

# GRANT OPPORTUNITIES

Newsletter of the Office of Grants and Program Review  
January 2006

## UTC Professors Attract Funds to Expand Research Capacity

In order for scientists at universities throughout the United States to engage in much-needed research activities and prepare the next generation of scientists, they must have access to research equipment. The acquisition of critical research instrumentation improves the quality and expands the scope of research and research training and fosters the integration of research and instruction. To enhance research and learning at UTC, a multi-disciplinary team of faculty researchers collaborated to secure a \$251,720 Major Research Instrumentation (MRI) grant from the National Science Foundation. The team of researchers, Drs. Sean Richards, Greg Grant, Margaret Kovach, Deborah Kreiss and Steven Symes, will use the grant funds to purchase a Liquid Chromatography (LC) system with tandem Mass Spectrometer detection (LC-MS-MS).

The faculty team secured the grant award by presenting a strong research agenda that will utilize the new instrumentation and by building on previous successes the Department of Chemistry and Department of Biological and

Environmental Sciences have had with the MRI program. Combined, these departments have secured \$723,833 from NSF since 2001 to support four separate MRI projects. The team's research plans for the most current award will engage faculty as well as undergraduate and graduate students from both departments. The collaborating faculty members will use the system to enhance their research in the areas of analytical, toxicological, physiological, and synthetic studies, which require LC-MS-MS identification of molecules.

**Dr. Sean Richards**, Assistant Professor of Biological and Environmental Sciences, and **Dr. Steven Symes**, Assistant Professor of Chemistry, will use the system to determine the concentration of pharmaceuticals in surface water and the subsequent risk posed to aquatic ecosystems. The instance of pharmaceutical runoff may actually have a greater risk than that of pesticides due to the inherent potency of pharmaceuticals and unknown interactions which are likely to occur in non-mammalian organisms.

**Dr. Greg Grant**, Grote

Professor of Chemistry, will utilize the LC-MS-MS system to analyze the transition metal mediated self-assembly of molecular squares and cubes using thiocrown ligands. Recently, this area of coordination chemistry has received considerable attention. In Dr. Grant's research, the Liquid Chromatography system will be a critical tool required in order to identify potential new molecular polygons and polyhedra.

**Dr. Deborah Kreiss**, Assistant Professor of Neurobiology, will investigate serotonin release in the basal ganglia following repeated administration of selective serotonin reuptake inhibitors (SSRIs). The use of SSRIs (a type of antidepressant) is widespread in the general population. Dr. Kreiss's study will examine the effects of chronic exposure to SSRIs on neurophysiological alterations. Analysis of the serotonin content of dialysates using the LC-MS-MS is significantly superior to other analytical techniques.

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**Dr. Margaret Kovach,**  
 Assistant Professor of  
 Biological and Environmental  
 Sciences, will use the Liquid  
 Chromatography system to aid  
 her in her primary research  
 interest—mammalian genomics.  
 Mammalian genomics is the  
 identification and functional  
 characterization of mammalian  
 genes. Dr. Kovach is  
 particularly interested in  
 genome organization and  
 chromatin structure and their  
 influences on nuclear functions

such as DNA replication,  
 chromosome segregation, and  
 gene expression. Currently, Dr.  
 Kovach is working on two  
 projects in this area that will be  
 significantly enhanced by the  
 use of this new equipment.

The faculty team's  
 acquisition of the LC-MS-MS  
 instrument will enable students  
 to receive hands-on experience  
 with a major research  
 instrument that they are likely  
 to use in scientific careers. An  
 estimated six graduate students

and seventy undergraduate  
 students will use the instrument  
 as part of their education and  
 research each year. In addition  
 to augmenting the learning  
 environment, the acquisition of  
 this research instrument will  
 expand UTC's research  
 capacity and enhance  
 instruction and research in  
 fields such as toxicology,  
 chemistry, physiology, and  
 pharmacology.

## FUNDED GRANTS AND RESEARCH JANUARY 1, 2006 – JANUARY 31, 2006

### COLLEGE OF ARTS & SCIENCES

**DR. BARBARA MEDLEY**

Community Research Council, Inc.	Allied Arts Surveys	\$11,157
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**DRS. DAVID ROSS & AMYE WARREN**

United Way of Chattanooga	Additional fund for Evaluation Technical Assistance	\$6,025
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### COLLEGE OF HEALTH, EDUCATION & PROFESSIONAL STUDIES

**MR. TOM PATTY**

Hamilton Co. Dept. of Education	Girls in Flight Continuation Program 2005-06	\$17,625
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**DR. LUCIEN ELLINGTON**

Freeman Foundation	NCTA Memphis Seminar	\$45,000
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### ADMINISTRATIVE UNITS

**MS. REXANN BUMPUS**

TN Student Assistance Corp.	Peer Counselor Program 2005-06	\$27,900
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