



University of Houston-Downtown

Proceedings

3rd Annual

Student Research Conference

Sponsored by the UHD Scholars Academy
College of Sciences and Technology



Friday, November 14, 2003
Special Events Center



We are pleased to present the proceedings of the 3rd Annual Student Research Conference sponsored by the UHD Scholars Academy in the College of Sciences and Technology. Over 250 people attended this year's event held on Friday, November 14, 2003. Fifty-one undergraduate authors and co-authors from the College of Sciences and Technology presented 37 papers in oral and poster presentations. Research presented resulted from projects conducted at UHD and elsewhere in corporate and competitive academic internship programs. Joining the conference for the first time were 88 students presenting 85 papers resulting from class projects in behavioral and social sciences. We are proud of the effort that these high-achieving students put into their research presentations, and we trust that each presenter found their experience challenging and rewarding. The research conducted by many of these students has served as a springboard for participation in local, regional and national conferences.

It is a pleasure to recognize the many individuals, organizations, and institutions supporting UHD students in their research endeavors. These include the National Science Foundation's Division of Undergraduate Education (DUE 0089435) as well as several other programs funded by the National Science Foundation (95221257, 9900893, 0094432, 0336612), the Office of Naval Research (N0014-99-1-0950), Army Research Office (W911NF-04-1-0024), Department of Education (P120A020069), Shell Oil Company Foundation, Welch Foundation, NASA and UHD Donors. Many of our students conducted their research during summer internships, including Baylor College of Medicine SMART program, NASA summer internship programs, Research Experience for Undergraduates at Sam Houston State University, Rice Undergraduate Summer Program in Statistics, Ronald E. McNair Post-baccalaureate Achievement Program, Undergraduate Summer Research Program in Environmental Science and Ecology at University of Houston-Downtown, University of Texas Medical Branch Summer Undergraduate Research Program, and the UT-Houston Medical School Summer Research Program. Faculty and staff members of these and many other academic institutions, as well as personnel at industrial facilities, have generously supported and mentored our students. In addition, we thank the UHD faculty and staff who've worked tirelessly to support undergraduate research experiences as well as the administrators who have helped make this event a reality. We especially thank our Scholars Academy Co-Directors, Drs. Richard Aló, Kenneth Oberhoff and Larry Spears, Deans Susan Ahern and George Pincus, and UHD President Max Castillo.

Suzette Mouchaty, Ph.D.
Director
UHD Scholars Academy

The **UHD Scholars Academy (SA)** is an academically competitive program in the College of Sciences and Technology (CST) that promotes scholarship and student success for undergraduate students majoring in Science, Technology, Engineering and Mathematics (STEM).

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3rd ANNUAL STUDENT RESEARCH CONFERENCE AT UHD

*A showcase of academic excellence demonstrated
by UHD undergraduates majoring in:*

- Behavioral/Social Sciences
- Computer Science
- Engineering
- Engineering Technology
- Mathematics
- Natural Sciences

PROGRAM

Friday, November 14, 2003

- 8:00 - 8:30 am Continental Breakfast, Coffee House
9:00 am **Dr. Max Castillo**, President, UHD, Welcoming Remarks, Auditorium
9:10 - 9:30 am **Dr. Phebe Chen**, Associate Professor & Chief of Ultrasound, Dept. of Radiology,
UT-Houston Health Science Center; UHD Alumnus of the Year 2003
Guest Speaker, Auditorium
9:30 - 11:40 am Oral Presentations, Auditorium, Introductions by **Dr. Erin Hodgess**, Associate
Professor of Mathematical Sciences, UHD
11:40 - 12:30 pm Lunch break
12:30 - 2:30 pm Poster Session, A300
1:30 - 2:30 pm Networking & Mentoring Session, A300
2:30 - 3:00 pm **Dr. Larry Spears**, Professor of Chemistry, UHD, Closing Comments, Auditorium
-

Conference Chairs:

Dr. Byron Christmas, Associate Professor of Chemistry, UHD
Dr. Ermelinda DeLa Vina, Associate Professor of Mathematics, UHD
Dr. Heidi Ziemer, Assistant Professor of Psychology, UHD

Conference Organizers:

Dr. Suzette Mouchaty, Director, Scholars Academy, UHD
Mr. Rene Garcia, Program Coordinator, Scholars Academy, UHD
Ms. Heather Davis, Program Coordinator, Department of Natural Sciences, UHD

Sponsored by the UHD Scholars Academy. Funded by the National Science Foundation,
Office of Naval Research, the U.S. Department of Education, and UHD.

Oral Presentations



Imene Bokhetache

“Investigating Glutamate Receptor Binding Site Using Vibrational Spectroscopy”

Co-Author: **Dr. Vasanthi Jayaraman (UT Medical School)**

Project Location: University of Texas at Houston Medical School

We used Fourier Transform Infrared Spectroscopy to probe the vibrations of the carbonyl groups of the protein backbone, and the asymmetric vibrations of the carboxylate groups of the ligand, glutamate. The infrared difference vibrational spectra for GluR2 and GluR4 AMPA subunits of glutamate receptors between the unbound and the bound states indicate that glutamate induces the same structural changes on both of the AMPA subtype subunits, suggesting that the protein is more ordered upon binding glutamate. Based on previous spectroscopic investigations, glutamate is thought to first dock on the protein by interactions at the 1C carboxylate, followed by protein conformational changes. We have performed time resolved F.T.I.R. investigations, which indicate that the protein and the ligand modes change approximately at the same rate. Future investigations will be aimed at using mutants that alter the rate of the ligand docking and protein locking steps so that these steps can be analyzed in more detail.



Shannon Collins

“Are You Embarrassed by Your Flatus?”

UHD Faculty Mentor: **Dr. Heidi Ziemer and Karena Valkyrie**

Project Location: University of Houston-Downtown

This study was developed to find out if people are embarrassed by their flatulence *less* when they have a *brother*, or came from *households accepting of flatulence*. Participants, students at an urban university, were asked to rate their level of embarrassment, in 14 situations. People were embarrassed by their flatulence *regardless of brothers, or acceptance*. Women reported a higher amount of gas episodes, more household acceptance, and less embarrassment, although there were no significant gender differences. Both genders reported feeling that they had normal or less than normal flatulence episodes. Future research should focus on household acceptance and gender differences.



Jannie Dilber

“Effect of Thickness, Shutter Time, Light Intensity, and Photoinitiator Level on the Relative Reactivity of UV-Polymerizable Formulations”

UHD Faculty Mentor: **Dr. Byron Christmas**

Project Location: University of Houston-Downtown

In the course of investigating the effects of thiol-functional monomers on the relative reactivity of ultraviolet (UV)-polymerizable formulations, differential photocalorimetric (DPC) methods have been utilized in this laboratory. In order to insure greater reproducibility with DPC techniques, a two-level factorial screening experiment was conducted to determine the optimum sample thickness, shutter time, UV light intensity, and photoinitiator (PI) level for maximizing relative reactivity. The results of this study give an indication of the variability inherent in DPC methodology.



Scholar Lesley Leggett and Program Assistant, Kevin Dorsey register student participants and guests.



Visitors and students await the opening speech by UHD President Max Castillo.





Cyril Harris

“The Color of Cryptography: Applying the Knapsack Problem to Pixels”

UHD Faculty Mentor: **Dr. Linda Becerra**

Project Location: University of Houston-Downtown

Is it possible to represent a message with a single pixel? That was a question I asked myself some time ago. The search for the answer to that question brought me to a problem in number theory - the knapsack problem. The knapsack problem is as follows: “Suppose we have a knapsack that can hold S pounds. Further suppose we have a number of objects that weigh w_1, w_2, \dots, w_k pounds respectively. Which objects can we take on a trip that will most nearly fill the knapsack without exceeding the weight limit?” The basis of my research was applying this problem to pixels where the pixel would be the knapsack and the letters of the message would be the weights.



Alexis Infantas

“Parallel Processing and Computer Networking”

UHD Faculty Mentor: **Dr. Hong Lin**

Project Location: University of Houston-Downtown

My research consists of studying the relationship between parallel processing and computer networking. I will discuss the relationship between networks and the underlying facilitation for data communications in parallel processing. The research allows for further discussion on how computer-networking techniques are implemented in parallel computing. I will start with a brief history on the development of parallel processing systems. This historic prelude will discuss the many different attempts at parallel computing and the breakthroughs achieved during the evolution of parallel computing. The second part of my presentation will contain information as to how networks have become a necessity when developing parallel systems. Then I will focus on the various attempts at developing new implementation techniques for parallel programming.



Victor Kaiser

“Level 4 XML Representation of the Arden Syntax Programming Language”

Faculty Mentors: **Dr. Ongard Sirisaengtaksin** and **Dr. R. Matthew Sailors**

Project Location: University of Houston-Downtown

Arden Syntax is a special-purpose programming language for representing Medical Logic Modules. A Medical Logic Module contains the logic necessary to carry out a single medical decision. Although the traditional text representation of source code is convenient for programmers, the deep and complex structure of a program is apparent only after parsing. This forces system developers to duplicate parsing functionality in every tool. The presenter describes an alternative XML-based representation of Arden Syntax that exposes the structure of a program to various tools and allows the translation of Arden Syntax to other languages. Several approaches to the modeling of language constructs are investigated and discussed.



Tudon Martinez

“The Good Samaritan”

Co-Author: **Alisha Romero**

UHD Faculty Mentor: **Dr. Heidi Ziemer**

Project Location: University of Houston-Downtown

We studied whether gender determines the likelihood of a driver stopping to assist a casually dressed gentleman stranded on the side of the road. Many studies report differences between men and women when helping others is involved. The probable explanation lies in the nature of the help required in the situation. Active doing, spontaneous, and anonymous acts are more likely to be carried out by men than by women. Women are more likely to help than men when helping is more planned, formal, personal, and less likely to involve direct intervention. We considered a number of variables: situation, type of help necessary, time of the day, physical condition of the person offering help, and previous experiences. Some studies have found that interveners in several kinds of dangerous events had more exposure to crime, both in personal experience and in witnessing others' victimization, they were also taller, heavier, better trained to cope with emergencies (e.g. trained in life saving skills, medical and/or police trained) and were more likely to see themselves as physically strong, aggressive, emotional and principled.

**Curtis Schlak**

"Project FuzzyGKS"

Co-Authors: **Victor Kaiser** and **Iride Gramajo**UHD Faculty Mentor: **Dr. Ongard Sirisaengtaksin**

Project Location: University of Houston-Downtown

Project FuzzyGKS is a Java-based fuzzy control system compliant with the International Electrotechnical Commission's standard 1131, Part 7. In addition to providing an extensible, multithreaded framework for fuzzy systems, FuzzyGKS can serialize and deserialize Fuzzy Control Language documents in real time, allowing runtime refinement of the Fuzzy Control Language documents in real time, allowing runtime refinement of the fuzzy system, such as by artificial neural networks or human intervention. FuzzyGKS has a robust and mature API which allows an extension from Type I fuzzy reasoning to Type II fuzzy reasoning. The contributors to the FuzzyGKS project used agile programming techniques to design, build, test, and release the basic system.

Poster Presentations*

College of Sciences & Technology

**Rukayat (Becky) Adelagun**

"Signaling Pathways of T cell Activation and Death Induced by CD28 Membrane Antibodies"

Co-Author: **Dr. Dorothy Lewis (Baylor College of Medicine)**

Project Location: Baylor College of Medicine

To determine how ANC 28 and β interferon interact with T cells to initiate cell death or activation, isolated T cells were treated with ANC 28 only, IFN β only and ANC 28 + IFN β . After 24 hours of incubation, cytometric analysis was used to detect activation by mean fluorescence intensity of CD69, and cell death was measured by annexin V staining. Preliminary results showed that ANC 28 induced cell death, and activation was reduced by IFN β . Next, *N*-linked glycosylation of CD28 of two different tumor T-cell lines, Jurkat cells and H9 cells, were compared since Jurkat cells are susceptible to death induced by ANC 28, whereas H9 cells are not. Cells were treated with different concentrations of PNGase or tunicamycin, and lysates were analyzed by western blotting using an antibody to CD28. Results with PNGase indicated a difference in the *N*-linked glycosylation of CD28 of Jurkat cells and H9 cells. In the presence of tunicamycin CD28 was detected only in Jurkat cells. These results suggest that CD28 glycosylation on Jurkat and H9 T-cell lines is different, which may be responsible for their differential response to ANC 28.

**Shiva Adhikari**

"Grand Challenge Problems"

UHD Faculty Mentor: **Dr. Hong Lin**

Project Location: University of Houston-Downtown

Grand Challenge Problems are problems which involve billions of calculations per second, problems which cannot be simulated just in a single workstation with a single processor, and problems that involve distribution of data among a list of powerful processes in the network. Computer scientists started to think about the idea of distributing data among different processes for the problems that involve a large number of calculations, augmenting the speed and efficiency of the program executions. Most of the complex computational problems such as weather pattern prediction are computed by using parallel computing. Some other examples of grand challenge problems are the Human Genome Project, real time radio-astronomy, galaxy simulations and seismic models.

*Student Researchers making oral presentations also presented a poster of their research.



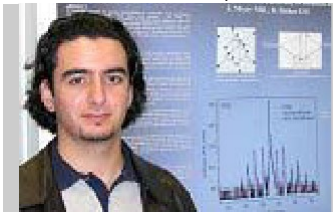
Salma Akbar
"Genomic Analysis Environment"
Co-Author: **Janet Siefert (Rice University)**
UHD Faculty Mentor: **Dr. Akif Uzman**
Project Location: Rice University

Databases that store nucleotide and amino acid genomic sequences need to be quickly accessible and contain completely sequenced as well as draft genomes for research purposes. In order to meet this challenge, all versions of the sequence comparison program BLAST were downloaded and databases containing nucleotide and amino acid sequences were created on a local server. The result was faster retrieval of genomic sequences and BLAST queries from a comprehensive database of draft and completely sequenced genomes. This "Genomic Analysis Environment" created is readily accessible over the Internet and can be updated with genomic sequences in various file formats.



Larry Bellot
"Signaling Pathways Mediating Growth and Anti-apoptotic Effects of Progastrin on Rat Intestinal Epithelial Cell Lines"
Co-Authors: **Drs. Azar Owila (UTMB) and Pomila Singh (UTMB)**
UHD Faculty Mentor: **Dr. Akif Uzman**
Project Location: University of Texas Medical Branch Galveston

The IP3/AKT pathway is implicated in proliferation and cell survival of various cancer cell lines. Progastrin (rhPG) exerts similar effects on rat intestinal epithelial cell lines. Gly-Gastrin activates the IP-3/AKT pathway. Beta-catenin and Cox-2 levels are increased in cell lines expressing the gastrin gene. We investigated whether these pathways mediate the growth and anti-apoptotic effects of rhPG. Cultured IEC-6 and IEC-18 cells were stimulated 0-15 min. or 24-48h with 0.1-10nM rhPG and analyzed by immunoblots using AKT, IP-3, Cox-2, and beta-catenin antibodies. rhPG increased the levels of Cox-2 and b-catenin in IEC-6 and IEC-18 cells, respectively. rhPG did not show any activation of IP-3 and AKT kinases within 15 min. stimulation of IEC-18 cells. These results suggest that PG stimulates growth of IEC cells via increased levels of Cox-2 and b-catenin. Thus, at least three pathways (Cox-2, Wnt and IP3/AKT) mediate the observed biological effects of PG on IEC cells.



Daniel Brenes
"Structural Characterization of a Group III/V Semiconductor Superlattice"
Co-Authors: **Drs. Rebecca Forrest, Jerry Meyer, and Donna Stokes**
UHD Faculty Mentor: **Dr. Rebecca Forrest**
Project Location: University of Houston-Downtown

An investigation concerning the structural characterization of a group III/V semiconductor superlattice grown by molecular beam epitaxy was conducted. The sample, an InAs/GaSb/InAs/AlAsSb superlattice, is of interest for infrared detector applications. The structural properties were determined from x-ray diffraction analysis. A computer simulation was used which modeled the lattice spacing, composition, thickness of the layers, and allowed for interdiffusion between the layers. The simulation modeled the x-ray diffraction data of the semiconductor using a χ^2 analysis. The analysis of the data will report the results obtained for the semiconductor superlattice structure.



Leslie Cook
"Isolation and Characterization of Fungi from Coastal Prairie Soils at Sheldon Lake State Park"
Co-Authors: **Blythe Parham, Linu Matthew and Stephanie Cabrera**
UHD Faculty Mentor: **Dr. Phillip Lyons**
Project Location: UHD and Sheldon Lake State Park

This research is part of the UHD Coastal Prairie Research Project (CPRP) and aims to determine the composition of soil fungal communities at Sheldon Lake State Park (SLSP). It is an essential aspect of efforts to understand how these communities interact with biotic, chemical and physical components of the Coastal Prairie. Both traditional culture techniques and molecular analyses will be used to establish a database for SLSP soil fungi. To date, we have established a catalog of more than 1000 fungal isolates from these soils representing well over 50 different species. The majority of these are mitosporic fungi; however, several ascomycetes and zygomycetes also have been isolated. We also have demonstrated that some of the isolates are inhibitory to bacterial species cultured from the same soils.

**Tim Davies-Balogun**

“Mutational Analysis of Novel Tyrosine Motifs (TxxYxxV/I) in the Cytoplasmic Tail of Human Natural Killer Cell Receptor, 2B4”

Co-Authors: **Drs. Porunelloor Mathew** and **Stephen Mathew (UNTHSC)**

Project Location: University of North Texas Health Science Center

Natural killer (NK) cells of the immune system kill infected cells and tumor cells. 2B4, a cell surface glycoprotein present on all (NK) cells has been implicated in the activation of NK-cell mediated cytotoxicity. Human 2B4 (H2B4) has been found to contain four tyrosine-based motifs (TxxYxxV/I), and that phosphorylation of tyrosine in the motifs is required for its interaction with SAP, a modulator of 2B4 signaling. We hypothesize that threonine plays a significant role in 2B4 signal transduction because it is conserved in the novel motifs. To further understand the mode of action, we ask whether the threonine residue is critical to tyrosine phosphorylation and docking with SAP using *in vitro* mutagenesis.

**Brijesh Desai**

“NOW and PVM”

UHD Faculty Mentor: **Dr. Hong Lin**

Project Location: University of Houston-Downtown

NOW (network workstation) is a way to construct parallel computing environments using available computing facilities. PVM is a software system that provides a programming environment on NOWs. PVM is also a software package that permits a heterogeneous collection of UNIX and/or windows computers to be networked together as a single, large parallel computer. Thus, large computational problems can be solved more cost effectively by using the aggregate power and memory of many computers.

**Zehra Victoria Dilber**

“The Effect of Ultraviolet (UV) Light Intensity on the Thermal Response Characteristics of the Differential Photocalorimeter (DPC)”

Co-Author: **Fermin Lopez**

UHD Faculty Mentor: **Dr. Byron Christmas**

Project Location: University of Houston-Downtown

A differential photocalorimeter (DPC) measures the evolution of heat from UV-polymerizing systems, giving an “exotherm” plot that provides the total energy evolved and parameters related to the rate of the reaction. To insure the accuracy of data generated by DPC, an experiment was conducted to evaluate the linearity of the response of the DPC detector at various UV light intensities. The peak height of the exotherm, the total exotherm, and the time required to reach the peak were plotted as a function of UV intensity in order to determine the linear region of the instrument’s response.

**Juan Gallegos**

“Body Mass Index and Mortality”

Faculty Mentors: **Dr. Javier Rojo (Rice)** and **Dr. Ermelinda DeLaVina (UHD)**

Project Location: Rice University

The presenter will describe his summer research experience at the Rice University Summer Institute of Statistics program. The topic of research was to investigate any association between body mass index and mortality in a Hispanic cohort. Further, the presenter will discuss future research interests, which were inspired by the research.

**Arely Gonzalez**

“Analysis of Native Houston Plants: Plant Reservoirs of *Xylella fastidiosa*”

Co-Author: **Dr. Lisa Morano**

UHD Faculty Mentor: **Dr. Lisa Morano**

Project Location: University of Houston-Downtown

The bacterium *Xylella fastidiosa* causes Pierce's Disease in cultivated grapevines, as well as other plant diseases in asymptomatic plant hosts. A total of thirty-three native plants belonging to twenty-four different families were collected in the Houston area. Enzyme-linked immunosorbent assay was used on plant samples and on *Xylella fastidiosa* dilutions. This test, detected the presence of bacteria in many plants. Of the total native plants tested, 64% tested positive for *Xylella fastidiosa*. A wide variety of reservoirs for the bacteria indicates a serious threat to the propagation of the bacteria from alternate hosts to cultivated grapevines in this area.



Iride Gramajo
 “On Lower Bounds for the Independence Number of a Graph”
 UHD Faculty Mentor: **Dr. Ermelinda DeLaViña**
 Project Location: University of Houston-Downtown

This presentation is a summary of a graph theoretical research project. Dr. DeLaViña, project advisor, designed a program called Graffiti.pc, which makes conjectures about graph invariants. My work involved resolving conjectures on lower bounds on the independence number of a graph, which is defined as the cardinality of a set with the maximum number of vertices such that no two are adjacent, in terms of other easily computed graph invariants. A motivation for studying the independence number of a graph is that it is known to be computationally difficult.



Daniel Haddock
 “Metal Analysis of Field, Mima Mound, and Forest Soil Samples Collected at Sheldon Lake State Park”
 Co-Authors: **Drs. Scott Slough (UHD) and Melanie Barnes (TTU)**
 UHD Faculty Mentor: **Dr. Scott Slough**
 Project Location: UHD, Texas Tech University and Sheldon Lake State Park

Field, mima mound, pothole, and forest soil samples were collected from Sheldon Lake State Park to determine if farming had affected the metals composition of the soil. The basic metal composition and Loss On Ignition (LOI) rates of 24 samples were determined via ICP spectrophotometry. Fe, Mg, Al, Ca, K, Na, Mn, Mo, Ni, Cr, Be, Cu, V, Cd, Sr, Ti, Be, P, Pb, As, Y, Sc, and Nb concentrations were determined with precisions ranging from parts per million to parts per billion. Metal concentrations did vary by soil site with farmed soils containing higher concentration of metals.



Maisam Lakhani
 “Performance Analysis of Parallel Computing”
 UHD Faculty Mentor: **Dr. Hong Lin**
 Project Location: University of Houston-Downtown

There are two approaches to fire protection: (1) the prescriptive approach that indicates how many hours the wall of a building should withstand a fire before it collapses; and (2), the performance approach is one that analyzes the engineering aspects of a fire and the behavior of materials under fire. The fire model is a simulation in a computer involving all determinants of the intensity, extent, and duration of a fire in a building. These factors are combustibles, room dimensions, windows, doors and fire extinguishers. The curriculum of the Safety and Fire Protection major in Engineering Technology at UHD places great emphasis on fire models and is classified as a “performance-based” fire protection program.



David Lang
 “A Preliminary Study of Animal Diversity in Sheldon Lake State Park”
 Co-Author: **Ross Eglund**
 UHD Faculty Mentor: **Dr. Deanna McCullough**

A previously cultivated area of Sheldon Lake State Park will be converted into grassland prairie and wetlands. Animals/animal signs were collected or observed as part of the ongoing ecological study at Sheldon Lake State Park. Varying techniques were used for the capture and/or observation of animals present in the park. Our results show various diversities of animals in each of the areas studied in the park. This project will continue throughout the conversion of the Sheldon Lake State Park cultivated field areas into grassland prairie and wetlands. Future data will be compared with current data of the entire research program and monitored for changes in ecological balance. Animal diversity plays a major role in this balance and will be reevaluated in future works.



At left: Scholars Ross Eglund, Vien Lam and David Lang interact with guest during poster session.



At right: Scholar, Daniel Brenes discusses his research with guest, Dr. Gyanesh Khare, Kingwood Technology Center, Chevron Phillips Chemical Company, Kingwood, TX.



Nadia Lera

“Early June *Xylella fastidiosa* Levels of Three Varieties in a Texas Vineyard”
UHD Faculty Mentor: **Dr. Lisa Morano**
Project Location: University of Houston-Downtown

Pierce’s Disease is a serious disease in grape vines and is caused by *Xylella fastidiosa*. *X. fastidiosa* resides in the xylem of vines and as a result it prevents water conduction to leaves by physically blocking these vessels. In June 2003 eighty-one leaf samples of the three hybrids (Blanc du Bois, Cynthiana and Black Spanish) were collected from a vineyard in the Gulf Coast region in Texas. An Enzyme Linked Immunosorbent Assay (ELISA) was run on all samples. Polymerase Chain Reaction (PCR) was then performed on selected samples. Data from ELISA indicated the presence of *Xylella fastidiosa* in all three varieties. From PCR results, Cynthiana appeared to have higher *X. fastidiosa* levels. Analysis of Variance (ANOVA) was also run on ELISA values to determine if there was a statistical difference between varieties. Results showed no significant difference between these hybrids at this time.



Teresa Martinez

“The Effect of UV-Dose and Peak Irradiance on the Type and Level of Non-Crosslinked Components Present in UV-Polymerized Films”
UHD Faculty Mentor: **Dr. Byron Christmas**
Project Location: University of Houston-Downtown

A size-exclusion chromatography (SEC) investigation was conducted to determine the relative amounts and types of non-crosslinked, solvent-soluble components in UV- polymerized films. Initially, a 2³ factorial screening experiment was used to optimize the flow rate, temperature, sensitivity, and injection volume of the SEC instrumentation. Using these optimized parameters, the effects of UV dose and peak irradiance on the production of non-crosslinked components were subsequently determined. The results are obtained through chromatography software and interpreted using accepted mechanistic concepts for free radical polymerization processes.



Mai Nguyen

“PLTL Spells Success in College Algebra at UHD”
Co-Authors: **Jennifer Bustos** and **Aaron Murray**
UHD Faculty Mentor: **Ms. Mitsue Nakamura**
Project Location: University of Houston-Downtown

The Peer Led Team Learning (PLTL) Workshop is a pedagogical model that engages teams of six to eight students in learning math or science guided by a peer leader. We were first in the nation to implement the PLTL Workshop in College Algebra. Original workshop materials created by one of us (Nakamura) are available online. The National PLTL Workshop program is linked to UHD’s PLTL Workshop via the internet. PLTL workshops provide active learning experiences for participants and focuses on improving students’ understanding of difficult concepts. PLTL also benefits peer leaders. Workshop leaders perform better academically after this leadership experience. UHD offers two workshops in College Algebra each semester; over 500 students have participated since fall 2001. The National PLTL Conference will be held in Houston, Texas, in 2005.



Thiet Nguyen

“Instrumentation and Data-Logging Using PC Serial Port”
Co-Authors: **Meng Tian** and **Amenual Berhe**
UHD Faculty Mentor: **Dr. Weining Feng**
Project Location: University of Houston-Downtown

Due to its broad availability, RS232 serial port on every PC has been widely used to interface with scientific and engineering instruments for the purpose of data visualization and logging. In this research project, the RS 232 protocol is studied in detail along with a case study of interfacing an engineering digital instrument using serial port.



Akash Patel
"Parallel Libraries"
UHD Faculty Mentor: **Dr. Hong Lin**
Project Location: University of Houston-Downtown

MPI is a library specification for message passing, proposed as a standard by a broadly based committee of vendors, implementers, and users. A process is a program counter and address space. MPI is for communication among processes, which have separate address spaces. Intercrosses communication consists of synchronization and movement of data from one process address space to another. MPI provides a powerful, efficient, and portable way to express parallel programs. I am going to talk about Parallel Libraries that are associated with MPI. MPI was designed to enable libraries, which may eliminate the need for many users to learn MPI.



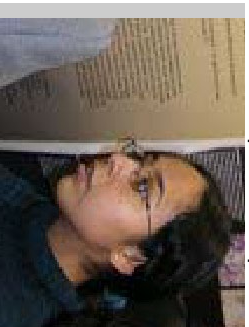
Dipal Patel
"Biochemical and Molecular Analysis of Bacteria in Martian Simulant Soil"
Faculty Mentors: **Dr. Poonam Gulati (UHD)** and **Dr. Penny Morris-Smith (NASA; UHD)**
Project Location: University of Houston-Downtown

Bacteria and Archaea are probably the oldest forms of life and have existed on Earth for most of time. Assuming that bacteria could exist in other environments, Martian Simulant Soil is being analyzed for signs of bacteria, which would indicate signs of life on Mars. The stimulant soil is obtained from Pu'u Nene, an ash cone on the Hawaiian Island, and closely matches the color and particle size of soil on Mars as determined from studies using probes. Most bacteria exist in nature in biofilms, which is their primary mode of survival and safe habitat. Within the biofilm, bacteria synthesize and secrete polysaccharides, which protect them from environmental insults. In this study, bacteria were isolated and identified by utilizing culture, biochemical and molecular techniques. Detection of biofilm formation was accomplished by using two methods, "Isolation of biofilms from soil crumbs" and "Measurement of biofilm density using spectrophotometer." The data demonstrates biofilm formation from altered ash, and the isolation and identification of a few bacterial species. Although the molecular techniques show promise, further work is needed to obtain reliable data for identification of the organisms.



Patricia Ramon
"Evaluation of Mycorrhizal Levels in Three Soil Types at Sheldon Lake State Park"
Co-Author: **Arbella Roman**
UHD Faculty Mentor: **Dr. Lisa Morano**

Three different soil types at Sheldon Lake State Park were evaluated for their level of beneficial mycorrhizae. Mycorrhizae is a mutualistic or symbiotic relationship between plant roots and soil fungi where plants get nutrients from the fungi and the fungi gain sugars from the plant. Mycorrhizal levels were compared using a corn bioassay. After twenty-eight days, corn roots in different soils were evaluated for their % hyphae, vesicle and arbuscule infection. Analysis of six replicates of each three soil types (forest, regular soil, and mima mound soil) showed that roots in mima mound soils had a significantly greater amount of arbuscules ($p=0.04$) and significantly greater vesicles ($p=0.0084$). Perhaps mycorrhizae are more important in the sandier soils. DNA extraction and PCR using general and mycorrhizal specific primers verified that mycorrhizae were present. These molecular techniques will allow for specific sequencing of mycorrhizal species.



Arbella Roman
"Soil pH and Texture Analysis of Forest, Agricultural and Mima Mound Soils at Sheldon Lake State Park"
Co-Author: **Patricia Ramon**
UHD Faculty Mentor: **Dr. Lisa Morano**
Project Location: University of Houston-Downtown ; Sheldon Lake State Park

Texture and chemical properties of soils are major factors determining plant growth. We investigated soil pH and soil texture (% sand, silt and clay) with six replicate sites of forest, agricultural and mima mound soil areas at Sheldon Lake State Park. This initial soil information will be important for comparison when this area is restored to prairie. There were significant texture differences between soils. Mima soils had higher sand than agricultural or forest soils ($p < .05$). Forest soils had significantly higher silt ($p < .05$) and agricultural soils had higher clay ($p < .01$). There was no statistical difference in pH between the soils ($p = .09$).



Janeth Sanchez

“The Effect of Low Levels of UV-Dose and Intensity on the Thermomechanical Properties of UV-Cured Films”

Co-Author: **Jannie Marie Dilber**

UHD Faculty Mentor: **Dr. Byron Christmas**

Project Location: University of Houston-Downtown

An investigation was conducted to determine the effects of very low levels of UV dose and peak irradiance (PI) on the thermomechanical properties of UV-polymerized films. Earlier work demonstrated an apparent lack of PI effects for values above 400 mW/cm². The current study focused on PI levels from about 80 mW/cm² up to about 400 mW/cm² to determine if a free-radical “saturation effect” exists below 400 mW/cm². Results are interpreted with this question in mind.



Jorge Santos

“Performance-Based Fire Protection”

UHD Faculty Mentor: **Dr. Alberto Gomez-Rivas**

Project Location: University of Houston-Downtown

There are two approaches to fire protection: (1) the prescriptive approach that indicates how many hours the wall of a building should withstand a fire before it collapses, and (2) the performance approach that analyzes the engineering aspects of a fire and the behavior of the wall under fire. From this analysis, a wall of specific materials and dimensions is used in the building to withstand a fire. Fire is a complex natural phenomenon that requires several traditional sciences for its analysis. The fire plume involves thermodynamics, fluid mechanics, chemistry and computational fluid dynamics (CFD). With the help of these sciences, especially CFD, many universities, research institutions and the National Bureau of Standards (NIST) have developed “Computer Fire Models.” The fire model is a simulation in a computer involving all determinants of the intensity, extent, and duration of a fire in a building. These factors are combustibles, room dimensions, windows and doors. Fire extinguishers are also included in some models. The models have been validated by comparison with test and historical records from building fires. The curriculum of the Safety and Fire Protection major in Engineering Technology at UHD involves the presentation of engineering principles and comparison with the predictions given by the fire model. Therefore, the program is classified as “performance-based” fire protection.



Stephen Seetaram

“Analysis of Bacterial Diversity at Sheldon Lake State Park”

Co-Authors: **Evelyn Odeh, Sanu Mathew, and Dipal Patel**

UHD Faculty Mentor: **Dr. Poonam Gulati**

Project Location: University of Houston-Downtown ; Sheldon Lake State Park

The coastal prairie, a native ecosystem along the Texas coast and Louisiana, is diminishing and considered at risk. There are major efforts underway to restore the coastal prairie and one such project is taking place at the Sheldon Lake State Park. The restoration provides a wonderful opportunity to study changes in soil composition and populations of micro- and macro-organisms. It is important to first establish a baseline of the resident flora and soil composition. Then data will be collected at different times during the restoration and compared to the baseline data. Soil samples from three major areas, mima mound, grasslands, and forest, including 18 different sites were collected and bacteria were isolated and identified. Gram stain, biochemical tests and molecular analysis were used for identification. Twenty-three bacteria were isolated and purified. Of these, ten were identified using biochemical tests. The molecular analysis, although showing promise, has not yielded any data.



Shakti Sharma

“An Investigation of UV-Polymerizable Thiol/Acrylate-Functional Systems, Part D”

Co-Authors: **Thanh-Mai Vo, Jannie M. Dilber, and Dr. Byron Christmas**

UHD Faculty Mentor: **Dr. Byron Christmas**

Project Location: University of Houston-Downtown

An investigation was conducted to determine the effects on relative reactivity of adding a trifunctional thiol to UV-polymerizable, acrylate-based systems. Experiments were performed with systems containing one or more monomers in each formulation with no oligomers. The relative reactivity of each formulation was measured using differential photocalorimetry (DPC) methods. All of the results are reported as a function of the concentration of thiol-functional monomer and/or photoinitiator or photosensitizer present in the formulation. The gellation time of each formulation was observed and recorded. This provides information on the shelf-stability of each formulation.



Fatima Sultana

“Phylogenetic Relationships Among Plant Genera of the Mimosidae”
UHD Faculty Mentors: **Dr. Deanna McCullough** and **Dr. Phillip Lyons**
Project Location: University of Houston-Downtown

This project analyzes the plant chloroplasts DNA (cpDNA) sequences of the gene for ribulose biphosphate carboxylase (Rubisco) large subunit. I have analyzed cpDNA of plants of different genera and species within the Mimosidae and intend to show relatedness based on their respective Rubisco sequences. My research has focused on the taxonomy of *Mimosa spp.* and the plant previously placed in the genus *Schrankia*, now incorporated within *Mimosa*. I want to determine whether these should be one genus or two, and how they are related to other genera of the subfamily Mimosoidea (family Fabaceae), primarily *Neptunia*, *Acacia*, and *Albezia*. Total DNA was extracted from various plant species of *Mimosa*, *Schrankia*, *Neptunia*, *Acacia*, and *Albezia* followed by PCR amplification of the Rubisco large subunit. The PCR product was 1420 bp, which is consistent with the known size of this gene. The PCR products of these four different species were cloned and the DNA sequence determined. Phylogenetic relationships were determined by constructing phylogenetic trees and selecting the tree with the greatest parsimony.

Photo unavailable.

Mustafa M. Syed

“Grid Computing”
UHD Faculty Mentor: **Dr. Hong Lin**
Project Location: University of Houston-Downtown

The general principle of grid computing consists in the availability of a network that connects geographically spread computing and storage resources while giving many user groups access to this network. Each user can gain access to the totality of the resources (computing capacity, memory, software, storage, ...) that have been added to the network by other members of the network. Grid computing means in fact a globalization and virtualization of computer infrastructures. The term grid comes from the concept of electricity grid that is available in the industrialized world and where all power plants are connected to each other in a grid structure.



Meng Tian

“Biomedical Instrument to Detect EKG Signal”
UHD Faculty Mentor: **Dr. Weining Feng**
Project Location: University of Houston-Downtown

The human body contains sets of steady electric potential fields, which can be detected by biomedical instruments. The purpose of this research project is to build and test a biomedical instrument to detect biological signals (EKG, EOG, and EMG). The basic version of the instrument system consists of electrodes, a high-gain instrumentation amplifier, and a digital oscilloscope. The focus will be given to the electrocardiogram signal, ECG or sometimes called EKG, which represents the cardiac cycles. The electrodes detect EKG signals and, through the different stages of amplification, the 1mv signal will be amplified to 100mv and displayed on the digital oscilloscope for visualization. This signal can be further analyzed for the clinical condition of the individual heart.



Thanh-Mai Vo

“An Investigation of UV-Polymerizable Thiol/Acrylate-Functional Systems, Part C”
Co-Authors: **Jannie Dilber, Shakti Sharma, Dr. Byron Christmas**
UHD Faculty Mentor: **Dr. Byron Christmas**
Project Location: University of Houston-Downtown

An investigation was conducted to determine the effects on relative reactivity of adding a trifunctional thiol to UV-polymerizable, acrylate-based systems. Experiments were performed with systems containing a blend of two monomers in each formulation with no oligomers. The relative reactivity of each formulation was measured using differential photocalorimetry (DPC) methods. All of the results are reported as a function of the concentration of thiol-functional monomer and/or photoinitiator or photosensitizer present in the formulation. The gellation time of each formulation was observed and recorded, which provides information on the shelf-stability of each formulation.



Carolina Yong

“Message Passing Standardization and Its Future”

UHD Faculty Mentor: **Dr. Hong Lin**

Project Location: University of Houston-Downtown

My topic of this research is “Message Passing Standardization and Its Future.” MPI, also known as MPI-1, is a standard for message passing interface. MPI is a message-passing application programmer interface, together with protocol and semantic specifications for how its features must behave in any implementation such as a message passing and collective operations, all scoped to a user-specified group of processes. It is also a large number of implementations from both research institutes and vendors allow ease of migration to and from an increasing number of current and future architecture. The new features in future version of MPI will incorporate singled-sided communication, inter-communicator collective operations, and parallel I/O in MPI-2.



Linu Mathew and Leslie Cook isolating fungi from soil samples collected at Sheldon Lake State Park.



Shakti Sharma working in the Center for Applied Polymer Research in the Department of Natural Sciences at UHD.



Tittu Mathew working in the Seed and Plant Technology Lab at UHD.



Nadia Lera, Patricia Ramon, and Arbelia Roman collecting soil samples at a local vineyard.



David Lang collecting insects at Sheldon Lake State Park.

Undergraduates at UHD in the College of Sciences and Technology are engaged in research on and off-campus year-round. Students are encouraged to participate in full-time paid research programs and internships during the summer months. The students look forward to the opportunity to present their research projects at the Student Research Conference held on the UHD campus each year.

Poster Presentations

Behavioral/Social Sciences Class Projects

Anthony Adame, "Marijuana: Testing the Gateway Theory at UH-Downtown"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Glicelda Aguila, "Relationship Between Temperament and Career Choice"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

George Arango, "People's Perceptions of Professionals with Tattoos"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Tracie Askew, "Aggression Amongst SUV Drivers"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jesus Avila-Escamilla, "Social Class Identity in Higher Education"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Andrew Barr, "Drinking Among College Students"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Indira Bayne, "Day versus Night, Young versus Old, Men versus Women:
Who Rules in Study Skills"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Anthony Bernard, "What Does Happiness Mean to You?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Latasha Blair, "Ethnic Group and the Decision to Continue Education"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

JB Bobbit, "Contributing Factors to Academic Success at UH-Downtown"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

James Bowers, "The Sounds of Emotions"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Malika Bradley, "Parents' Awareness of Their Children's Attachment Level"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Marti Castillo, "Are You As Clean As You Think?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Lourdes Cerda, "College Students' Reactions Toward Romantic Partner's
Infidelity"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Conchata Clark, "The State of Student Health Care"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Derek Cogdill, "Music and Moods"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Piran Commissariat, "What Makes People Turn to Violence?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Adriana Contreras, "Romantic Jealousies: Influences and Intensities"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Kelly Crusham, "The Impact of Lifestyle on G.P.A.: A Descriptive Study"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Mark Dailey, "To What Degree Do People Feel Responsible For Their
Own Safety and Security?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jennifer Dawson, "America's Speed Limit: Methamphetamine"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Chris Evans, "Brothers and Sisters"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Courtney Flack, "How Do I Love Thee?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Elizabeth Garcia, "Religion and First Sexual Intercourse: Gender
Differences Observed"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jesus Garcia, "Do UHD Students Support the Death Penalty?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Linda Garrett, "Getting Down to the Seat of the Problem (Or is the Seat THE
Problem?)"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Dina Ghetes, "Gender Differences in Pre-school Play Behavior: An
Observational Study"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Luis Gongora, "Attitudes Towards Law Enforcement Officers: A Descriptive
Study"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Cynthia Guerrero, "Fatigue and College Students"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

James Etta Harrison, "Who Killed the Gentlemen?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Debra Hatley, "Death: Are You Prepared?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Nichole Hillard, "Gender Differences in Attitudes Toward Animal Research"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Dan Isgro, "Gender Differences in Fear of Flying"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Tamela King, "Does Prayer Affect People's Physical Health?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Ajitha Kurian, "Cheating: Men Versus Women"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Man Wai Law, "Comparing Attitudes Toward Marriage Between
Caucasians and Asians"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Dallas Laws, "Attitudes Toward the Legalization of Prostitution"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Diana Leal, "Caffeine and Its Effect on You!"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Shanequa Levigne, "What Makes You Attend Class?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Ken Lim, "Do College Students Really Graduate in Four Years?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Ashley Locke, "Sexually Transmitted Diseases: Are You at a Greater Risk?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Rebecca Martinez, "College Students' Definitions of Sex"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jayson McKee, "Plagiarism: Is It Still Considered Cheating?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Juan Mena, "What Do Women Want?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Zeljka Momirovik, "Eating Disorders and Depression Among College Women"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Monique Mucker, "The Impact of Social Class Upon Physical Appearance"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Rashida Murphy, "Is Living Together the New Marriage?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Bitra Najimipour, "The Relationship Between Religious Beliefs and Assisted Suicide"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Vernon Nauls Jr., "Cell Phone Usage at University of Houston-Downtown"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Maya Newman, "Cell Phone Obsession"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Uka Nwosu, "Challenges Facing Working Mothers"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Robanna Ogden, "UHD Students' Views Toward Presidential Candidates of Differing Ethnicities"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Christopher Pena, "Are Visible Tattoos Attractive?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Trisha Pfluger, "Spirituality and Religious Beliefs: The Endless Search"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Joselyn Pierre, "Are African American Children More At Risk Academically than Children of Other Races?"
UHD Faculty Mentor: **Karena Valkyrie**
Project Location: University of Houston-Downtown

Lagatha Polk, "The Relationship Between Parents' and Children's Educational Level"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Erin Porter, "Sleepy? How's your GPA?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Shelly Power, "Classroom Seat Selection and Academic Success"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Zinnia Puente, "Gender Differences in Cell Phone Usage"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Dennis Ratemo, "High School Drop Outs: Underlying Economic and Social Factors"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Marci Renfro, "Friends Forever: Factors Underlying Long-Term Friendships"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Nakeesha Reynolds, "Evaluating Why African-Americans Don't Save Money"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Angelica Rivera, "Perceived Satisfaction with University Support Services"
Co-Authors: **Norma Sosa** and **Ronald Alas**
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Elizabeth Rivera, "The Effect of Public Speaking on UHD Students"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Eric Rodgers, "Platonic Interracial Relationships Among College Students"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Ashley Rogers, "Attitudes Toward the Death Penalty"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Behnaz Saffari, "Physical Attraction versus Personality"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Maria Salinas, "Why Do Alcoholics Deny the Consequences of Drinking?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Maribel Santamaria, "Student Life and Grade Point Average"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Donald Schmit, "Nursing Home Care: A Search for Knowledge and Attitudes"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jennifer Schnepp, "The Effect of Birth Order on Individual Personality"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Allison Silva, "The Relationship Between Stress and Multiple Personality Disorder"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Fleeter Thompson, "Giving to the Homeless"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jene Thompson, "The Effects of Female Circumcision in Regards to Religious and Cultural Beliefs"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Kayleen Thorson, "Cheating: Who is the Real Culprit?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

William Trippet, "Understanding Sleeping Problems in College Students"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Lorencita Villegas, "The Use of Ecstasy in the Student Population"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Gary Watson, "The Importance of Virginity to the College Student of Today"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Sharon Webb, "Healthy Drink Awareness at UHD"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Jackie Welch, "Risk Factors Associated with Childhood Obesity"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Sherina Welch, "Eating Disorders and Women of Race"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Melissa Williams, "Does Time of Day Affect Cognitive Ability?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Tanisha Wilson, "Attitudes Toward Bedwetting in Children"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

William Lee Winters, "Does Increasing Tuition Have an Adverse Effect on Student Enrollment?"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown

Heather Wyatt, "Effect of Gender-Specific Toys on Personality"
UHD Faculty Mentor: **Dr. Heidi Ziemer**
Project Location: University of Houston-Downtown



UHD President, Dr. Max Castillo, opened the 2003 SRC, welcoming over 200 participants and guests.



Guest speaker, Dr. Phebe Chen, Associate Professor & Chief of Ultrasound, Dept. of Radiology, UT-Houston Health Science Center. Dr. Chen is 2003 UHD Alumnus of the Year.



Dr. George Pincus, Dean, College of Sciences and Technology, and Scholar Shakti Sharma.



Audience awaiting the closing comments presented by Dr. Larry Spears, Professor of Chemistry and UHD Scholars Academy Co-Director.



Guests Dr. Bernd Budelmann, UTMB Galveston, and Dr. Eduardo Baralt, Chevron Phillips Chemical Company, Kingwood Technology Center, with Scholars Academy Director, Dr. Suzette Mouchaty, during the poster session.

The **UHD Scholars Academy (SA)** is an academically competitive program in the College of Sciences and Technology (CST) that promotes scholarship and student success for undergraduate students majoring in Science, Technology, Engineering and Mathematics (STEM).