Practice and Communications
 Title: An Interdisciplinary Oral History Project
 Contact: Dr. James Culhane
 Grant Award: \$8800
 Summary:

This grant application is for funding to complete phase III of a larger and ongoing interdisciplinary oral history project initiated and carried out by the Nesbitt School of Pharmacy and Communications Department. Phase I and Phase II of the project, which have already been completed, entailed recording and transcribing over 30 oral histories of pharmacists from the Wilkes-Barre/Scranton area, producing a Ken Burns style documentary in collaboration with the Advanced Video students, and coding and organizing specific sections of the transcription on the basis of specific themes (i.e. pharmacy education, pharmacy practice during WWI, the Agnes Flood of 1972,

etc). Phase III of the project involves mentoring student research associates in the research, development and writing of a text that details the general history of pharmacy in the Wyoming Valley and includes the oral histories of over 30 area pharmacists.

Department: Environmental Engineering and Earth Sciences Department
Title: Broadening Mentorship Impact at Yellowstone National Park
Contact: Dr. Sid Halsor
Grant Award: \$9650

Summary: This proposal seeks to expand student participation in an ongoing educational and research project at Yellowstone National Park (YNP), Wyoming. Since 1999, a faculty-student team from Wilkes University has been invited to YNP to lead a GPS-based geological survey of the Yellowstone caldera. Given that few Universities are permitted to conduct geological research at YNP, our annual survey presents an exceptional opportunity for Wilkes University and the YNP team members: Sid Halsor, Bill Toothill and commonly two students. The goal of this proposal is to broaden the impact of mentorship that occurs at YNP by increasing student participation from two to six for the 2007 and 2008 surveys.

The success of our annual YNP survey is dependent on faculty-student interactions that promote leadership, mutual respect and trust, all essential elements for effective teamwork. Over 10 days at YNP, students work closely with faculty while learning field geology, standard procedures for set up and operation of high-precision GPS measurement stations, and navigation and mountaineering skills. They then use their field skills to assist Wilkes faculty in supervising a survey that includes over 20 undergraduate geology students from universities across the nation. Our students effectively serve as co-leaders of the survey, deploying student teams to measurement stations, supervising proper set up and operation of instruments, and trouble-shooting technical problems as they arise. Wilkes students consistently rise-up to the challenges of a demanding survey and carryout their responsibilities with enthusiastic fortitude. We believe our mentorship model enables students to seek their potential as "learner leaders" and it is our desire to apply the model to a larger number of students.

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