



Undergraduate Research Day 2012

**Thursday, October 11
4:00 p.m.**

Elizabeth D. Rockwell Pavilion &
The Honors College

2nd Floor,
M.D. Anderson Library

Poster Presentations by UH Undergraduates

Presented by:

Office of Undergraduate Research &
The Honors College

UNIVERSITY of **HOUSTON**

Undergraduate Research Day

Elizabeth D. Rockwell Pavilion

M.D. Anderson Library

October 11, 2012

4:00 p.m.

4:00-5:00 p.m. Viewing of Student Posters

5:00-5:30 p.m. Welcome and Remarks

John Antel, Ph.D.

Senior Vice Chancellor for Academic Affairs,
University of Houston System
Senior Vice President for Academic Affairs and Provost,
University of Houston

Rathindra N. Bose, Ph.D.

Vice Chancellor for Research and Technology Transfer,
University of Houston System
Vice President for Research and Technology Transfer,
University of Houston

Stuart Long, Ph.D.

Associate Dean of Undergraduate Research and
The Honors College, University of Houston

5:30-6:00 p.m. Awards and Continue Poster Viewings

*Thank you to the **Gerald D. Hines College of Architecture** for printing the posters for the event, and the **Office of Undergraduate Discovery Programs** for contributing toward the shirts and awards.*

*And a very special thank you to the **Provost's Office, the Division of Research, and The Honors College** for their generous support of the Office of Undergraduate Research.*

On our eighth annual Undergraduate Research Day we applaud the accomplishments of the 56 students who participated in the 2012 Summer Undergraduate Research Fellowship program, and the over 70 additional undergraduate researchers who completed mentored research projects during the past year. Each year this event continues to grow in size and stature. The increasing number and variety of the projects presented today is a testament to the thriving undergraduate research culture here at the University of Houston. Our students continue to impress us with their talent, intelligence, hard work, and dedication. It's exciting to see what they have achieved in the past 12 months, and to witness their delight in sharing those endeavors with others.

To the students presenting at Undergraduate Research Day: We congratulate you! You've gotten a taste of the effort and perseverance required to break ground in your chosen career paths. Conducting research, as you have learned, is not without its frustrations: setbacks are to be expected in the pursuit of new, shareable knowledge. We recognize how well you have overcome those obstacles, and have already started contributing to your field. In addition, you are developing long-lasting mentorships with faculty. The graduates and undergraduates you have met may have already become colleagues and friends. We hope you will stay in contact with them as you go forward into your profession. Take pride in all you have accomplished this year—you have already started building the foundation for your future success.

Special thanks must also be extended to the faculty mentors who provide our students with the rare opportunity to participate in real world projects that give students a window into the realities of their profession. Under your guidance, they cultivate the skills and confidence that will serve them well throughout their professional lives. Thank you, faculty mentors, for helping to shape the next generation's leaders.

We were fortunate to have a dynamic range of speakers in our 2012 SURF Brown Bag Lecture Series (*visit page 41 for details*). SURF lecturers share experiences and provide advice, helping our students begin to model the life of a researcher, deeply committed to

his or her work. This series, a highlight of the summer research program, benefits our undergraduates by better preparing them for graduate or professional school or the work force.

The selection committee continues to do an outstanding job with the challenging task of reviewing the many applications we receive for scholarships and fellowships each year. They also provide the necessary guidance and feedback to assist us in modifying our office's policies and procedures. Their contributions are vital to the success of the Office of Undergraduate Research.

Last but not least, we thank the **Provost's Office**, the **Division of Research**, and **The Honors College** for their support. The funding we receive from these units allows us to bolster and expand the mentored research programs that enhance the academic experiences of hundreds of undergraduates last year.

It has been a truly rewarding year for our undergraduate researchers at the University of Houston, *and a privilege for us to support their endeavors*. We hope you enjoy this exciting day.

Stuart Long
Associate Dean of
Undergraduate Research and
The Honors College



Professor of Electrical and
Computer Engineering

Karen Weber
Program Director,
Office of
Undergraduate
Research



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Elizabeth D. Rockwell Pavilion

**The Office of
Undergraduate Research**

The Honors College

University of Houston

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Lynn Voskuil, an Associate Professor in the Department of English at the University of Houston, was the recipient of the Faculty Award for Mentoring Undergraduate Research for 2012.

Dr. Voskuil supervises a number of undergraduate students in the more traditional academic activities of thesis-writing and Provost's Undergraduate Research Scholarship (PURS) funded research projects, but she has perhaps done her most transformative work as faculty advisor to UH's undergraduate literary journal, *Glass Mountain*. She assisted the *Glass Mountain* staff in its ambitious expansion from a local publication that exclusively featured the work of UH students to a national journal that accepts hundreds of submissions a year from undergraduates all over the country. She was instrumental in launching *Boldface*—an annual, national summer writing conference for undergraduate and emerging writers.

"Lynn quickly saw the potential of [the] student-driven literary journal as a means of validating [the students'] independent creative expression, and of developing their editorial, administrative, and other professional skills," says Professor and English Chair Wyman H. Herendeen. Many of Dr. Voskuil's mentoring activities are devoted to creating forums outside the classroom, such as public readings, journal staff meetings, and fundraising events.

A student in Dr. Voskuil's Victorian Literature course, Tiffany Fiehn Thor joined the staff of *Glass Mountain*, and then became a Research/Pedagogy Assistant and Peer Mentor in Dr. Voskuil's Literary Criticism course. She says of the experience, "I was able to directly apply the culmination of research and mentoring skills she taught me to students from the many disciplines at UH."

Dr. Voskuil's emphasis on professional development has empowered her students to

submit their own work for publication in peer-reviewed literary journals and at important national conferences. In February 2012, *Glass Mountain* past and present senior staff members presented a panel at the Associated Writing Programs conference, the nation's most prestigious writing symposium. "Students I have spoken to describe with a sense of amazed gratitude the lessons they have learned in their work with Dr. Voskuil," comments Dr. Margot Backus, Associate Professor of English and Director of Graduate Studies. "She has offered them a radically transformed sense of themselves and their potential futures in their chosen academic field."

Vanessa Villarreal, a former editor at *Glass Mountain*, had this to say: "I do not believe I have ever met a more generous and energetic person with as much of a positive effect on others' lives...She is the keystone figure in the advance of undergraduates like me as well as the catalyst for the development of a thriving creative writing community." Vanessa received her BA from UH in 2011 and now attends the MFA program at the University of Colorado, a position she attributes directly to her experience with Dr. Voskuil.

"I can think of no better testament to my work mentoring our undergraduates than their success in excellent graduate programs," Dr. Voskuil states. "I hope to mentor students at the University of Houston for a long time to come."



Lynn Voskuil
Associate Professor
Department of English

SURF 2012 PARTICIPANTS

Strengthening Effect of FRP on Reinforced Concrete

SURF Student: Mamoun Adyel

Department: Civil and Environmental Engineering

Faculty Mentor: Ashraf Ayoub

The purpose of the research is to determine the strengthening effect of Fiber Reinforced Polymer on Reinforced Concrete. Two softening tests and one shear test were conducted using three 55" x 55" x 7" FRP-RC panels. The FRP sheet debonded before failure of the FRP-RC panel; therefore more ductility can be developed if the bonding between the FRP sheet and the reinforced concrete panel is more efficient. The bonding can be improved by using mechanical anchorage. The gain of strength when FRP is applied to reinforced concrete is in the range of 10 to 15%. Factors including FRP thickness, FRP configuration, FRP orientation as well as other factors possibly contribute to the strengthening effect of FRP on RC. More research tests need to be conducted to establish a constitutive law of FRP-RC subject to pure shear.



Poverty as Poor Health: Assessing and Addressing NTDs Among Vulnerable Populations

SURF Student: Amber Alaniz-Owens

Program: Medicine & Society

Faculty Mentor: Courtney Queen

On January 30, 2012, the London Declaration set forth a plan to eliminate or control 17 clinical infectious diseases formerly classified as neglected tropical diseases (NTDs). Until now, lack of early diagnoses, poor access to health-care, and low adherence to prescription antibiotic regimens, NTDs (neglected tropical diseases) and NIOs (neglected infections of poverty) have constituted to leading causes of disability in endemic regions and have contributed to the socioeconomic burden on families and communities through lost agricultural productivity, lost parenting time, and increased household costs associated with treatment and recovery (Queen, 2011). As the unifying characteristic of those who suffer from these infections, poverty itself, rather than poor health, and the subsequent vulnerability that it produces, is the subject of examination. While contemporary policy has targeted health, we explore poverty as both a cause and an effect of poor health and seek ways to use social theory and community-based participatory research methodologies to investigate problems and identify meaningful interventions on behalf of the vulnerable. Our findings describe rural and urban poverty in endemic communities as a lack of access to social goods such as capital, political voice, education, transportation, relationships, and mobility and point to the myriad ways in which policymakers might address these unmet needs.





REBO Potential for Zirconium Diboride

SURF Student: John Alred

Department: Mechanical Engineering

Faculty Mentor: Pradeep Sharma

Molecular dynamic is a type of simulations where the physical position and state of each atom are tracked. These simulations are on a larger scale than quantum mechanics, but takes into account effect which are left out in classical mechanics. A potential is a set of expressions which determine the atomic interactions in a molecular dynamic simulations. This poster summarizes the procedure of creating a Reactive Empirical Bond Order (REBO) potential for the material Zirconium DiBoride. Until now there have been no potential created for this material. The REBO potential is a simple potential which models energy changes very well but leaves out other effects, such as charge related effects. This allows for a fast simulation which will model the material in a variety of conditions to moderate accuracy.



Does Visual Acuity Affect Saccadic Adaptation?

SURF Student: Kennan Bieber

Department: Electrical and Computer Engineering

Faculty Mentor: Bhavin R. Sheth

This study attempts to explore the parameters that control saccadic adaptation. A saccade is a fast, directed movement of the eye which serves to relocate the gaze on objects that may be of interest. Saccadic adaptation is the ability of the ocular system to unconsciously adjust the way the eyes move to best view a scene or a target. The best documented form of saccadic adaptation is known as parametric adaptation, which occurs to correct for an eye movement that is inaccurate. In this study, the role of visual acuity as a factor in saccadic adaptation is considered. To emulate a drop in image clarity, a Gaussian blur is applied to a target on a computer monitor, and eye movements are tracked using an EyeLink II system. Preliminary results indicate that there may not be a significant connection between visual acuity and saccadic adaptation.



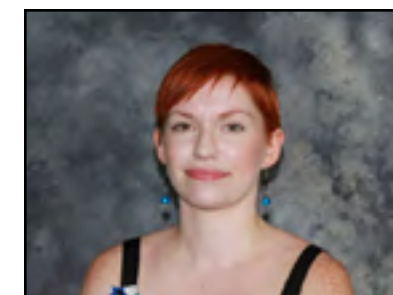
How Stress Affects Student Performance

SURF Student: Barry Brinker

Department: Health and Human Performance

Faculty Mentor: Thomas Lowder

Stress is an overarching term that includes both psychological and physical responses to a real or perceived threat. Physical responses to stress are often manifested through increases in heart rate, sweat rate, and hormones such as epinephrine and cortisol. We have examined responses to a physical and mental stressor (surgeons' performance during an observed, timed surgery). In the present study, we chose to focus on a mental stressor, that of a timed examination taken by volunteers in a junior-level physiology course. We collected saliva to measure cortisol levels prior to and immediately following the exams (four semester exams and a comprehensive final exam). We wanted to determine if salivary cortisol measures were a reliable method of determining psychological stress, and compared results to psychometric scores, facial expressions, and their exam grades. Our pilot data demonstrated that cortisol could be a reliable measure of stress, but more research is needed.



Tuning Gold Nanoshells

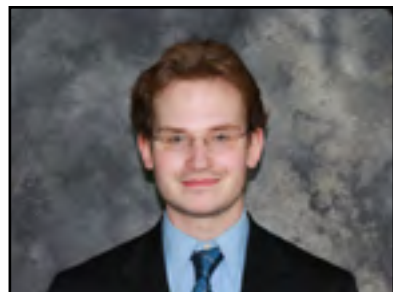
SURF Student: Blake Broussard

Department: Chemistry

Faculty Mentor: T. Randall Lee

A gold nanoparticle is a particle of gold that is so small you cannot see it with the naked eye. These particles have the ability to absorb specific wavelengths of light. When these particles absorb light they get hot. This property makes gold nanoparticles attractive for use in photothermal therapies. Certain photothermal therapies require that the gold nanoparticles be introduced into a person's body at a specific location, such as a cancerous tumor. Light can then be used to heat the particles and ultimately kill cells at the targeted location. However, in order for this approach to work properly, the particle must be able to respond to wavelengths of light that penetrate flesh; otherwise, the light would never reach the particle. Unfortunately, simple gold nanoparticles respond to wavelengths of light between about 520 nm and 580 nm. At these wavelengths, light cannot penetrate flesh. In contrast, gold nanoshells, which consist of a dielectric core (in this case silica) surrounded by a gold layer, can be tuned to respond to specific wavelengths of light. This tuning is possible because the wavelength at which gold nanoshells respond varies with the ratio of the thickness of the gold outer layer to the diameter of the dielectric core. By controlling the dimensions of the gold nanoshells, we can design them so that they can perform as a medium for photothermal therapy, overcoming the limitations of simple gold nanoparticles.





Appeal of the Immigrant Novel

SURF Student: Gregory Buchanan

Department: English

Faculty Mentor: Irving Rothman

We studied novels from the Irish-American, Italian-American, Jewish-American, Hispanic-American, and Asian-American immigrant cultures in order to better understand the nature of their appeal. Our research involves the work of Claude Lévi-Strauss, who argues that readers are attracted to literature involving the concepts of architecture, family, food, and space. These concepts may be interpreted in several senses. Any artificial construction may constitute architecture. Family can mean the nuclear family, an extended family, or a larger political unit. Food has three conceptual senses: any energy-producing matter that is both ingested and ejected, the exchange of words, and the exchange of warmth between lovers. Space can signify the extension of a relationship between individuals or be any invention of the imagination. We found that instances of these concepts occur frequently in the novels and believe that this accounts for the significant readership they enjoy.



Spatiotemporal Development of Late-Born Rods and Bipolar Cells and Their Synapses in Mice with Gestational Lead Exposure (GLE)

SURF Student: Jaime Carrillo

College: Optometry

Faculty Mentor: Donald A. Fox

The environmental neurotoxicant lead produces retinal, visual, neuro-motor and cognitive deficits in children. Fox and coworkers showed that low-level gestational lead exposure (GLE) produced a dose-dependent increase in the number of rod photoreceptors and bipolar cells in mice: corresponding to the increased rod-mediated electroretinogram in children. This resulted from an increased and prolonged retinal progenitor cell (RPC) proliferation. Our goal was to investigate the spatiotemporal development of rods, bipolar cells and their synapses. Immunohistochemistry and confocal imaging visualized the cells. C57BL/6 female mice were given tap water (controls) or a low-dose lead solution throughout gestation and until postnatal day 10 (PN10). Central retinal sections from PN0-PN14 were stained with cell-specific primary antibodies followed by secondary antibodies. GLE retinas had significant 2-3 day delays in the development of rods and bipolar cells, and their synaptic connections. The delay corresponds with the periods of increased and prolonged RPC proliferation and neurogenesis.



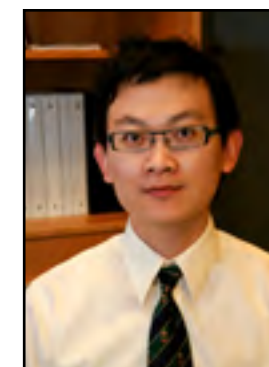
Effects of Tactile Cueing on Functional Movement Modulation on Parkinson's Disease

SURF Student: Martin Castaneda

Department: Health and Human Performance

Faculty Mentor: Jian Liu

According to the National Institute of Neurological Disorders and Stroke, about 50,000 new cases of Parkinson's Disease (PD) are reported annually. This makes PD one of the most prevalent neurodegenerative disorders in the United States. Due to reduced motor control, resulting from the loss of dopamine, common symptoms associated with PD involve abnormal gait patterns and reduced motor performance. To help alleviate these problems audio and visual cueing of gait has been extensively researched. However, audiovisual cueing increases the burden on executive cognitive function. Requiring minimal cognitive demand, tactile cueing (TC) may offer a more efficient way to improve motor performance than audiovisual cueing. This study aims to examine the effectiveness of TC on PD motor performance by delivering TC via a smart phone. If successful, this study could increase our understanding of sensorimotor integration in PD, characterize the role of TC in PD motor performance and validate the use of an inexpensive TC walking aid.



Water City: Phnom Penh

SURF Student: Meredith Chavez

College: Architecture

Faculty Mentor: William Truitt

The confluence of the Mekong and Tonle Sap Rivers presents a unique relationship of city to river. Once a year, the Mekong overflows into the Tonle Sap River, causing the smaller river to reverse course and expand an inland lake by 200 percent. This annual flood provides a harvest of food, stores water for the rest of the year, and generates a later fish harvest. The natural ecology of flood and dry season has long co-existed in the Khmer culture and the city of Phnom Penh. Now that relationship is threatened by large-scale development, urbanization of low lying areas, and extreme flooding. The city's original form and relationship to water is dramatically altered by current growth. This research strives to express an opportunity for design to bridge the gap between urban planning and ecological conditions by mapping the longstanding network of water bodies, flooding, and urbanization.





Pilot Study for Development of Nutritional Assessment Tool for Pre-Orthotopic Liver Transplantation Patients

SURF Student: Joel Cisneros Barrera

Department: Health and Human Performance

Faculty Mentors: Sharon Bode and Sherilyn Gordon-Burroughs



An association between malnutrition and chronic liver disease has been established producing negative outcomes in the ability to be listed for transplantation^{1,2}. Currently three methods for nutritional assessment non-specific to End-Stage Liver Disease (ESLD) are used in the nutritional assessment of pre-orthotopic liver transplantation (OLT) patients. In increasing order of cost and complexity they are: body composition analysis, traditional nutritional parameters, and subjective global assessment. Currently, no information regarding a cost-effective and objective nutritional assessment scoring tool specific for ESLD pre-OLT patients is available. The aim of this study is to identify nutritional parameters that best predict for malnutrition specific to ESLD in order to create a tool that may be validated to produce improved detection of the severity of malnutrition and need for nutritional intervention to optimize outcomes in OLT patients. Ideally, this tool will be more accessible and cost-effective in a clinical setting versus in vivo neutron activation analysis (IVNAA) & Dual-energy X-ray absorptometry (DXA), the gold standards to evaluate protein calorie malnutrition¹. We predict that the selected nutritional parameters will have a better approximation to metrics of severity of liver disease, such as MELD, to assess severity of malnutrition in liver disease than tools available not specific to ESLD malnutrition.

Identification of Druggable Kinase Targets in Prostate Cancer

SURF Student: Hannah Do

Department: Biology and Biochemistry

Faculty Mentor: Daniel Frigo



Currently, patients with advanced prostate cancer are treated with androgen ablation therapy. While this treatment is initially effective, most patients will experience a relapse of the disease within 1-2 years. Researchers have determined that androgen receptor (AR)-regulated signaling pathways are critical for the progression of prostate cancer. This discovery has led to extensive efforts by the pharmaceutical industry to identify new targets, specifically protein kinases, which would affect the signaling pathway. To identify druggable kinases involved in prostate cancer, we used the Published Kinase Inhibitor Set (PKIS) donated by GlaxoSmithKline and Roche. In the PKIS set, there are 602 kinase inhibitors which target a wide range of kinases. Our objective was to test each of these kinase inhibitor compounds to determine their effects on androgen-mediated prostate cancer cell growth. Eventually, the data generated from the Frigo Laboratory would be combined with other labs worldwide using PKIS to identify specific kinases.

Testing of Smart Aggregates in Mock Civil Structures

SURF Student: Jeremy Evans

Department: Mechanical Engineering

Faculty Mentor: Gangbing Song

Smart aggregates (SAs) are made by attaching a positive and negative wire feed to a piezoceramic patch, then encasing the patch in either marble or concrete. This casing protects the delicate piezoceramic from damage caused by stress within a civil structure. Piezoceramics are a special type of material, which will change shape slightly when they receive an electrical charge. Conversely, they will emit a charge when deformed mechanically. The wiring extrudes out of the SA, as well as outside the civil structure in which the SA is embedded. The wires can then be connected to the appropriate equipment in order to designate each SA as an actuator or a sensor. Those set as actuators receive an electrical charge from a function generator. Via the piezoceramic properties mentioned above, the actuator will deform, which will create a mechanical wave that propagates through the structure. Any damage in the concrete acts as a relief for the stress wave, thus changing the shape of the propagated wave. Those set as sensors will convert the received stress wave back into an electrical wave, which can be compared to the original wave in order to create an algorithm based damage index matrix. Our research will enable us to classify the severity of damage caused by natural phenomena and the aging of civil structures, which can then be used to predict failure and save lives.



Characterization of Nanoporous Gold Films for Low-Impedance Electrode Contacts

SURF Student: Cesar Figueroa

Department: Electrical and Computer Engineering

Faculty Mentor: Wei-Chuan Shih

It is highly desirable to reduce the size of individual electrodes in neural probes for deep-brain stimulation and recording in order to benefit from increased spatial resolution, improved signal quality, and diminished tissue rejection. A technique to wane the negative effects of a small geometric area in electrodes is to increase the electrochemically active surface area by adding nanoporous gold to the electrode surface. This project sought to investigate the impedance behavior of electrodes with nanoporous gold films on the surface, as well as the feasibility of the addition of such structures to existing neural probe designs. A flat sample resembling a neural probe with correct physical dimensions was fabricated as part of the project. The electrical impedance at various frequencies was recorded before and after the addition of nanoporous gold to the surface of the electrode on this sample. The data showed a ninefold reduction of impedance of the nanoporous covered electrode with respect to its solid metal counterpart. The results favoring nanoporous gold in terms of low electrical impedance as well as its relatively easy fabrication process show promise for future probe designs with nanoporous gold electrodes as their main feature.





Metamaterial Antennas with Application to Force Shields

SURF Student: Gregory Funchess

Department: Mathematics

Faculty Mentor: Daniel Onofrei

We present the basic physical and mathematical principals behind conductors, Gauss law, separation of variables technique for solving PDE, multipole expansion, and dielectrics. These topics form a necessary background for the understanding of anomalous localized resonance phenomena caused by charged objects approaching materials with negative index. Conservation of energy suggests that such structures may be able to act as a force shields, preventing any charged objects from approaching it.



Bond Behavior of Steel Structures Strengthened with Carbon Fiber Reinforced Polymers (CFRP)

SURF Student: Yohanna Gomez-Calvo

Department: Civil and Environmental Engineering

Faculty Mentor: Mina Dawood

According to the U.S. Department of Transportation, one in four bridges in the United States is classified as structurally deficient or functionally obsolete. Carbon Fiber Reinforced Polymer (CFRP) is an emerging rehabilitation material for existing steel infrastructure. The objective of this project was to gather experimental data that will validate numerical models that predict the bond behavior of CFRP-to-steel joints. The research focused on analyzing the relationship between bond strength and the end plate geometry of such joints. A non-contact measurement system was used to measure the strains induced in the adhesive at the end of the joint. The experimental strain contours are qualitatively similar to those predicted by the numerical models, showing the peak strain near the end of the bonded joint. However, the magnitude of the predicted strains did not correlate well with those predicted by the numerical models. This was attributed to the relatively small magnitude of the displacements in the test specimen which could not be accurately measured using the current measurement system. While the technique is promising further refinement is needed to accurately measure the strain fields within the adhesive layer.



Using Objective-Based Homework to Improve Student Achievement in a Circuit Analysis Course

SURF Student: Rebecca Habib

Department: Electrical and Computer Engineering

Faculty Mentor: Len Trombetta

In the Electrical and Computer Engineering Department of the Cullen College of Engineering at the University of Houston, ECE 2300 (Circuit Analysis) is a course with historically low pass rates and high drop rates. To address this issue, we developed and tested the effectiveness of three new “objective-based” homework problems for the classroom, in order to improve learning in ECE 2300. These homework sets are graded in difficulty, and have clearly stated learning objectives. By implementing these assessments we hope to increase student achievement in this circuits analysis course, which will lead to increased student retention and graduation rates for the engineering college. Preliminary feedback from five students who have completed the assignments indicates that the new homework will be effective. We will be testing these assignments in the fall 2012 Circuits Analysis class.



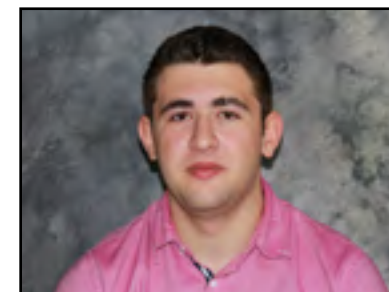
The Molecular Vibration of Odorants as a Salient feature in *Drosophila* Olfaction

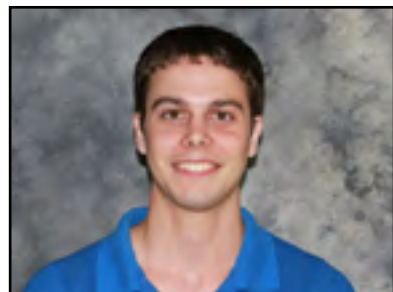
SURF Student: Jihad Harmouche

Department: Biology and Biochemistry

Faculty Mentor: Gregg Roman

It has been proposed that odorant receptors can detect the quantum vibrations within an odorant molecule, and use these vibrations as a way to distinguish odorants. We examined this hypothesis using the behavior of *Drosophila melanogaster* in a four choice olfactometer to determine whether these flies can discriminate naively between odorants of identical shape but different molecular vibrations. We also examined the conditioned approach in a T maze. Canton-S flies were used as experimental flies while smell-blind *orco2* flies were used as a control. Discrimination was determined by using a one-way analysis of variance. Three odor pairs were used to test the naïve approach, and in all, canton-S flies showed significant discrimination while none was observed with *orco2* flies. Similar results were observed in the conditioned approach; generalized conditioned deuterium avoidance was also observed. These findings support the hypothesis that molecular bond vibrations are a salient feature in *Drosophila* olfaction.





Between Berlin and a Boycott: African-Americans, Jewish-Americans and the Debate over the 1936 Olympics

SURF Student: Nicholas Heisig

Department: History

Faculty Mentor: Irene Guenther



Adolf Hitler's ascent to power in 1933, two years after the 1936 Olympic Games were awarded to Germany, provoked immediate debate over whether the Games should remain there, be relocated elsewhere, or cancelled outright. As the largest delegation, debate was most contentious in the U.S., where African-Americans and Jewish-Americans were athletically successful, felt threatened by Nazi policies, and deeply engaged in this discussion as prominent American communities. Exploring the positions taken by athletes, luminaries, newspapers, and organizations helps to illuminate the similarities and differences between the two groups. Many striking patterns emerge from such comparisons, as do jarring ruptures, such as the partnering of anti-Semite Father Charles Coughlin with Jewish groups to oppose the Games and the strong advocacy of African-American athletes to participate in the Games while praising Hitler's Nazi State as being more racially tolerant than the United States.

Comparing Economic Outcomes of Post-Communist Countries with Personal Views of Religiosity versus Naturalism

SURF Student: Sheryl Herin-Devereaux

Program: Liberal Studies

Faculty Mentors: Thomas Behr and Barbara Elliott

In 1993, *Candles behind the Wall*, by Barbara (Von der Heydt) Elliot chronicled the oral history of 150 individuals involved in the religious movement in the former communist bloc. Curiosity has arisen to whether that movement has had lasting or effectual impact upon a uniquely complex region of the world. Very few studies of post-communist Europe's conditions include comparisons between religious attitudes and other conditions of society. My research focuses upon basic religiosity as defined by individuals; and the impact those beliefs have on their individual economies and their respective country's economies. The data indicates that there may be more than a correlation, but a causal relationship, between the two variables: naturalism v. religiosity; and tangible increases in personal social-economic prosperity v. economic stupor. The object of this thesis is to explore the relationship between the two phenomena.



Evaluation of PR Status in ER α + Mice Mammary Tumors

SURF Student: Anthony Hoang

Department: Biology and Biochemistry

Faculty Mentor: Sang-Hyuk Chung

A well-known etiological factor for breast cancer is estrogen, which is one of the major female hormones. Estrogen functions through its receptor estrogen receptor alpha (ER α) and is widely used as a biomarker for this common malignancy. Another biomarker is progesterone receptor (PR), which is regulated by ER α . It was recently found that K14Cre/p53^{fl} mice treated with estrogen develop ER α + mammary tumors. However, the PR status in these tumors has not been characterized. Using immunohistochemistry we stained 56 archival mammary tumor tissues from K14Cre/p53^{fl} mice treated with estrogen, for PR. These tumors are either positive or negative for ER α . I found that the all of the tumor samples are PR negative regardless of ER α status. We conclude that the ER α status does not correlate with PR status. In future studies we would like to determine if ER α -PR- mammary tumors found in this study express HER2, which is a growth factor receptor known to promote ER α -PR- breast cancers in women.



Woody Encroachment into Texas Coastal Prairies May Accelerate the Invasion of Chinese Tallow (*Triadica sebifera*)

SURF Student: Andrew Huynh

Department: Biology and Biochemistry

Faculty Mentor: Steven Pennings

Coastal prairies of Texas and Louisiana historically encompassed 9.4 million acres of land. Less than 1% of this ecosystem remains and remnants are currently threatened by the invasion of Chinese tallow. An understanding of how tallow invasion may be facilitated by existing vegetation may help to preserve this rare ecosystem and its underlying biodiversity. This study determined how woody vegetation, specifically wax myrtle (*Myrica cerifera*), affected the presence, germination, growth, and dispersal of tallow. We predicted that tallow density would be greater around wax myrtle, and that the presence of wax myrtle would increase the dispersal, establishment, and performance of Chinese tallow. These hypotheses were tested using an observational study, followed by a series of seed rain, germination, and growth experiments. Our observational study suggests that wax myrtle significantly increases numbers of tallow individuals ($p < 0.001$). Continued observations of experiments during winter is required to further test our predictions.





Limitations of David Hume's Moral Theory: Cross Cultural Applicability

SURF Student: Seetha Jagannath

Department: Philosophy

Faculty Mentor: Iain Morrisson

As recent research concerning morality has come back to the conclusion that our emotions and senses play a large role in forming moral judgment, philosophical interest in moral sentiment theories has risen. David Hume's theory of moral sentiment is one of the central theories concerning the foundations of morality. This study reveals some of the theory's vulnerabilities when applied cross culturally. An analysis of Hume's methodology and findings, in comparison to studies in contemporary moral psychology done by Jonathan Haidt, show that Hume serves a good starting point in terms of methodology. However, Haidt's findings about vast differences between Western culture and the rest of the world expose a fundamental limitation to Hume's moral sentiment theory. Because of its dependence on relatively similar emotional responses to events and situations, the moral sentiment theory cannot reconcile the extremely varying emotional and moral responses found in different cultures. This project reveals a weakness in moral sentiment theory which must be sufficiently addressed.



The Effect of Physical Fitness on Vocal Warm-up

SURF Student: Danielle Johnson

Department: Communication Sciences and Disorders

Faculty Mentor: Monica McHenry

Vocal warm-up is an essential component of preventative vocal care. This study was designed to determine if individuals' physical fitness or gender impacts their response to an aerobic warm-up. Forty participants performed a 30 minute aerobic workout preceded and followed by voice productions in a sound proof booth. Of each gender, 10 were more physically fit, and 10 less physically fit. There was a significant difference ($p = .01$) in phonatory threshold pressure (PTP) across groups, pre and post warm-up. Less physically fit females demonstrated a significant reduction in PTP ($p = .004$), with a comparable trend noted for less physically fit males ($p = .104$). There were no significant acoustic differences. Thus, an aerobic workout is an effective warm-up, and less physically fit individuals may benefit more from this warm-up than those who are more physically fit.



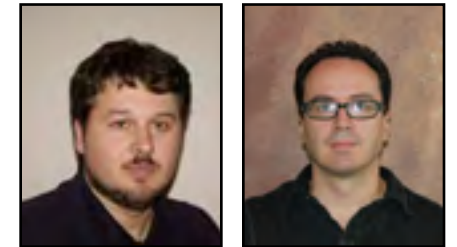
Decision Making in Different Networks

SURF Student: Irina Korotaeva

Department: Mathematics

Faculty Mentors: Ilya Timofeyev and Krešimir Josić

How do people make decisions? Some people align their decision with the judgment of who they perceive to be the most certain person in the group. Some people look at a majority opinion and construct their decision to go along with it. If we knew everybody's opinion and their certainty, we could obtain an optimal way to make a group decision. In my project I investigate how different network structures change group votes. For example, a decision reached by a group of isolated voters differs from a decision reached by a group that shared all the information with each other. The result will be different if the members of the group operate in a network where they only see some members' opinions, not everybody's. In other words, they are in a network and only share information with some of the members.



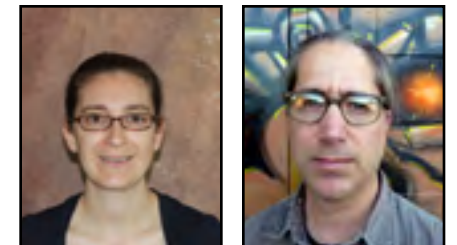
Courtship Song as a Reproductive Isolation Mechanism in an Experimental Evolution Study of *Drosophila*

SURF Student: Abigail Lamb

Department: Biology and Biochemistry

Faculty Mentors: Erin Myers and Anthony Frankino

In the process of speciation, lineages diverge and form reproductively isolated populations. Contact between newly formed species provides opportunity for hybridization, which may come at a significant fitness cost. Selection against disadvantageous hybridization may lead to the evolution of traits that enhance species discrimination, reducing interspecific breeding. Drs. Frankino and Myers have developed an experimental evolution study in which replicate populations of two recently diverged *Drosophila* species (*D. pseudoobscura* and *D. persimilis*) are allowed the opportunity to hybridize. Decreased hybridization has been evolved in these populations, leading to investigation of the mechanisms underlying this response. One such mechanism may be the interpulse interval (IPI) of the male courtship song. Preliminary analysis of IPI patterns indicates changes in experimental *D. persimilis* populations. A more detailed analysis of IPIs from all our experimental populations is underway.





Outcomes of Constraint Induced Language Therapy in a Community Based Setting

SURF Student: Christy Lee

Department: Communication Sciences and Disorders

Faculty Mentor: Lynn Maher



Aphasia is a language impairment which negatively impacts communication abilities. Research suggests people with aphasia can improve after rehabilitation with the help of speech language pathology. Constraint Induced Language Therapy (CILT) is a treatment approach that has been demonstrated to improve spoken language in some people with aphasia; however the impact of CILT on functional communication has not been well described. The purpose of this study was to analyze the treatment response and narrative discourse of four people with aphasia post CILT to discover how intervention impacted functional communication as captured by changes in conversational discourse. The analysis yielded evidence of positive changes in language output from pre to post treatment. Changes in narrative discourse were evident in amount of correct information units, number of narrative words produced and the mean length utterances. Results suggest that CILT may have a positive impact on functional communication in individuals with chronic aphasia.



Using Virtual Reality to Study Alcohol-Related Cues Across Varying Contexts

SURF Student: Tenée Lopez

College: Social Work

Faculty Mentor: Luis Torres



Alcohol dependence is characterized by compulsive alcohol use despite detrimental physical and mental health, and social consequences. Cravings to drink can be triggered by multiple cues (e.g., seeing an alcoholic beverage, certain smells, parties, etc.). Cue reactivity studies utilizing virtual reality (VR) have successfully elicited craving responses in alcohol-dependent individuals. This study examined the association between exposure to a variety of cues (proximal and environmental context) and self-reported craving (i.e., questionnaires). Four different environments were developed with varying degrees of delivered cues (i.e., high alcohol-related environment with and without proximal cues, and low alcohol-related environment with and without proximal cues). Alcohol-dependent individuals (N=200) were randomly assigned to one of the four environments (50 per group). Bivariate analyses will be conducted to determine how each environment affects craving.

Stiffness Assessment of Ocular Tissues with Phase-Sensitive Swept Source Optical Coherence Tomography (PhS-SSOCT)

SURF Student: Floredes Menodiado

Department: Biomedical Engineering

Faculty Mentor: Kirill Larin

Optical Coherence Tomography (OCT) is a noninvasive imaging technique which allows for stiffness studies with relatively low intensity stimulus. In this project, a Localized Pressure Air Stimulation (LPAS) system is used in conjunction with a Phase-Stabilized Swept Source Optical Coherence Tomography (PhS-SSOCT) system to generate low amplitude air puffs and assess the eye's response to it. The wave propagation generated by the air puff on the eye surface is studied, particularly the wave amplitude and velocity. Different stiffness of rabbit eye is generated by cross-linking some samples to form more stiff tissues. The results indicate that the developed method can differentiate between samples of different stiffness, with more stiff samples resulting in waves with higher velocity. In the future, the project will examine ocular stiffness in in vivo models.



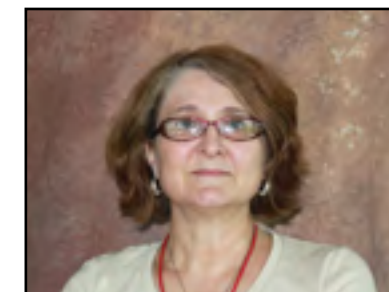
Differential Effects of Demethylation on Expression of Pluripotency Genes in Mouse Müller Glia *In Vitro*

SURF Student: Kendall Mills

College: Optometry

Faculty Mentors: Deborah Otteson

Ocular diseases including glaucoma, macular degeneration and *retinitis pigmentosa* cause permanent blindness in humans because the retina cannot regenerate neurons. Although Müller glia express Sox2, a known pluripotency genes, and other genes characteristic of retinal progenitors, their stem cell capacity is limited in the mammalian retina. De-methylation of the genome is necessary to establish pluripotency in embryonic stem cells during development and multiple genes required for retinal neurogenesis are hyper-methylated and silenced in cultured mouse Müller glia. To test the role of methylation in regulating pluripotency gene expression, immortalized Muller glia in neurosphere cultures were de-methylated with 5-Azadeoxycytidine (Aza) and gene expression compared to non-Aza treated cells by quantitative reverse transcriptase PCR. Demethylation resulted in significantly increased expression of *Sox2* and *cMyc*, decreased expression of *KLF4* and *Lin28* but had no effect on *Pou5F1*. We conclude that demethylation is insufficient to induce pluripotency in mouse Müller *in vitro*.





Computational Docking and Analysis of a Peptide Linked Inhibitor of Rho Associated Kinase

SURF Student: Jeffrey Mindrebo

Department: Biology and Biochemistry

Faculty Mentor: James Briggs

Rho Associated Kinase or ROCK is a protein from the serine/threonine kinase family. ROCK is a homodimer that contains an N-terminal kinase domain, a coil-coil domain and a C-terminal Pleckstrin Homology Domain (PH domain) that autoinhibits its catalytic domain. ROCK plays a key role in inducing stress fiber formation in the heart, which if excessive, leads to cardiac hypertrophy and ultimately interstitial fibrosis and heart failure. The Schwartz group found candidate inhibitors of ROCK from a phage peptide library and my project sought to elucidate inhibition mechanisms and interactions of those peptides with ROCK. A bivalent strategy built on linking our peptide candidates with known general kinases inhibitors was tested. The compound Y-27632 was adapted based on structure data from Jacobs et al. and Commander et al. I hypothesized that a compound with bivalent binding modes could enhance both specificity and potency. I computationally modeled multiple truncations of peptide 25 (pep25Tx) with four different linkages to Y-27632. Each one of the peptide-inhibitor complexes was subsequently docked for a total of 20 poses per trial against 2V55, a crystal structure of ROCK produced by the Jacobs group. Results showed that the tyrosine from the peptide pep25Tx competed for the ATP binding pocket of ROCK where Y-27632 was expected to favorably bind. These poses were then evaluated and energetically scored using NAMD and CHARMM to better understand which poses were more favorable.



Investigating the Role of Genetic ‘Dark Matter’ (LncRNAs) in Converting Bone to Fat

SURF Student: Scott Moncrieff

Department: Biology and Biochemistry

Faculty Mentor: Preethi Gunaratne

The majority of RNAs that are expressed from the human genome are non-coding and described as genetic “dark matter” with unknown function. Long non-coding RNAs (lncRNAs) are emerging as ‘air traffic controllers’ that guide transcription factors and epigenetic regulators to genes that need to be activated or repressed. We have identified the complete set of lncRNAs that are driven by the stem cell factor Sox2 in bone using Chip-sequencing. We then examined patterns of Sox2 driven lncRNA expression in primary mesenchymal multipotent stem cells, osteospheres, Sox2 knockout and Sox2-overexpressing osteoblasts and osteoprogenitor lines that are self-renewing and undergoing differentiation to bone and fat cells and compared this data with osteosarcoma samples using quantitative RT-PCR. We found two lncRNAs that are highly enriched in Sox2-overexpressing osteoprogenitor lines and dramatically down-regulated upon differentiation that could be manipulated to convert bone to fat and vice versa. Both these lncRNAs are expressed at very low levels in osteosarcoma a highly malignant bone tumor that presents during adolescence. A future goals of this project is to examine if the two Sox2 regulated lncRNAs that we uncovered can be used to convert bone tumors to fat that can be removed through liposuction.



History of Honors Education at the University of Houston

SURF Student: Keri Myrick

College: Honors

Faculty Mentor: Robert Cremins

The Honors History Project brings together students, faculty, and alumni in a reunion of memories and historical facts that collectively create the history of Honors education at the University of Houston. This catalog of events is achieved through personal interviews, library research, archival research, and the organization of historical documents into navigable registers. Outside sources include media clipings, journals, articles, and other publications.



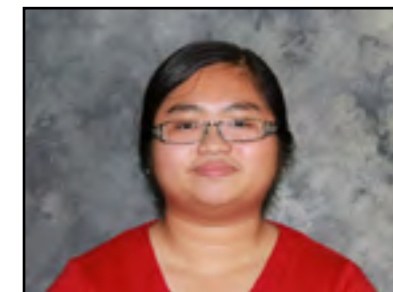
TouchAuth: A Security Enhanced Continuous Mobile User Authentication System Using Touchscreen Inputs

SURF Student: Nhung Nguyen

Department: Computer Science

Faculty Mentor: Larry Shi

Mobile user authentication is a challenging task because of the fundamental tension between security and usability. Secure user authentication is required because sensitive information is frequently stored or accessed from mobile devices due to the popularity of those devices and their wide applications. However, most existing user authentication approaches fail to provide good usability on mobile systems because of the size and mobility of these systems. In this paper, we propose a new touchscreen based authentication approach for mobile devices, named TouchAuth. TouchAuth improves mobile security by augmenting mobile login security with touch behavior data. Furthermore, after user login, TouchAuth provides transparent and continuous protection by verifying the mobile user in the background without disrupting normal user-smartphone interactions. TouchAuth captures multi-touch sensor data such as touch based shape drawings, touch based virtual typing inputs, and touch gestures. Using classification algorithms on the extracted features from the touch data, TouchAuth achieves a good balance between security and usability during continuous user verification by maintaining low FRR (False Reject Rate). TouchAuth attains improved security protection when compared with the systems without considering user specific touch behavior data for authentication and systems without after-login user verification protection. Using touch data collected from 40 users, it is shown that TouchAuth can achieve, i) 12.44% FAR (False Accept Rate) with 6.76% FRR for drawing based login access control using only touch behavior data; ii) 16.58% FAR with 0.27% FRR; and iii) 16.30% FAR with 0.13% FRR for continuous user authentication after login. The low FRR indicates that TouchAuth can provide enhanced access security after login without disturbing mobile users.





Expression, Purification, and Enzymatic Characterization of Hybrid Enzyme in Yeasts

SURF Student: Thien Nguyen

Department: Pharmacological and Pharmaceutical Sciences

Faculty Mentor: Ke-He Ruan

The project utilizes a novel hybrid enzyme (TriCat enzyme, COX1-10aa-PGIS), engineered by linking human cyclooxygenase-1 (COX-1) with prostacyclin (PGI2) synthase (PGIS) together through a transmembrane domain. The hybrid enzyme, was able to directly integrate the triple catalytic functions of COX-1 and PGIS and effectively convert arachidonic acid (AA) into the vascular protector, PGI2. In order to further characterize the biological activity and evaluate its therapeutic potential, the TriCat enzyme cDNA was first subcloned into pYES2, a yeast vector and then its protein expression using INVSC1 yeast host cells was confirmed by Western blot. The yeast-produced TriCat enzyme showing biological activity directly converting AA to PGI2 in cells and purified protein forms were identified by enzyme activity assay. This study suggested that the low cost yeast expression system could be used for large-scale production of the TriCat enzyme, which has direct therapeutic impact against heart disease.



The Effects of High Impact Practices on Student Retention and Graduation Rates

SURF Student: John Nicklos

Department: Management

Faculty Mentor: Teri Longacre

In 2009 George Kuh, with the Association of American Colleges and Universities published a study to describe High Impact Practices (HIPs) and their effects on student success. Kuh uses data from the National Survey of Student Engagement about these practices and explains why they benefit all students. HIPs are active learning practices that require some level consistent engagement, reflection, and student involvement. These include first year courses and experiences, learning communities, living on campus, involvement in student organizations, studying abroad, internships, and of course, conducting undergraduate research. This study examined the effects of HIPs on student retention and projected graduation rates in a sample consisting of the C.T. Bauer College of Business 2009 undergraduate cohort. Correlations were found between these student success indicators and the number of hours students participated in a variety of HIPs.



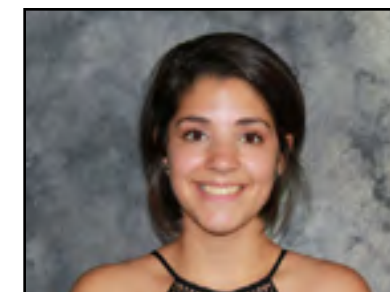
Effects of Neuropathy on Hand Function in Patients with Type II Diabetes

SURF Student: Nereyda Ochoa

Department: Health and Human Performance

Faculty Mentor: Stacey Gorniak

In daily interactions, tactile sensation provides important details ranging from personal safety to intimate touch. An individual's association with the external environment relies on visual, motor, and sensory cues, that if missing, may generate a significant threat for day-to-day activities. The purpose of this project is to identify sensory and motor deficits in the upper extremities of patients with Type 2 Diabetes. Research has proven that diabetes causes functional impairment to all limbs, however, the extent of the damage and its progression in the upper extremities has not been thoroughly examined. Thus, our goal for the project is to determine the severity of functional impairments associated with Diabetic Peripheral Neuropathy in Type 2 Diabetes and its effect on the management of diabetes and overall quality of life. Assessments will include extremity motor function tests and force production evaluations of the hand. This project will continue through the SURF program until completion and results will be presented at both Undergraduate Research Day at the University of Houston and at the Neuroscience Conference in New Orleans, Louisiana.



Using New Quantum Mechanical Scattering Techniques

SURF Student: Gulden Othman

Departments: Chemistry and Physics

Faculty Mentor: Donald Kouri

Quantum mechanics is the framework used to understand nature at the most fundamental level. Every physical process can be thought of as the collision of subatomic particles—an inherently quantum mechanical phenomena. Because of the ubiquity of quantum mechanics, providing solutions to its equations is of utmost importance to the understanding of natural processes at their most fundamental levels. Unfortunately, solving these equations is a nontrivial problem that requires fantastically complex methods. This was the motivation for my project. This summer, I explored promising avenues to reduce the computational difficulty of these calculations in order to better understand a whole host of physical phenomena.





Preliminary Emerging Themes from a Cohort of Heart Failure Self Management Interviews

SURF Student: Adesola Oyewole

Center: Center for Future of Health

Faculty Mentors: Clifford Dacso, M.D. and Lara Colton, M.D.

Self-management of Heart Failure (HF) through tele-monitoring (TM) has shown to improve patient outcomes by improving quality of life; reducing the number of hospital stays, and reducing health care costs (Sohn, 2012). The purpose of this study is to determine how people with HF manage their condition and to determine what they think of the BlueScale TM device, in terms of ease, use and how it would fit into their lives. The BlueScale device is a modified bathroom scale that collects vital signs with additional ECG, pulse, and hydration sensors. For the purpose of this study, individual audio recorded interviews that included eight questions on topics related to self management of heart failure and the theoretical use of the BlueScale device were conducted with subjects to qualitatively identify themes in HFmanagement and the participant's perceptions of the BlueScale. We found that most participants thought the BlueScale was easy to use, that it would be helpful in the management of HF and that it would fit in to their everyday lives. Many participants felt that they needed more time with the BlueScale to effectively evaluate its usefulness.

Identifying and Evaluating Barriers to the Physical Activity of Mexican Children through Objective Observation

SURF Student: Ann Pacheco

Department: Health and Human Performance

Faculty Mentor: Rebecca Lee

Mexico currently has the highest childhood obesity rates in the world. As the obesity prevalence rates keep rising, it is important to evaluate the relationship between the factors contributing to the lack of physical activity. This project evaluates the impact of barriers to children's physical activity levels in a sample of parks and plazas located in Puerto Vallarta, Mexico. A literature review was done to identify barriers to physical activity of Mexican children. Trained assessors used the System for Evaluating Play and Recreation in Communities (SOPARC) to assess physical activity levels of different age groups in Puerto Vallarta, Mexico. Physical activity level comparisons among different environments were analyzed using IBM SPSS Software. Different age groups will perform different types of physical activity depending on the time of day and the type of physical activity resource. Plazas serve as a social environment which can lead to sedentary behaviors. Effective interventions to enhance physical activity in children need a whole family approach.

Predicting the Presidential Candidates' Chances to Win the 2012 US Election: The Factors that Matter in Relation to a Prediction Market, Intrade

SURF Student: Minh Pham

Department: Decision and Information Sciences

Faculty Mentor: Norman Johnson

Intrade.com is an Internet Prediction Market where participants take positions, or hold contracts, on whether future events will or will not occur. These events could relate to entertainment, science, technology, politics, and other topics of relevance. However, politics is by far the most active event, and the issue of who will be the next US President generates many contracts on the chance of a winner. So in this study, we focus on the presidential candidates' chances to win the 2012 US election. We examine what factors predict these chances based on data from Gallup's daily polls. We focus on a wide array of factors such Employment, Economic Index, and Life Evaluation. We find a number of counterintuitive results. For example, we find that the levels of under-employed are negatively related to the chances of both Obama and Romney to win. However, the levels of unemployed are positively related to the chance of Obama winning but negatively related to the chance of Romney winning. This last result is probably contrary to commonly held beliefs.

This, Not That: Materialism's Effect on Impulse Purchases

SURF Student: Kiley Pitts

Department: Marketing and Entrepreneurship

Faculty Mentor: Jacqueline Kacen

Defined as a sudden, compelling, hedonically complex purchasing behavior, impulse buying is making up an increasingly large portion of consumer purchases in recent years. This research explores the types of goods purchased by individuals with varying levels of materialism. While there are many studies that examine materialism and impulse buying separately, there are few studies that examine the specific types of items materialistic consumers buy on impulse. In this study, a survey was given to a convenience sample of 108 adults and impulse items purchased were coded as 1) public or private, 2) luxury or necessity, and brands were coded as either status or non-status. Study results show that individuals high in materialism are more likely to purchase public goods rather than private goods. However, respondents of all materialism levels were more likely to purchase necessities over luxuries and non-status brands over status brands.



Edward II: An English Monarch in History, Theater, & Film

SURF Student: Joshua Puey

Department: English

Faculty Mentor: Ann Christensen

My project compared and contrasted three different accounts of the reign of the 14th-century English king, Edward II. I read Raphael Holinshed's *Chronicles of England, Scotland, and Ireland, Vol. II* (1587), a text that Shakespeare and other early modern English playwrights plumbed for material; a dramatized version by Christopher Marlowe, *The Troublesome Reign and Lamentable Death of Edward the Second, King of England, with the Tragical Fall of Proud Mortimer* (1593); and I viewed the film adaptation of Marlowe's play, Derek Jarman's *Edward II* (1995). I produced an inter-disciplinary study of these three representations of the character. My objective was to track the subtle (and not so subtle) ways that the monarch has been treated across these three media, and over time. For example, Marlowe's play emphasizes Edward's conflicting responsibilities as king, lover, and husband, whereas Jarman's film places homosexuality, gay rights, and government censorship in the forefront. I accomplished this objective by incorporating various fields of research including historiography, literary, and film criticism. I created an annotated bibliography of secondary sources relating to the three primary sources.



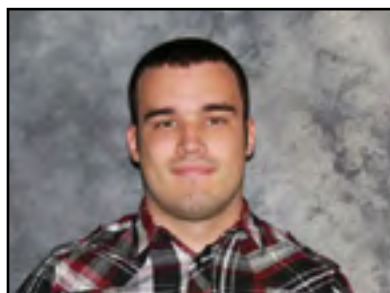
Guiding Infants' Attention in an Object Search Task

SURF Student: Ryan Roy

Department: Psychology

Faculty Mentor: Hanako Yoshida

In the complex world, people navigate their attention by familiar contextual information. The particular effect where people benefit from repeated contextual information during visual search (contextual cuing effect) has been systematically studied with adults (Chun & Jiang, 1998), and the effect is typically documented by showing decrease in search times for repeated context while minimal decreases given non-repeated configurations. While this effect is robust among adult participants, studies with children yield mixed results (e.g., Dixon, Zelazo, & De Rosa, 2010; Vaidya et al, 2007). One potential factor involved in these developmental differences is the use of feature vs. contextual information. The current study aims to explain the role of both of these factors during infant development by specifically investigating spatial arrangements and the predictive nature of contextual information. Infants' sensitivity to repeated context was observed, suggesting potentially heightened sensitivity to repeated context which influences more complex looking behavior across development.



Temperature Control for a Microfluidics Device for Characterization of HbS Polymerization

SURF Student: Kerry Schuette

Department: Chemical and Biomolecular Engineering

Faculty Mentor: Peter Vekilov

Sickle cell anemia is a human disease in which hemoglobin (Hb) in the red blood cells converts to sickle-cell hemoglobin (HbS). HbS has the propensity to form polymers when in deoxy-state. The polymers stretch out the cell membrane and make the red cells rigid. Once polymerized and rigid, these cells have difficulty passing through capillaries. Experiments with mice have shown that this polymerization is the main cause of the disease. If it can be stopped or slowed the disease could be tamed. In order to do this, the way the polymerization occurs must be studied. One method to determine the rate of the polymerization is based on quickly changing the temperature of HbS solutions undergoing polymerization in microfluids of picoliter samples. This method will allow the polymerization to be studied under very controlled conditions, such as use of small volumes, obtaining uniform temperatures and good mixing. The temperature of the heater is a response from its resistance to an electrical current. This is controlled by a proportional-integral (PI) system that maintains constant resistance of the heater by varying the current passing through it. After the tests of this technique have been validated, it can be implemented in the laboratories of physicists, chemists, biochemists, and engineers to allow broader studies of this and other processes like it.



Coastal Resilience and Coastal Planning

SURF Student: Ian Spencer

College: Architecture

Faculty Mentor: Thomas Colbert

The relative failures of the existing flood control system have been well-documented as each successive hurricane system moves through the Houston-Galveston coastal region. At the center of these factors is the critical infrastructure nestled along the Houston Ship Channel, which requires both storm surge protection and access. As the economic integrity of the region continues to rely on shipping and petroleum, the need for a comprehensive protection plan for this industrial hub is apparent. Both local and national economic health is threatened should the present condition remain in place. To meet this need the SSPEED Center (<http://sspeed.rice.edu/sspeed/>) has developed real-world proposals for a levee system along State Highway 146 between the Houston Ship Channel and Texas City. In order to answer these questions, this research has generated the following information pertaining to the State Highway 146 alignment: 1) An in depth examination of the social and urban impact of the proposed levee configuration. 2) The development of two architecturally distinct proposals for a gate system to protect the Houston Ship Channel while remaining unobtrusive to shipping traffic. 3) The digital visualization of these proposals as they address these needs and demonstrate the integration of the proposed levee system into local urban fabric conditions.



Framing International Conflict: A Bosnian Case Study



SURF Student: Diane Stout

Department: Political Science

Faculty Mentor: Ryan Kennedy

American public opinion is essential in shaping political action on foreign civil conflict. Therefore, understanding the impact of how the media and government communicate about a conflict is imperative. This means testing whether individual responses to the same conflict differ when presented with different types of appeals. I test three main types of communication—a personal perspective, a statistical assessment, and an unbiased account—to see if that influences the policy response desired by survey participants. I also test the impact of conflict labels. It is expected that individuals will desire a more active policy response when a conflict is labeled “genocide” rather than “ethnic cleansing” or “civil conflict.” This portrays the impact the media and the government’s power of influencing the public opinion’s support or opposition toward intervention in a foreign conflict.



Neural Mechanisms of Dravet Syndrome



SURF Student: Matthew Styskal

Department: Biology and Biochemistry

Faculty Mentor: Jokūbas Žiburkus

Dravet syndrome, also known as severe myoclonic epilepsy of infancy, is a genetic disease and one of the most severe forms of pediatric epilepsy. Children with Dravet syndrome develop seizures during their first year of life; more than a third are clinically intractable and do not respond well to common anti-epileptic medications, leading to a mortality rate of 20%. The defective neural mechanisms causing Dravet syndrome are not well understood. This study seeks to develop analysis software and discover quantitative differences in neurons and networks in hippocampal tissue between heterozygous Dravet and wild-type mice. Electrical trace recordings, both extracellular and whole-cell, and voltage-sensitive dye optical recordings were taken and analyzed with new Matlab programs. Using these techniques no significant differences in power in distinct frequency bands, excitatory network synchrony, excitatory spike amplitude, nor excitatory spiking frequency were observed, but the duration of excitatory spikes was increased in heterozygous animals. In addition to previously reported spiking impairments in the inhibitory cells, this finding suggests that this Dravet model SCN1A gene mutation also affects excitatory cell spiking activity.



Liberal Nationalism

SURF Student: Katherine Teeters

Department: Political Science

Faculty Mentor: Jeffrey Church

Nationalism has been a driving force throughout the development of the modern nation-state; and yet, whether, defined by cultural affinity, geographical area, ideological consensus, or ethnic similarity, nationalism has been the cause of conflict and exclusivity. From Nazism to Stalinism, nationalism has been used to defend illiberal acts such as forced migration, ethnic cleansing, and domestic discrimination. However, there must be a reason that nationalism has had a continued existence. Nationalism allows for community, while also providing states with the unity that can supply reasoning for social justice and sacrifice for the state. However, nationalism does not require loss of individual rights; in fact nationalism can be compatible with liberalism. Using ideas from *Citizenship and National Identities* by Miller, *Liberal Nationalism* by Tamir, *Multicultural Citizenship* by Kymlicka and several other authors, I tried to show the instrumental goals motivating liberal nationalism, and the compatibility of national loyalty and liberty.



Slave Murder in the Antebellum South: A New Perspective

SURF Student: Kelsea Tennyson

Department: History

Faculty Mentor: Matthew Clavin

By the year 1831, slaves in the antebellum south had exhausted their ability to conjure up massive rebellions. This research, focused between the years 1831-1861, sought to find the individual acts of rebellion slaves took upon themselves to counteract the institution they had no way out of. Over this 30 year time span, hundreds of slave men, women and children, committed outright murder against their overseers, masters or other white people who supported the institution of slavery. Although these stories occurred over 150 years ago, they were very well documented in both primary and secondary resources. The two sources I focused on, *The Liberator* and *The National Anti-Slavery Standard*, were newspapers published between 1831-1861. I plan to use this research opportunity to further my career in the field of early American history while my mentor, Professor Clavin begins his third book for publication.





Vascular Reactivity Measurement through Digital Thermal Monitoring of Fingertip Temperature

SURF Student: Hilario Torres

Department: Mechanical Engineering

Faculty Mentor: Ralph Metcalfe



It has been reported by the World Health Organization that cardiovascular disease (CVD) is the leading cause of death worldwide. Fairway Medical Technologies, in conjunction with the University of Houston, is developing a new inexpensive and noninvasive way to screen for CVD through measuring vascular reactivity as a function of fingertip temperature during the reactive hyperemia that follows a three to five minute occlusion of the brachial artery. Fairway Medical Technologies has created a standardized automated testing system, VENDYS, which usually results in a certain fingertip temperature curve after the test is completed. Environmental, systemic, and physiological variations can cause a person's fingertip temperature to deviate from the expected behavior. Some of the reasons for variation from the expected fingertip temperature profile during the VENDYS test were investigated and a MATLAB script was written to systematically identify and organize data according to these variations.

Analysis of CaMKK β Splice Variants in Prostate Cancer

SURF Student: Peter Tran

Department: Biology and Biochemistry

Faculty Mentor: Daniel Frigo



Calcium/Calmodulin-dependent protein kinase B (CaMKK β) is a protein kinase that is highly expressed in the brain where it regulates a number of physiological processes such as neuronal migration. Recently, it has been found in prostate cancer where it promotes prostate cell migration and invasion through one of its downstream targets, AMP-activated kinase (AMPK) (Frigo et al. 2011). We hypothesized that the shorter variant found in the prostate possesses more basal activity than the longer brain variant and this may contribute to the development of cancer. Stable cell line models of prostate cancer were created with plasmids containing the various CaMKK β splice variants using retroviral transduction systems. Future studies involve testing the different effects of CaMKK β on downstream targets (i.e. AMPK, CAMKI) that may be a potential target for drug intervention. These cell lines will be used as model systems that will be used to compare xenograft tumor models in mice.

Organocatalytic Synthesis of Polyenes through Conjugate Addition of Vinylogous Esters with Boronic Acids

SURF Student: Tho Tran

Department: Chemistry

Faculty Mentor: Jeremy May

Polyenes are present in a variety of naturally occurring compounds that display therapeutic properties such as anti-malarial and anti-fungal effects. Current methods to synthesize these compounds typically require the use of wasteful, expensive, and/or potentially hazardous materials. Instead, a method is being developed to synthesize these compounds through the reaction of vinylogous esters and boronic acids with the aid of a carbon based catalyst. This newly developed method provides an effective, cost-efficient alternative to existing practices.



Adaptive Evolution of Wing Shape in the Fruit Fly *Drosophila Melanogaster*

SURF Student: Felipe Vazquez

Department: Biology and Biochemistry

Faculty Mentor: Anthony Frankino

Complex morphological phenotypes are composed of multiple traits that act as a single unit in an ecological context. Individual elements comprising phenotypes exhibit strong patterns of size and shape co-variation that are presumably the product of selection for ecological function. *Drosophila* exhibit genetically-based altitudinal/latitudinal clines across several continents in wing shape and relative size; flies from populations in colder locations have wings that are larger relative to the body as compared to flies from warmer populations. This genetic differentiation among populations is hypothesized to be adaptive; the phenotypes are predicted to enhance flight performance (and thus reproductive success) at the temperature where they occur.





Hyperspectral Image Analysis

SURF Student: Paike Xu

Department: Electrical and Computer Engineering

Faculty Mentor: Saurabh Prasad

Hyperspectral images are multi-dimensional images collected by sensors mounted on airborne and spaceborne platforms, representing reflectance information over a wide range of the visible and short-wave infrared regions of the electromagnetic spectrum. Dr. Prasad's research group at UH has an in-house toolkit for analysis for remotely sensed images, such as hyperspectral images. The goal of this SURF project was to work towards a graphical-user-interface wherein a user can load imagery and perform a range of operations representing cutting-edge analysis techniques for such images. In particular, the toolkit can take spectral reflectance as provided by hyperspectral images, along with other geophysical information and perform pre-processing and analysis tasks. The end goal of the toolkit is for users to manage their spectral libraries, as well as perform target recognition and ground-cover-classification with such images, with as high an accuracy as possible. This research focused on the user-interface aspects of this toolkit—taking the existing software and wrapping it around a graphical interface where it is possible to view spectra, denoise spectra, delete noisy or unwanted spectra, perform classification and so on.



A Pilot Study Analyzing Nonverbal Behavior During an Iterative Social Interactive Trust Game

SURF Student: Roya Zamani

Department: Psychology

Faculty Mentor: Carla Sharp

Neuroeconomics is a relatively new, growing discipline which aims to combine behavioral economic theories and neuroscientific methods to better understand incentivized decision-making. Neuroeconomics notably aids in examining psychosocial interactions that may prove significant in identifying psychiatric disorders. The aim of this study is to pilot new methodology in analyzing nonverbal behavior of participants during an adapted two-player, iterative social interactive trust game. Nonverbal behavior during social exchange is an aspect of interpersonal interaction that has not yet been investigated. In the first phase of this study, the technology for the trust task was developed such that both players could see each other via a webcam but could not otherwise communicate. In the next phase, participants will be asked to play the game and complete a series of questionnaires that will assess the validity of the trust task. If findings support its validity, this may particularly aid in the early identification of Borderline Personality Disorder, a disorder known for its anomalies in trust behavior.



SURF 2012 LECTURERS

Jeremy Bailey

Jeremy Bailey joined the University of Houston in 2007 and holds a dual appointment in the Department of Political Science and The Honors College. He teaches the Human Situation, American Political Thought, and Introduction to US Politics. He is the author of *Thomas Jefferson and Executive Power* (Cambridge University Press, 2007). His research has also been published in journals including *American Political Science Review*, *Review of Politics*, *Harvard Journal of Law, and Public Policy*, and *Political Research Quarterly*. Bailey is now working on democratic theories of executive power, as well as a project on James Madison and the problem of public opinion. *Dr. Bailey participated on the SURF faculty panel on applying to graduate and professional school.*



Jillian Conrad

Professor Jillian Conrad holds a BA in Classics from St. John's College and an MFA in Sculpture from Rhode Island School of Design. Her numerous residencies include the Headlands Center for the Arts Residency, and the Core Program Artist in Residence at the Museum of Fine Arts in Houston. Professor Conrad was an artist teacher with the Joan Mitchell Foundation in New York and a graduate studio critic at the Maine College of Art, and her work was featured in three recent solo exhibitions: *Splits* at the Devin Borden Gallery and *Construct* at Art Palace, both in Houston, Texas, and *On Tenterhooks* at the Hunt Gallery in St. Louis, Missouri. She teaches sculpture as an Assistant Professor at the University of Houston. *Professor Conrad gave a presentation for the SURF students on her research and approach to sculpture and work this past July.*

SURF 2012 LECTURERS

Daniel Frigo

Dr. Daniel Frigo is an Assistant Professor in the Department of Biology and Biochemistry at the University of Houston. His research involves a multidisciplinary approach that integrates bioinformatics, pharmacology, biochemistry, and molecular and cellular biology. The focus of his research is on achieving a better understanding of how nuclear receptors function in specific disease states, with the long-term goal of developing novel cancer therapies that target newly identified nuclear receptor-mediated mechanisms. He has coauthored dozens of articles published in widely recognized journals, including the *International Journal of Oncology*, *Cancer Research*, and *Molecular Endocrinology*. Last summer, Dr. Frigo conducted a research tour through the Center for Nuclear Receptors and Cell Signaling for SURF participants.



P. Shiv Halasyamani

Dr. P. Shiv Halasyamani is a Professor in the Department of Chemistry at the University of Houston. Dr. Halasyamani teaches a wide range of courses, such as chemistry for honors freshman, descriptive inorganic chemistry for undergraduates, and solid state chemistry for graduate students. His research focuses on the synthesis and characterization of new oxide and halide materials with technologically important properties. Throughout his career, he has received many accolades, such as the NSF Early Faculty CAREER Award, the ExxonMobil Faculty Award, and the Beckman Young Investigators Fellowship. He received his B.S. at the University of Chicago, his Ph.D. at Northwestern University, and was a Postdoctoral Fellow and Junior Research Fellow at Oxford University before arriving at the University of Houston. He has published over 130 peer-reviewed articles and presented his research at over 70 universities and conferences. Dr. Halasyamani lectured on research ethics this past summer to the SURF participants.



SURF 2012 LECTURERS

Charles Layne

Dr. Charles Layne is the Chair of the Department of Health and Human Performance at the University of Houston. He teaches a variety of classes on motor control, learning, and neuroscience. He initiated the development of the Center of Neuromotor and Biomechanics Research located in the Texas Medical Center and continues to conduct his research in the Center. He is a member of the Society for Neuroscience, the International Society for Ecological Psychology, and World Federation of Neurology. His interests include the development of human coordination from a neuromuscular perspective and the sensory effects, particularly muscle vibration, on movement control. He is also expanding his research interests to include the assessment of physical activity for those at risk for obesity. He currently serves as an editor for a new scientific journal: ScienceJet. Dr. Layne participated on the faculty panel on considering and applying to graduate and professional school.



Lynn Maher

Dr. Lynn M. Maher is Professor and Chair of the Department of Communication Sciences and Disorders at the University of Houston in Houston, TX, where she teaches graduate courses on aphasia and related disorders in the Medical Speech-Language Pathology track, and serves as Executive Director of the United-Way funded University Speech-Language Hearing Clinic. She is Chair of the Professional Advisory Board and a member of the Executive Board of the Houston Aphasia Recovery Center. Her research interests are in the understanding and rehabilitation of aphasia and related disorders and have been funded in the past by the National Institutes of Health, NINDS, and NIDCD as well as the by the Department of Veterans Affairs, Rehabilitation Research & Development. Dr. Maher led the SURF students on a tour through the University Speech, Language, and Hearing Clinic.



SURF 2012 LECTURERS

Monica McHenry

Dr. McHenry received her Ph.D. in Speech and Hearing Sciences at the University of Washington, and is currently an Associate Professor in the Department of Communication Sciences and Disorders. She teaches classes on motor speech and voice disorders, and her current research is focused on the impact of physiology and perception on speaker intelligibility. Her work has received grants from the McCullough Foundation, and articles detailing her research have been published in many peer-review journals including the *American Journal of Speech-Language Pathology*, *Journal of Voice*, and *Logopedia Phoniatria Vocology*. Dr. McHenry also collaborates with researchers at MD Anderson Cancer Center, analyzing physician-patient interactions to improve the ability to communicate empathy. *Dr. McHenry led the SURF students on a tour through The University Speech, Language, and Hearing Clinic last summer.*



Michelle Miley

Michelle Miley holds a B.A. in English and Psychology and an M.A. in English Literature from Baylor University. As the Assistant Director of Writing in the Disciplines at the University of Houston Writing Center, Michelle partners with professors across the university to teach writing within their courses. Her research interests include the use of small writing groups as a methodology for developing both better writing and better thinking. Michelle is currently working on her Ph.D. in Rhetoric, Composition and Pedagogy from the University of Houston. She has taught freshman and sophomore composition classes at Baylor University, Lubbock Christian University and Wayland Baptist University, and has coordinated and taught in the XL: Strategies for Learning program at Texas Tech University. *Last June, Michelle conducted a lecture for the SURF students on learning the language of their disciplines.*



SURF 2012 LECTURERS

Anna P. Newman

Dr. Anna Newman is a geneticist who has studied protein secretion in the yeast *S. cerevisiae* and the development of the nematode *C. elegans*. In *C. elegans*, she discovered cell-cell interactions that occur during uterine development and characterized genes required for these processes. She performed her undergraduate studies at Harvard and received a Ph.D. in Cell Biology from Yale. She is the coauthor of over twenty research articles as well as of scientific review articles. Her work has been published in journals including *Nature*, *Genetics*, *Development*, and the *Journal of Cell Biology*.

She has taught and mentored students at the high school, undergraduate, and graduate levels. At the University of Houston, she teaches Introductory Biology, Genetics, and Interpreting Experimental Biology. She also organizes the Colloquium for Undergraduate Research in Biology, which provides students with a forum in which to present their research results. *Dr. Newman participated on the SURF faculty panel on considering and applying to graduate and professional school.*



Hanadi S. Rifai

Dr. Hanadi Rifai is a Professor in the Civil and Environmental Engineering Department at the University of Houston. Her expertise includes ground water flow and transport modeling, risk assessment, natural attenuation, hazardous waste, hydrology, urban storm water quality, non-point source pollution, total maximum daily loads, decision support systems and geographic information systems. In addition to authoring the widely-used BIOPLUME II, BIOPLUME III and BIOPLUME IV computer models for biodegradation and natural attenuation modeling, Dr. Rifai has built and manages the GIS (Geographical Information Systems) computer laboratory in the department. She also teaches professional courses on groundwater contaminant transport, remediation and groundwater modeling, natural attenuation, and risk assessment. *Dr. Rifai presented her cross-disciplinary research involving ground water flow, risk assessment, and urban storm water quality.*



SURF 2012 LECTURERS

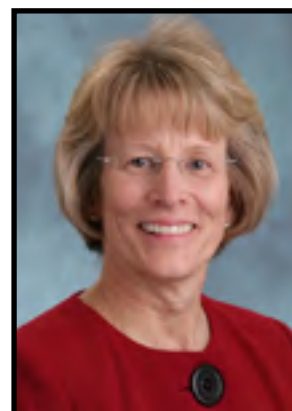
Reginald Toussant

Reggie Toussant works with students in the Colleges of Natural Sciences & Mathematics, Pharmacy, Optometry and students who are pursuing pre-professional training for healthcare careers. Originally from Galveston, Texas, Reggie received both a Bachelor of Arts degree in Mass Communications- Public Relations with a minor in Psychology and a Master of Education degree in Counseling and Guidance with an emphasis in Student Affairs from Texas State University- San Marcos, and has been working in higher education for over five years. Feel free to contact Reggie or request an appointment to discuss the various aspects of career development such as job search, choosing a major, graduate school applications, or for resume development, personal statements, interview techniques, and any other career related needs. *Reginald participated on the SURF faculty panel on applying to graduate and professional school.*



Kathy Zerda

Dr. Kathy Zerda is the Director of the Program for Mastery in Engineering Studies (PROMES), an engineering excellence program at the Cullen College of Engineering. Before arriving to the University of Houston, Dr. Zerda worked as an Engineering Manager at Compaq Computer Corp and Hewlett-Packard Company for nine years. She has her M.B.A. from Mays Business School at Texas A & M, her Ph.D. from Baylor College of Medicine, and her B.S. from University of Notre Dame. *Dr. Zerda participated on the SURF faculty panel on applying to graduate and professional school*



SURF 2012 BROWN BAG LECTURE SERIES

Week 1

SURF Kick-off Event

Wednesday, June 6th, 2012

First opportunity to get to know your fellow SURFers

Week 2

“Research Ethics” Lecture

Wednesday, June 13th, 2012

“Research Ethics” lecture by **Dr. P. Shiv Halasyamani**, Professor of Chemistry

Week 3

“Entering the Conversation” Lecture

Wednesday, June 20th, 2012

“Entering the Conversation”; learning the language of your field; lecture by **Michelle Miley** from the Writing Center

Week 4

Student Research Panel

Wednesday, June 27th, 2012

Undergraduates and recent graduates share their research experiences with current SURFers

Week 5

No Lecture Scheduled

Wednesday, July 4th, 2012

Week 6

Cross-Disciplinary Research

Wednesday, July 11th, 2012

Dr. Hanadi Rifai, Civil and Environmental Engineering Presentation on her cross-disciplinary research involving ground water flow, risk assessment, and urban storm water quality

Week 7

Faculty Panel—Applying to Graduate School

Wednesday, July 18th, 2012

Faculty panel on considering and applying to graduate and professional school; Panelists: **Dr. Jeremy Bailey**, Political Science; **Dr. Kathy Zerda**, Engineering; **Reginald Toussant**, Medical School and Health Professions; **Dr. Charles Layne**, Human Health and Performance, **Dr. Anna Newman**, Natural Sciences

Research Tour

Friday, July 20th, 2012

Research tour with **Dr. Daniel Frigo** at the Center for Nuclear Receptors and Cell Signaling

Week 8

School of Art Presentation

Wednesday, July 25th, 2012

Professor Jillian Conrad, School of Art Presentation on her research and approach to sculpture and work

Research Tour

Friday, July 27th, 2012

Research Tour with **Drs. Lynn Maher** and **Monica McHenry** of the Department of Communication Sciences and Disorders

Week 9

Creating a Research Poster Lecture

Wednesday, August 1st, 2012

Dr. Stuart Long and **Karen Weber**

Week 10

Final SURF Luncheon

Wednesday, August 8th, 2012

Lunch provided - Faculty mentors invited to this final session

PRESENTING UNDERGRADUATE RESEARCHERS

Role of NF-kB/MYD88 Pathway in Lung Cancer Promotion by Inflammation in a Mouse Model

Student Researcher: Sabah Akbani

Principal Investigators and Mentors: Seyed Javad

Moghaddam, and Maria Miguelina De La Garza

Affiliate: MD Anderson Cancer Center, Pulmonary Medicine

Sensing System for Real Time Detection of Upper GI Endoscope Loops

Student Researcher: Amir Ali

Principal Investigators and Mentors: Mequanint Moges and Luca Pollonini

Department: Engineering Technology

Anxiety, Hypertension and Cognitive Impairment: Role of Oxidative Stress

Student Researcher: Farida Allam

Principal Investigator and Mentor: Samina Salim

Department: Pharmacological and Pharmaceutical Sciences

Material Degradation: Effects of Salt Attacks on Marine Concrete Structures

Student Researcher: Adolfo Aranzales

Principal Investigator and Mentor: Kalyana Babu Nakshatralla

Department: Civil and Environmental Engineering

Classical Two-Dimensional Numerical Algorithm for α -Induced Charge Carrier Advection-Diffusion in Medipix-3 Silicon Pixel Detectors

Student Researcher: Mason Biamonte

Principal Investigators and Mentors: Lawrence Pinsky and John Idarraga

Affiliates: CERN, Physics

Homology Modeling and Docking Studies of ABCB Subfamily Efflux Transporters

Student Researcher: Lindsey Brier

Principal Investigators and Mentors: Elena Dolgikh, Matthew Jacobson, and Katrina Lexa

Affiliate: University of California, San Francisco, Pharmaceutical Chemistry

PRESENTING UNDERGRADUATE RESEARCHERS

Developing a High Performance Mutagenesis Approach for the Identification of Key Residues of a Subtype Prostaglandin E2 Receptor

Student Researcher: Eddie Dinh

Principal Investigator and Mentor: Ke-He Ruan

Department: Pharmacological and Pharmaceutical Sciences

Self-Assembled Nano-Patterns by Off-Normal Gas Cluster Ion Beam Bombardment for Biological Applications

Student Researcher: Huy Dinh

Principal Investigators and Mentors: Buddhi P. Tilakaratne, Babu R. Bhandari, Dharshana N. Wijesundera, and Wei-Kan Chu

Departments: Physics and Texas Center for Superconductivity

Future Discovery Trends of Giant Oil and Gas Fields

Student Researcher: Naila Dowla

Principal Investigator and Mentor: Paul Mann

Department: Earth and Atmospheric Sciences

Domestic vs. International Terrorism: Analysis of Opinions on National Security

Student Researcher: Derick Fan

Principal Investigator and Mentor: Ryan Kennedy

Department: Political Science

Monolingual and Bilingual Preschool Children's Performance on Various Measures of Executive Function

Student Researcher: Dayana Ferrera

Principal Investigator and Mentor: Hanako Yoshida

Department: Psychology

PRESENTING UNDERGRADUATE RESEARCHERS

Petroleum Service Environmentally Assisted Corrosion

Student Researcher: Michael Fischer

Principal Investigators and Mentors: Raresh Pascali and David Rypien

Department: Engineering Technology

Investigation of the Direct Consequences of Dipole Moment Fluctuation in a Photovoltaic System

Student Researchers: Francis De-Dios and Lionel Flores

Principal Investigator and Mentor: Margaret Cheung

Department: Physics

Two-Way FSI Jumper Analysis with Interacting Underwater Current

Student Researcher: Marcus Gamino

Principal Investigators and Mentors: Raresh Pascali and Burak Ozturk

Department: Engineering Technology

Investigating Maternal Employment and Breastfeeding

Student Researcher: Cassie Grochett

Principal Investigator and Mentor: Christiane Spitzmüller

Department: Psychology

Effects of Environmental Factors on Protein Adsorption by Carbon-Based Nanoparticles

Student Researcher: Krystal Gutierrez

Principal Investigator and Mentor: Debora Rodrigues

Department: Civil and Environmental Engineering

PRESENTING UNDERGRADUATE RESEARCHERS

Massively Parallel Nanopatterning Over Large Areas Using Nanopantography

Student Researcher: Sean Hensarling

Principal Investigators and Mentors: Siyuan Tian, Fritz Claydon, Vincent Donnelly, and Demetre Economou

Department: Chemical and Biomolecular Engineering

Optimality Versus Majority in a Homogeneous Dichotomous Voting System

Student Researcher: Tam Huynh

Principal Investigator and Mentor: Krešimir Josić

Department: Mathematics

Salt-Sensitivity is Associated with Anxiety

Student Researcher: Faizan Jafri

Principal Investigator and Mentor: Samina Salim

Department: Pharmacological and Pharmaceutical Sciences

Study of Parameter Space of POCl_3 Diffusion in c-Si

Student Researcher: Camden Kirkland

Principal Investigator and Mentor: Stuart Bowden

Affiliate: Arizona State University, Engineering of Matter, Transport, and Energy

What's in Your Soda?

Student Researcher: David Kronenberger

Principal Investigator and Mentor: Jay Neal

College: Hotel and Restaurant Management

PRESENTING UNDERGRADUATE RESEARCHERS

The Role of CeO₂ in Diesel Exhaust Aftertreatment Catalyst Systems: Interactions with Ammonia and NO_x

Student Researcher: Victor Leung

Principal Investigator and Mentor: William Epling

Department: Chemical and Biomolecular Engineering

Homology Modeling of GABI PH Domain and Molecular Docking of IP4 Inhibitor-GABI Complex

Student Researcher: Samantha Mathew

Principal Investigators and Mentors: Shuxing Zhang and Lu Chen

Affiliate: MD Anderson Cancer Center

Evaluation of a Protein with Cyclooxygenase and Prostacyclin Synthase Activities in Transgenic Mice

Student Researcher: Anthony Nguyen

Principal Investigator and Mentor: Ke-He Ruan

Department: Pharmacological and Pharmaceutical Sciences

The Role of Cognitive Processes in Linguistic Distance

Student Researcher: Nathan Nguyen

Principal Investigator and Mentor: Hanako Yoshida

Department: Psychology

Measurement of Histone Methyltransferase G9a Activity in Medulloblastoma

Student Researcher: Siddiqua Noor

Principal Investigators and Mentors: Vidya Gopalakrishnan, Chandra M. Das, and Vrushali Datar

Affiliate: MD Anderson Cancer Center, Pediatrics

PRESENTING UNDERGRADUATE RESEARCHERS

Seismic Interpretation of Paleogene Volcaniclastic Rocks in the Cerros del Rio Volcanic Field, New Mexico, Using CMP Stacking Analysis

Student Researcher: Johnathon Osmond

Principal Investigator and Mentor: Paul Mann

Department: Earth and Atmospheric Sciences

Pathway Inhibited by *Dasatinib* in Breast Cancer Cells

Student Researcher: Junghwa Park

Principal Investigators and Mentors: Xiaolian Gao and Chen Zhao

Department: Biology and Biochemistry

A Study of the Properties and Potential Applications of *Drosophila* Ultrabithorax Protein Biomaterials

Student Researcher: Dustin Porterpan

Principal Investigator and Mentor: Donna Pattison

Department: Biology and Biochemistry

The Use of Information Sheets to Promote Food Safety Practices for Lettuce Sold in Texas Farmers' Markets

Student Researcher: Megan Prickett

Principal Investigator and Mentor: Jay Neal

College: Hotel and Restaurant Management

Cultural Interactions in Development and Performance of Executive Function

Student Researcher: James Rice

Principal Investigator and Mentor: Hanako Yoshida

Department: Psychology

Transplant of *Pogonomyrmex barbatus*

Student Researcher: Stephanie Rice

Principal Investigator and Mentor: Lara Appleby

Department: Biology and Biochemistry

PRESENTING UNDERGRADUATE RESEARCHERS

Memory for What, Where, and When in Everyday Situations

Student Researcher: Alicia San Miguel

Principal Investigators and Mentors: Stephanie Babb and Ruth Johnson

Affiliate: University of Houston-Downtown, Psychology

ER Stress Potentiates Fas-Mediated Cell Death in the Liver

Student Researcher: Nancy Shenoi

Principal Investigator and Mentor: Darren Boehning

Affiliate: University of Texas Medical Branch Galveston, Neuroscience & Cell Biology

Stochastic Delay and Signal Propagation in Gene Regulatory Networks

Student Researcher: Sarah Stanley

Principal Investigator and Mentor: William Ott

Department: Mathematics

Chemical and Physical Compatibility of Intravenous Solutions of Epinephrine and CaCl_2

Student Researcher: Mary Sun

Principal Investigators and Mentors: Phillip Weeks and Diana Shu-Lian Chow

Department: Pharmacological and Pharmaceutical Sciences

Gravin Protein Mediates Signaling in Atherosclerosis Mice Model

Student Researcher: Lauren Tolat

Principal Investigator and Mentor: Bradley McConnell

Department: Pharmacological and Pharmaceutical Sciences

PRESENTING UNDERGRADUATE RESEARCHERS

Adjective Learning & Perception

Student Researcher: Audrey Utti

Principal Investigator and Mentor: Hanako Yoshida

Department: Psychology

Surveying the Needs of Survivors

Student Researcher: Fatima Yusuf

Principal Investigators and Mentors: Fran Zandstra, Ludivine

Russell, Jacklyn Flores, and Guadalupe R. Palos

Affiliate: MD Anderson Cancer Center

Serotonin Signaling Inhibits Exploratory Behavior in *Drosophila*

Student Researcher: Syed Zaidi

Principal Investigators and Mentors: Gregg Roman and Shixing Zhang

Department: Biology and Biochemistry

PRESENTING RESEARCH GROUPS: TECHNOLOGY

Audio(G)Fusion

Student Researchers: Jared Gaertner, Ruben Israel Gomez, and Christopher Valdez

Principal Investigator and Mentor: Mequanint Moges

Department: Engineering Technology

Home Innovative Intelligent Technology (HI²T)

Student Researchers: Ruben Israel Gomez, Max Ngo, Atish Patel, and Christopher Valdez

Principal Investigators and Mentors: Mequanint Moges, Driss Benhaddou, and Demond Williams

Department: Engineering Technology

Non-Invasive Glucometer Using Near-Infrared Spectroscopy

Student Researchers: Joshua Helguero, John Henneman, Joshua Saenz, and Brittany Sessum

Principal Investigators and Mentors: Mequanint Moges, Xiaojing Yuan, and Christian Landry

Department: Engineering Technology

Self-Powered Pacemaker

Student Researchers: Amir Ali, Xavier Mirza, Thomas Reyes, and Jonathan Zea

Principal Investigators and Mentors: Mequanint Moges, Bernard McIntyre, and Seamus Curran

Department: Engineering Technology

UH - A.N.S.A. Technologies

Student Researchers: Hector Castañeda, Austen Chang, Malek Elassi, and Jose Zamora

Principal Investigators and Mentors: Mequanint Moges and Luca Pollonini

Department: Engineering Technology

PRESENTING RESEARCH GROUPS: MEDICINE & SOCIETY

Chagas Disease in Texas – An Intervention through Education and Government Petition

Student Researchers: Areeba Ahmed, Alexander Angelescu, Lyna Meas, Monika Schmitt, and Thu Huong Vu

Principal Investigator and Mentor: Courtney Queen

Program: Medicine & Society

Educational Campaign for Prevention of Buruli Ulcer in Rural West Africa

Student Researchers: Angela Salemi and Nicole Solano

Principal Investigator and Mentor: Courtney Queen

Program: Medicine & Society

Preventative Influenza Outreach for Current and Future Pregnancies

Student Researchers: Mariel Arhelger, Tyler Calvin, Laura Failla, Raquel Torres, Jasmine Washington, and Juliana Zadoorian

Principal Investigator and Mentor: Courtney Queen

Program: Medicine & Society

ORAL PRESENTATIONS 1:30 - 3:00 P.M.

Characterization of Surface Morphology and Deformation on Handcart Rock Glacier, Colorado Using Terrestrial Laser Scanning

Student Researcher: Yanet Cuddus

Principal Investigator and Mentor: Julia Wellner

Department: Earth and Atmospheric Sciences

Comparing Economic Outcomes of Post-Communist Countries with Personal Views of Religiosity versus Naturalism

Student Researcher: Sheryl Herin-Devereaux

Principal Investigators and Mentors: Thomas Behr and Barbara Elliott

Program: Liberal Studies

Solving the Heat Equation with a Highly Oscillatory Thermal Diffusivity

Student Researcher: Alonso Miranda

Principal Investigators and Mentors: Daniel Onofrei and Yuliya Gorb

Department: Mathematics

Investigating the Role of the Long Non-Coding RNA in the Differentiation of Osteoblasts and Keratinocytes

Student Researcher: Scott Moncrieff

Principal Investigator and Mentor: Preethi Gunaratne

Department: Biology and Biochemistry

OFFICE OF UNDERGRADUATE RESEARCH

The Provost's Undergraduate Research Scholarship (PURS) is a part-time semester research program for juniors and seniors, and awards a \$1,000 scholarship to work one-on-one with a faculty mentor. This scholarship is open to students from all colleges and disciplines. Candidates must have at least a 3.0 grade point average to apply. For more information and to view the online application, visit the PURS website at www.undergraduateresearch.uh.edu/purs.html.

The Summer Undergraduate Research Fellowship (SURF) program is a full-time, 10-week summer research program, open to all continuing students, that provides a \$3500 stipend to conduct research under the mentorship of a UH faculty member. The projects run the gamut from analyzing texts in the library, to conducting fieldwork, to experimenting with specimens in laboratories. Students from all disciplines are encouraged to apply. The deadline for SURF is in the middle of March each year. For more information and to view the online application, visit the SURF website at www.undergraduateresearch.uh.edu/surf.html.



The Senior Honors Thesis is a capstone program that serves as the pinnacle of the student's undergraduate career in research. Student participants enroll in 3399H and 4399H, a total of six hours of course-work, which is typically applied toward their major degree requirements in their senior year. Before the start of the semester, the student secures a thesis director that serves as the instructor of record and mentor of the project. A second reader and Honors reader also serve on the student's thesis committee, offering advice during the research and writing process as well as at the student's defense of the thesis. Many students view the thesis project as the highlight of their experience as an undergraduate. For more information, visit the thesis website at www.undergraduateresearch.uh.edu/thesis_guidelines.htm.

How to Get Started in Research:

- Peruse your department's website to find out about the research the faculty within your discipline are conducting.
- Talk to current and past professors (during their office hours) from courses you have excelled in and have enjoyed. (Even if the professor is not currently seeking an undergraduate researcher, he or she may know of a colleague that is seeking an undergraduate research assistant.)
- Consult an academic advisor from your department to inquire about faculty members currently conducting research in your discipline.
- Check OUR web page of faculty members currently seeking undergraduate researchers, www.undergraduateresearch.uh.edu/facultyresearch.html.
- Join the UH Undergraduate Research **Facebook** fan page and/or the Office of Undergraduate Research's list serve. You will receive postings on available research positions and scholarships for undergraduates.
- Join **HURN**, the student organization for undergraduate research. This will allow you to connect and network with other UH undergraduate researchers.

NATIONALLY COMPETITIVE SCHOLARSHIPS

The Honors College and The Office of Undergraduate Research assist students in finding and applying for nationally competitive scholarships. These are awards that require university endorsement to apply. Visit <http://www.uh.edu/honors/undergraduate-research/scholarships/index.php> for a comprehensive listing. Among these scholarships are the following:

BARRY M. GOLDWATER SCHOLARSHIP

The Goldwater Scholarship is awarded to outstanding sophomores and juniors interested in pursuing a research career in science, math, or engineering. Each scholarship covers eligible expenses for tuition, fees, books, and room and board up to a maximum of \$7,500 annually. Regarding eligibility, candidates must be full-time sophomores or juniors at the time of application, be a U.S. citizen, natural or resident alien, and have at least a 3.7 gpa. Strong candidates should have at least three months of prior research experience. Candidates must be nominated by UH and may not apply directly. Each university may nominate only four students per year. If necessary, an internal competition will be held among UH applicants. **The UH Goldwater application deadline is November 26, 2012, and the national deadline is January 28, 2013.** For more specific information, visit the Goldwater website at www.act.org/goldwater or contact Karen Weber at kweber@uh.edu.

HARRY S. TRUMAN SCHOLARSHIP

The Truman awards \$30,000 scholarships to students who wish to attend graduate school in preparation for careers in public service. The Truman Foundation defines public service as employment in government at any level, uniformed services, public-interest organizations, nongovernmental research and/or educational organizations, public and private schools, and public service oriented nonprofit organizations. Applicants must be full-time juniors intending to graduate in the 2013-2014 academic year and be U.S. citizens or nationals. Applicants should have a strong academic and leadership record and have public service related experiences and goals. Candidates must be nominated by UH and may not apply directly. Each university may nominate only four students per year. If necessary, an internal competition will be held among UH applicants. **The UH campus deadline is November 26, 2012, and the national deadline is February 5, 2013.** For more information, visit the Truman Scholarship website at www.truman.gov or contact Karen Weber at kweber@uh.edu.

MORRIS K. UDALL & STEWART L. UDALL SCHOLARSHIP

The Udall Scholarship funds scholarships up to \$5000 to sophomores and juniors committed to careers related to the environment, tribal public policy, or Native American health care. The Udall Foundation seeks future leaders across a wide spectrum of environmental fields, including policy, engineering, science, education, urban planning, business, health, justice, and economics. The Udall Foundation also seeks future Native American and Alaska



Native leaders in Native American health care and tribal public policy. Candidates must be enrolled full-time, have at least a 3.0 gpa, and be a U.S. citizen, national, or permanent resident. Candidates must be nominated by UH and may not apply directly. **The campus deadline is February 2, and the national deadline is March 1, 2013.** For more information, visit <http://www.udall.gov/> or contact Karen Weber at kweber@uh.edu.

NATIONALLY COMPETITIVE SCHOLARSHIPS

PAUL & DAISY SOROS FELLOWSHIPS FOR NEW AMERICANS

The Paul & Daisy Soros Fellowships for New Americans provide opportunities for new Americans to achieve leadership in their chosen fields. For this program, a New American is considered an individual who is a U.S. citizen, resident alien, or is the child of two parents who are both naturalized citizens. Fellows must demonstrate academic excellence, creativity, and commitment to the values of the U.S. Constitution and the Bill of Rights. Graduating seniors and graduate students under 30 years of age may apply. **The deadline is November 9, 2012.** For more information visit <http://www.pdsoros.org/> or contact Karen Weber at kweber@uh.edu.

NSF GRADUATE RESEARCH FELLOWSHIP

The NSF Graduate Research Fellowship offers funding to undergraduate and graduate students in science, mathematics, engineering, and some fields within the social sciences. Fellowships are awarded for graduate study leading to research based master's or doctoral degrees. Each award provides a \$10,500 cost-of-education allowance and a \$30,000 stipend. Applicants must be U.S. citizens or nationals, or permanent resident aliens of the United States. **The deadlines vary from November 13-19, 2012 depending on field.** For more information visit <http://www.nsfgrfp.org/> or contact Karen Weber at kweber@uh.edu.

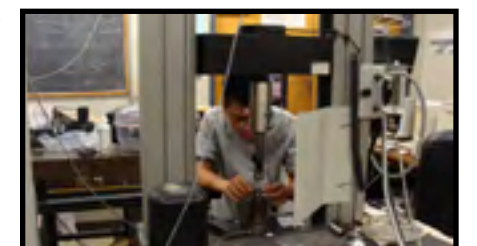
BOREN AWARDS FOR INTERNATIONAL STUDY

The Boren scholarships and fellowships provide undergraduate and graduate students funding for study abroad programs outside of Western Europe in non-English speaking countries. The program focuses on geographic areas, languages, and fields of study deemed critical to U.S. national security. Boren Scholarships promote long-term linguistic and cultural immersion, and therefore study abroad proposals for two or more semesters are strongly encouraged. Boren Awards provide students with the resources and encouragement they need to acquire skills and experiences in areas of the world critical to the future security of our nation, in exchange for Boren scholars' commitment to later seek work in the federal government. **The campus deadline is January 25, 2013 and the national deadline is February 13, 2013.** For more information on the Boren Scholarships, visit www.borenawards.org or contact Parul Fernandes at pfernandes@uh.edu.

JACK KENT COOKE GRADUATE ARTS AWARD

The Jack Kent Cooke Foundation's Graduate Arts Award enables graduating seniors and recent alumni with exceptional artistic and creative promise and significant financial need to pursue up to three years of graduate study in the U.S. or abroad. Awards may be as much as \$50,000 annually. In 2012, the Foundation selected 15 recipients for this award from a national pool. Applicants must be graduating seniors or have graduated from UH within the past five years; have at least a 3.2 gpa; have unmet financial need; and be starting a graduate degree program in the fall of 2013 in creative writing, visual arts, or performing arts. There are two phases to the application process. **The deadline for Phase One is November 28, 2012.** If you are selected as a semifinalist based on your Phase One application, you will be invited to submit additional information in Phase Two of the application

process. Phase Two requires university nomination. **The deadline for Phase Two is February 12, 2013.** For more information visit www.jkcf.org/scholarships/graduate-scholarships/graduate-arts-award/ or contact Karen Weber at kweber@uh.edu.



UH LEARNING THROUGH DISCOVERY

Transforming the Undergraduate Experience through Research

The *Learning through Discovery Initiative* is the University of Houston's comprehensive Quality Enhancement Plan (QEP). The five-year initiative promotes a teaching and learning culture supportive of research in all disciplines for all undergraduate students. The initiative focuses on 1) providing research skills training and 2) expanding student research opportunities both on and off campus. Research skills and experience will equip our talented and diverse students with the valuable tools they need to compete in the global marketplace or as they pursue graduate studies.



Photo by Lacy/Shea (UH)

Discovery Resources and Programs

Students will benefit from a host of new programs and resources such as:

- Discovery Workshops & Tutorials – introductory research skills training via in-person workshops or online tutorials
- eDISCOVERY – an online portal connecting students to research opportunities and mentors
- Reality Chats – in person and online chats with alumni and mentors about their career paths and research experiences in industry, academia, etc.
- Research Dissemination - support for student showcases in departments and colleges, prizes for Undergraduate Research Day, the Posters on the Hill Travel Award, and Undergraduate Research Travel Fellowships for student research presentations at national conferences
- Research-Supportive Curriculum – a QEP Curriculum Development Grant Program provides support for enhancements to existing courses or development of new courses that incorporate inquiry-based learning or research training
- Research Cafés – informal discussions about grand challenges in the world today, what research is being done to address them, and what areas remain to be explored by future researchers

For more information and to see how you can become involved, please visit www.uh.edu/discovery.

THE HONORS COLLEGE

The Honors College Philosophy

The Honors College at the University of Houston serves the intellectual needs of gifted undergraduates in more than 100 fields of study. We provide the careful guidance, flexibility, and personal instruction that nurture excellence. For the students who join us each fall, we offer the *best of both worlds*—the community and advantages of a small college together with the resources and rich diversity of a large research university. Our faculty and staff believe that a university education should offer more than the acquisition of skills for the workplace. The Honors College challenges the University's finest students to develop the attributes of mind and character that enhance all facets of life.

The Honors College Community

Special Classes and Course Selection

We draw on the talents of the finest faculty members within the University to provide a wide range of special courses with limited enrollment. Honors courses encourage student participation, interaction, and discussion.

Membership in a Community

You will enjoy special privileges, including The Honors College scholarships, priority registration, computer facilities, reserved

lounge and study areas, study abroad opportunities, and special housing in The Honors College residence halls. Many intangible benefits also come with participation in the Honors community—the friendships that develop in the classroom carry over into other areas of student life. We foster an atmosphere of collegiality and a spirit of camaraderie through informal gatherings, social activities, and on- and off-campus cultural events.

Talented Classmates

When admitted to The Honors College, you will enter the company of the most academically talented undergraduates at the university. Members bring a variety of interests, aptitudes, and ambitions to their studies. Through daily association with other Honors students, you will discover the broad range of academic programs at the University.

Honors Curriculum

Our curriculum is designed to coordinate with all majors/degree plans offered at the University of Houston's core. You will fulfill many of your university core requirements through Honors courses that take the place of regular required classes. One key sequence of courses, The Human Situation, is team-taught by Honors faculty and is designed to ensure that you are introduced to the great books of the Western tradition. For many Honors students, the Senior Honors Thesis represents the exciting culmination of a bachelor's degree. A thesis provides an excellent opportunity for you to work under the direction of faculty in your chosen field of study, applying your skills and knowledge toward the completion of a scholarly or creative project.



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PHRONESIS: A PROGRAM IN POLITICS AND ETHICS

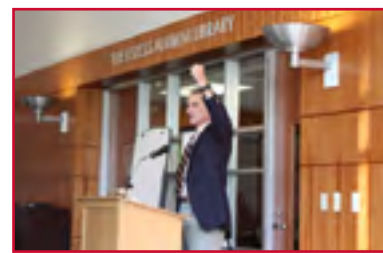
“What is justice?”

“What is justice?” asked Socrates, the self-described “gadfly” of ancient Athens. For centuries, great thinkers from Plato and Aristotle to Machiavelli and Nietzsche have addressed such fundamental questions as the nature of war and peace, the relation between freedom and authority, and the origins of moral and political order. Reflecting on our own American experience, writers and political actors such as Jefferson, Hamilton, and Madison call us to consider the character of democracy, the grounds of liberal constitutionalism, and the problems and promise of a free society. In the long course of intellectual history, these and other thinkers have taken up the issues of gender, the family, religion, commerce, and science, and, like the gadfly of Athens, urged us to reflect on the fundamental question of the human good.



Questions such as these are the focus of a program in Politics and Ethics established by the Honors College in collaboration with the College of Liberal Arts and Social Sciences. The program’s name, *Phronesis*, is the Greek word for prudence or practical wisdom, the quality that distinguishes good citizens and political leaders.

Students who participate in *Phronesis* are a part of a vibrant intellectual community engaged with some of the most profound and enduring questions of human life as well as central and current topics in politics and ethics. The program is housed in the Honors College as an interdisciplinary minor, established with the cooperation of faculty in Political Science, Philosophy, and Classical Studies. The curriculum draws on the foundation provided by “The Human Situation,” the year-long intellectual history course required of all Honors freshmen. Students of any major can then choose from a variety of courses in political theory, philosophy, and classics. Representative offerings include “Liberalism and its Critics,” “Law, Society, and Morality,” “History of Ancient Philosophy,” “The Roman Republic,” and “Recent Islamic Political Thought.” In addition to course offerings that draw on the expertise of faculty across disciplinary boundaries, *Phronesis* also hosts public events that engage the wider University and community.



Contact Information:

Susan Collins, Director suecoll724@uh.edu
Krystafer H. Redden and Safa Ansari-Bayegan, Student Assistants
phronesis.politicsandethics@gmail.com
Andy Little, Advisor alittle@uh.edu

MEDICINE & SOCIETY

The Medicine & Society Program

Houston is a city in which health care is an industry of immense importance historically, economically and culturally. The Texas Medical Center is the largest in the world and home to three medical schools, five schools of nursing, and a score of programs in the allied health sciences, as well as a dozen major hospitals, clinics, research laboratories, and other medical facilities.

Despite this prestigious center and others within the state, Texas residents are underserved in the realm of public health. Many have little access to affordable health care, relying on frequently overburdened emergency services for their most basic medical needs. Other Texas residents that do have access find the system difficult to navigate, or even alienating in its lack of meaningful human interaction. What Texas shares with the rest of the United States is a health care system that is at one and the same time the best in the world and also fraught with problems for so many of its consumers.

With its on-site faculty expertise and its close ties to the Methodist Hospital and other institutions in the medical center, The Medicine & Society Program (est. 2005) is ideally positioned to coordinate and lead major educational projects, including academic courses, public lectures, conferences, and research collaborations directed toward greater understanding of the relationship between medicine and wider society.

If you are a student or member of the public interested in more information about this program please contact Helen Valier, Coordinator of The Medicine & Society Program at 713-743-9021, or by email hkvalier@uh.edu. We also welcome inquiries from organizations and groups wishing to collaborate with our members. For more information, please visit uh.edu/honors/honors-minors-programs/medicine-society-program/.



Contact Information:

Helen Valier, Coordinator: hkvalier@uh.edu
Rachel Ainsworth, Assistant: lrainsworth@central.uh.edu
Robert Cremins, Academic Advisor: rcremins@Central.uh.edu

CENTER FOR CREATIVE WORK

The Center for Creative Work offers courses and programs for students interested in a critical and interdisciplinary arts environment. We provide workshops, directed studies, retreats, and signature events such as the *Dionysia* that bring together great books and creative minds.

The Center offers a Creative Work Minor that provides a multidisciplinary art-in-context program integrating creative projects, critical study, and cultural research. Beginning with the foundation course, “Poetics and Performance,” students explore creative work through the study of art, film, literature, theatre, and music in the context of culture, history, language, business, and society. The minor integrates co-curricular activities both on- and off-campus.

Partnership with various departments, disciplines, and programs is at the very heart of the Creative Work Minor. Courses in the minor include “Philosophy of Art,” “Politics, Film, and Literature,” and “Documenting the Culture of Houston.” Another course, “Artists and Their Regions,” affords students an opportunity to pursue art, dance, drama, fiction, music, videography, and poetry while reading and studying artists and authors in the geographical locale associated with their work. The class also travels to selected areas in and out of state for weeklong retreats to focus on individual creative projects and meet with other students and faculty in workshops.

The Center also unites academic study with artistic experience, both as a performer and as a spectator. During the spring, the traditional time of the *Dionysia* festival in ancient Athens, the Center for Creative Work produces and performs a newly-translated Greek tragedy or comedy. The Honors & The Arts program also creates opportunities for students to attend exhibitions, performances, readings, and film screenings throughout Houston by collaborating with organizations such as Inprint, the Cynthia Woods Mitchell Center for the Arts, The Menil Collection, and The Museum of Fine Arts Houston Film Series. Finally, many students pursuing the minor in Creative Work make the Senior Honors Thesis the culminating experience of their undergraduate careers. Particularly for those who aspire to continue their studies in graduate school, the thesis allows them to further the work that has been most exciting and rewarding. A thesis may be creative, performative, or critical, and students work closely with a faculty mentor throughout the process.



Contact Information: John Harvey, Director, jrharvey@mail.uh.edu

LEADERSHIP STUDIES

The proposed minor in Leadership Studies (fall 2013) allows students from any major to study leaders and leadership in a variety of contexts. The Minor in Leadership Studies provides complementary leadership development opportunities that would include student organization leadership, leadership skills training programs, and community leadership experiences. The minor, therefore, is an important part of the university’s effort to provide exposure to leadership for undergraduate students.

Description of the Minor in Leadership Studies

The proposed Minor in Leadership Studies is an interdisciplinary and experiential program open to baccalaureate students in all majors and degree programs. The foundation of the Minor in Leadership Studies is two leadership core courses (4 credit hours), coupled with three elective courses (9 credit hours) and a field experience course (3 credit hours), for a total of 16 credit hours.



The Minor in Leadership Studies seeks to promote college student leadership development by educating undergraduate students for and about leadership in a complex world. The goal of the minor is to prepare students to serve effectively in formal and informal leadership roles in campus, local, national, and global contexts. Faculty, staff, and students in the minor are dedicated to advancing the field of leadership studies by building upon and critically evaluating existing theoretical, research-based, and practical knowledge.

Core courses in the minor are sequenced to meet increasingly complex sets of learning outcomes across cognitive, personal development, group/organizational domains, and global dimensions. Students in the minor are exposed to diverse theories and perspectives on leadership and are encouraged to apply analytical skills to develop their own working philosophy of leadership that will serve them in organizational and career contexts. Civic engagement and multicultural competence are viewed as necessary requirements for leadership.

Academic Requirements

Required Courses (4 hours):

HON 3330	Leadership Theory and Practice (currently HON 3397)	3 hours
HON 4130	Honors ePortfolio (currently HON 4198)	1 hour

Elective Courses (12 hours):

To be selected from approved list (in development)	9 hours
Field Experience (Internship, Service Learning, Travel Abroad, or Thesis)	3 hours

Total Program Requirements	16 hours
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For more information, please contact Brenda Rhoden at bjrhoden@uh.edu or 713.743.9025.

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ePORTFOLIO

Honors College ePortfolio Program

The Honors College ePortfolio program offers students the opportunity to connect the dots of their education, and provides a forum for them to reflect upon their undergraduate career. Visit TheHonorsCollege.com/eportfolio for all the details on this exciting new program.

How does the ePortfolio program work?

Freshmen and Sophomores:

—Request that the ePortfolio link is added to your Blackboard Learn account at TheHonorsCollege.com/eportfolio. This folder is for you to store your files for developing your published, public

narrative at a later date. The information within the ePortfolio folder in Blackboard Learn will include recommended sections for your ePortfolio, guidelines on organizing materials, and helpful tutorials, pdfs, and links on developing your portfolio.

—Create and/or archive your reflection pieces, best course papers, leadership and service experiences, employment history, résumés, research activities, and other materials by uploading them into My Portfolios within Blackboard Learn.

—When you are ready to “go live” or make your ePortfolio public, plan to enroll in the one-credit hour HON 4198 ePortfolio course during your junior or senior year.

Juniors and Seniors:

—Enroll in the one-credit hour course: Honors ePortfolio. The one-credit hour E-portfolio course is two-fold in nature. It is a retrospective of a student’s Honors education, but also prospective in nature—serving as a preview of what’s coming next. Students are guided through the “folio process” of determining how to develop their public ePortfolio profile to share with external constituents. The instructors review the students’ reflection pieces and archived materials, and aid them in the process of creating their self-narrative and public ePortfolio profile.

—The program is intended to provide students with the tools necessary to create their own personal and professional narrative. A fully developed portfolio should offer a broader sense of who the student really is, what they have accomplished, and what they hope to achieve.

—A published ePortfolio provides an illustrative forum for faculty letter writers, selection committees for graduate and professional school, and potential employers to learn about the highlights of a student’s educational career.



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SAVE THE DATE!



PURS Spring 2013 Application Deadline:
Friday, November 16, 2012

SURF 2013 Application Deadline:
Friday, March 22, 2013

Faculty Mentoring Awards Nomination Deadline:
Monday, February 4, 2013

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