



Thursday, May 23, 2002

## University Student Research Scholar project abstracts

The following information highlights the abstracts submitted by the students selected for University Student Research Scholar awards on April 15.

**OU Student:** Nibedita Bandyopadhyay, Department of Mathematics and Statistics

**Faculty Mentor:** Ananda Sen, Department of Mathematics and Statistics

**Project:** Inhomogeneous Gamma Processes: A Model for Recurrent Event Data

**Abstract:** Analysis of recurrent event data is an important area of research in engineering, computer and biomedical applications. Recurrent data is commonly modeled by a non-homogeneous Poisson process (NHPP). However, the underlying assumption of NHPP is not suitable in many practical situations. The focus of this project is an extension of the NHPP that has some physical meaning and provides a more flexible modeling environment. This extension stems from a class of models called inhomogeneous gamma process and is a definite improvement over the usual NHPP framework. I shall study statistical properties of the proposed model thoroughly. Extensive numerical simulations will be carried out to supplement the theoretical findings.

**OU Student:** Megan Callewaert, Department of Anthropology/Sociology

**Faculty Mentor:** Richard Stamps, Department of Anthropology/Sociology

**Project:** Ethnographic Video of Pontiac Area Hmong Community

**Abstract:** The proposed project is the production of an anthropological documentary (an ethnographic video) about the Pontiac area Hmong community. It will center on Hmong artisans whose traditional crafts help support and preserve their culture. I will utilize library research on Hmong and their crafts, videotaped personal interviews (oral histories) with Hmong artisans and other members of the Hmong community, and, most importantly, spending time within the community (participant observation) to produce an anthropological documentary. This video will accurately document the Hmong community of the Pontiac area for future reference and research. A written supplement will provide data and analysis.

**OU Student:** Adnan Hussain, Department of Biological Sciences

**Faculty Mentor:** Rasul Chaudhry, Department of Biological Sciences

**Project:** Effect of Chemicals (i.e., carbofuran) on Embryonic Cell Differentiation

**Abstract:** Several pesticides and therapeutic drugs are highly toxic to humans. Exposure to such chemicals can cause degenerative diseases such as Alzheimer's and immunological and reproductive effects. The proposed research is aimed at developing in vitro methods of testing embryotoxicity and immunotoxicity using human ES cells. Mouse embryonic stem cells will be studied for the effect of carbofuran on cell viability, growth and differentiation. These studies may lead to developing alternative tests for toxicity using embryonic stem cells.

**OU Student:** Jonathan Muenk, Department of Psychology

**Faculty Mentor:** Ronald Butzlaff, Department of Psychology

**Project:** ADHD Meta-Analysis

**Abstract:** The purpose of the meta-analysis project is to examine prior empirical Attention-Deficit Hyperactivity Disorder (ADHD) research focused on the academic achievement of students with ADHD to comparatively statistically examine the relationship between chemical treatment, behavioral treatment and the combination of the two treatments. Boyle and Jadad (1999) suggest that for proper psychological ADHD research to be conducted, the researcher must examine one of the two effectiveness of the treatment or the efficiency of the treatment.

**OU Student:** Michael Sauer, Department of Biochemistry **Faculty Mentor:** Barry Winkler, Eye Research Institute **Project:** Metabolism in Cultures of Retinal Cells

**Abstract:** The goal of this research is to study the effects of metabolic inhibitors on metabolism and viability of cultures of retinal cells. The methods we propose to use include measuring lactate production and ATP content, analyzing selected enzymatic activities, and photography of cellular structure. This research is significant not only because it provides insight into the importance of the glycolytic pathway in the retina but it also can have ramifications with other cells that have high glycolytic rates, such as cancer cells.

**OU Student:** Jamie Togal, Department of Biological Sciences

**Faculty Mentor:** George Gamboa, Department of Biological Sciences

**Project:** The Causal Relationship between Body Oscillations and the Withholding of Larval Saliva in the Social Wasp *Polistes Fuscatus* (Hymenoptera, Vespidae)

**Abstract:** In the paper wasp species, *Polistes Fuscatus*, strong correlational evidence has linked a particular type of body oscillation performed by adult females, called lateral vibrations (LVs), to the withholding of salivary secretions by larvae. However, it has never been confirmed whether LVs actually cause this behavior to occur. In this study, we intend to establish whether such a causal relationship exists by producing artificial LVs mechanically and measuring the salivary output of larvae beforehand and afterwards. We also will conduct extensive video observations of *fuscatus* combs during the performance of LVs in search of visual evidence that larvae are withholding saliva.

**SUMMARY**

Highlights of the abstracts submitted by the students selected for University Student Research Scholar awards on April 15.

Created by CareTech Administrator (webservices@caretechsolutions.com) on Thursday, May 23, 2002

Modified by CareTech Administrator (webservices@caretechsolutions.com) on Thursday, May 23, 2002

Article Start Date: Wednesday, November 5, 2003