Abstracts of the Emerging Scholars Program Research Projects

Fall 2010

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Student Researcher	Dept.	Faculty Mentor	Project Title
Ehsanul Haque	ARCH	Kenneth Conzelmann	1.PassivHaus: Approaching a Net-Zero Energy Architecture
Andrea Emmanuel Sheldon Matthews	BIO	Armando Solis	2.Deriving Information-Optimized Local Potentials for Protein Structure Prediction
Dionne Trotman	BIO	Laina Karthikeyan/Steve Lipson (St. Francis)	3.Cranberry Juice and Grape Juice As Anti-Viral Agents
Hui Meen Ong (Mandy)	BIO/MAT	Liana Tsenova/Arnavaz Taraporevala	4.Multi Drug Resistant Pathogens and Nosocomial Infections in Brooklyn-a SENCER Project
Vangie Carrillo	BIO	Majeedul Chowdhury/Dennis Bakewicz	5.Studies On Cellular Factor(s) Involved in Pathogenesis in Infection of Shigella flexnen
Erika Green	BIO	Nasreen Haque	6.Chemokines in Atherosclerosis
Kenneth Paneto	BIO	Nasreen Haque	7.Microbial Diversity in the Gowanus Canal
Jameel Lancaster	BIO	Niloufar Haque/Nasreen Haque	8.Cultural Neuroscience: Cultural Influences on Brain Function
Lynn Derika Jean	BIO	Niloufar Haque/Nasreen Haque	9.Why is your spouse so predictable? Mirror Neuron System and Self-Expansion Model of Love
Ravneet Singh	BIO	Niloufar Haque/Nasreen Haque	10.Matrix Metalloproteinases: Chemical-Biological Functions and QSARs
Shavon Clenkian	BIO	Niloufar Haque/Nasreen Haque	11.Imitation, Mirror Neuron and Autism
Gessel Morales	BIO	Rachele Arrigoni-Restrepo/Maria Ter-Mikelian	12.Learning Through Serving:Cancer and Genetics
Anna Soyfer Pablo Mota	BIO	Rachele Arrigoni-Restrepo/Maria Ter-Mikelian	13.Learning Through Serving: Common Invasive Pests in the Metro Area
Anton Peterkin Michelle Perez	BIO	Rachele Arrigoni-Restrepo/Maria Ter-Mikaelian	14.Learning Through Serving: Pathophysiology and Treatment of Asthma and Cervical Cancer
Christine Kim Emmanuel Gutierrez	BIO	Tatiana Voza	15.Recreating Ecosystems
Diya Sarsour	BIO	Zongmin Li	16.Algae, The Possibilities
Hamesh Rafaqat	CHEM	Diana Samaroo	17.Establishing a Chemistry Laboratory Information System
Arielle Moxey	ENG	Jody Rosen	18.Representations of Women's Oppresion and the Pathways to Independence in *The Bell Jar* by Sylvia Plath
Anjelin Martinez	ENG	Reneta Lansiquot	19.Interactive Iconography: Scaffolding Writing across Cultures
Bernita Wynn	ENG	Reneta Lansiquot	20.The Narrative of Computing
Meleny Perez	ENG	Reneta Lansiquot/Candido Cabo	21.The Narrative of Computing
Stephanie Caraballoso	ENG	Robert Leston	22. Writing Therapy in the Classroom
Ryan Moore	HU	Justin Davis	23.Analyzing the EPA Greenversations
Dennis Nguyen Elizabeth Mills Tarik Johnson	MA	Andrew Douglas	24.The Energy of Graphs
Elizabeth Mills	MA	Boyan Kostadinov	25.The Mathematics of Invisibility
Enmanuel Almanzar	MA	Boyan Kostadinov	26. Computer Simulations of Random Walks and Gambler's Ruin
Student Researcher	**Dept.**	**Faculty Mentor**	**Project Title**

Moez Ahmed	MA	Boyan Kostadinov	27.Retirement Benefit Projection
Thomas Cheung	MA	Boyan Kostadinov	28. The Binomial Model for Pricing European Options in MATLAB
Kwasi James	MA	Delaram Kahrobaei	29.Secret Sharing
Lorenzo Lares	MA	Huseyin Yuce	30.Mathematical Modeling and Simulation of Prescribing Drug Dosage
Elizabeth Mills Yi Ming Yu	MA	Satyanand Singh	31.Testing for PrIme Numbers Using Calculus
Andrey Galper Etiosa Obasuyi Vladimir Monpremier	PHYS	Giovanni Ossola/Andrea Ferroglia	32.The Standard Model of Particle Physics
Jose Jimenez MD Razikul Islam	PHYS	Justin Vazquez-Poritz	33.Applying String Theory to the Quark-Gluon Plasma
Thinh Le	PHYS	Lufeng Leng	34.Investigation on the SRS Cross-Talk in WDM Distributed Raman Amplification
Ananthakrishnan Nair	PHYS	Oleg Berman	35.The Kinetics of Polariton Condensate in a Microcavity
Clareno Rosias	PHYS	Oleg Berman	36.The Localization of Microcavity Polaritons in a Trap
David Persico	PHYS	Oleg Berman	37.The Superfluidity of Microcavity Polaritons in High Magnetic Field
Michal Faryniarz	PHYS	Oleg Berman	38.The Localization of Microcavity Polaritons in a Microcavity
Sandy Ponticel	PHYS	Oleg Berman	39.Polariton Condensates at the Different Shapes of Microcavity
Seyedhamidreza Sadatian	PHYS	Oleg Berman	40.The Influence of the External Trapping Potential on the Polariton Superfluid
Steven Lora	PHYS	Oleg Berman	41.The Time Evolution of the Exciton and Cavity Photon Condensate Profiles in the Microcavity
Karl Garcia	PHYS	Reginald Blake/Reneta Lansiquot/Janet Liou-Mark	42.Tracking the Black Male Initiative Programmatic Activities: Keeping an Eye on Intervention Assessment
Ruth Ruben	S S	Daniel Capruso/Kara Pasner	43.Stereopsis as a factor in three-dimensional block construction
Olena Romanyshyn	S S	Pa Her	44.Cognitive Appraisals in Coping with Traumatic Events
Neishalee Perez	SS	Eric Rodriguez	45.Investigating the Intersection of Psychology and Religion: A Self-Exploration
Tiffany Clarke	SS	Hugh McDonald	46.An In-Depth Look at Euthanasia

Title: "Passiv Haus": Approaching a Net Zero Energy Architecture
Undergraduate Researcher: Ehsanul Haque
Faculty Mentor: Prof. Kenneth Conzelmann

In English it's called "passive house": a building which consumes nearly zero energy; a building which, in a sense, just lies there. Our endeavors as an Emerging Scholar team is a furtherance of a study by Prof. Conzelmann which began this past summer in Europe as part of a CUNY research grant which included on-site observations and documentation of passive design. The impression: Europe is decades ahead of us; our recommendation: let's catch up, at least!

Our project is comprised of two parts: Research and Application. Research involved poring over a vast amount of books, professional journals, newspaper articles, the internet, and an abundance of material and photos gathered in Europe. We became familiarized with key topics, terms and systems, working hard to take away just what we needed to know in order to move our project forward.

For the Application we chose to design a simple single family house. To illustrate the differences in construction materials and techniques used in Europe vs. the US, two sites were chosen: one in upper Austria, the other in upstate New York, both having similar climatic conditions.

We focused on fundamental concepts of the passiv haus such as site orientation, protective vegetation, super insulation and healthful ventilation. Renewable energy sources such as geothermal, solar and photovoltaic, wind and bio-mass were explored, as well as "green" and sustainability considerations of eco-friendly products which do not harm the environment.

The Emerging Scholar Program has provided an opportunity for us to share what we've discovered: that the passive house concept not only saves home owners energy dollars but ultimately benefits the environment at large by not contributing to global warming. Our next step is to bring this effort further, to go beyond the academic realm and to make a real difference in the real built world.

Title: Deriving Information-Optimized Potentials for Protein Structure Prediction
Student Researchers: Sheldon Matthews & Andrea Emmanuel
Faculty Mentors: Prof. Armando D. Solis

Knowledge-based potentials are equations derived from empirical data for use in various protein structure prediction and protein folding studies. This project involves the construction of such potentials from experimental structures found in the Protein Data Bank (PDB), using information-theoretic methods to maximize their effectiveness. Specifically, information theory can guide the best form and functionality of such potentials, and can direct the use of all the information available in the PDB. Ideas from prior published work of Prof. Solis are used to design the best-performing local potentials

to date. In this initial segment of the project, we are establishing the logistical foundations for a comprehensive optimization of potential functions. Specifically, we are currently in the process of organizing the most comprehensive database of high-resolution structures from the PDB, as well as setting up the computer programs that we will use going forward. We intend to use the comprehensive database to derive the most effective folding potentials that maximize the use of all available empirical data.

Title: Cranberry Juice And Grape Juice As Anti-Viral Agents and Cytotoxicity **Studies**
Student Researcher: Dionne Trotman
Faculty Mentor: Prof. Laina Karthikeyan
Collaborator: Prof. Steve Lipson (St. Francis College)

Defined phytochemicals in potable juices (grape juice and cranberry juice) have been shown to possess antiviral properties both *in vitro* and *in vivo*. However, cytotoxicity by chemical treatment of cells may mask any antiviral effects. Accordingly, such testing is critical to validate the effect of the juices in question as antiviral agents.

Antiviral testing in cell culture has addressed the potential issue of cytotoxicity by monolayer pretreatment with cranberry and Concord grape juices. Such [cytotoxicity] testing employed trypan blue exclusion and cell subpassage. However, confirmatory testing to identify subtle effects by juices and other phytochemicals or nutraceuticals needs to be tested by a metabolic assay. The metabolic assay that was conducted was a non-destructive bioluminescent cytotoxicity assay, which quantitatively measures the release of adenylate kinase (AK) from damaged cells. Release of AK from damaged cells, in complex with ADP, luciferein and luciferase additives from the Toxilight^{R} BioAssay kit, yields an ATP spark – which can be detected by placement of the reaction mix in a luminometer. The luminometer was procured through a GRTI grant, which was used in this collaborative effort.

Dionne did the experiments with the luminometer and perfected the assay and the data. She showed that 50% Purple, Niagara, and pure cranberry juice showed no cytotoxicity to monkey kidney cells grown in monolayer culture. This data confirms earlier results in that the antiviral effects were clearly due to the juices, and not artifact associated to host cell cytotoxicity.

Title: Multi Drug Resistant Pathogens and Nosocomial Infections in Brooklyn – a SENCER Project
Student Researcher: Judy Liang
Faculty Mentor: Profs. Liana Tsenova, Arnavaz Taraporevala

This study was a continuation of the project from academic year 2009/2010.
Nosocomial Infections (NI) are hospital acquired infections. Our previous study defined the most common pathogens causing such infections. Since antibiotic resistance of bacteria is an emerging problem, contributing to the high mortality in NI, we studied the susceptibility and resistance to some of the most commonly used antibiotics. We performed statistical analysis of the data obtained from patients' isolates from 15

hospitals in Brooklyn, NY. We used a chi-squared test to determine the antibiotics to which bacteria show the highest resistance. We examined *K. pneumonia, P. aeruginosa* and *A. baumannii.* We also found the correlation coefficient between the three pathogens.

Our results demonstrate that Ciprofloxacin should be used minimally for the three NI pathogens. Newer therapy such as Tigecycline and the combination of Polymixine + Rifampin proved to be more efficient. However, all antibiotics should only be prescribed through a thorough understanding between the physicians and patients, as there could be many underlying factors that need to be addressed, i.e. allergic reactions or multiple side effects.

Title: Studies on the Cellular Factors Involved in the Pathogenesis of Infection of *Shigella flexneri 1c.*
Student Researcher: Vangie Carrillo
Faculty Mentors: Profs. Majeedul Chowdhury, Dennis Bakewicz, Alam Nur-E-Kamal, Medgar Evers College

Shigellosis, also known as bacillary dysentery, is an infection caused by the *Shigella* bacteria. Infection is typically via fecal-oral contamination. The causative organism is frequently transmitted directly from person-to-person; hand-to-mouth in the setting of poor hygiene. Depending on the age and conditions of the host only as few as ten bacterial cells can be enough to cause symptoms. Symptoms range from abdominal cramps, fever, tenesmus, and dysentery. Currently, *S. flexneri* is the most common species found in shigellosis, especially in underdeveloped countries. It has been linked to more than 50% of known cases of shigellosis. Aside from the metabolic disturbances, neurological abnormalities have also been reported. In Bangladesh, it has been reported that children undergo alterations in consciousness, including seizures, delirium, encephalopathy and coma. While neurological manifestations are recurrent in children, its pathogenesis and mechanisms are still unclear. Review on the pathogenicity demonstrated that once *S. flexneri* is internalized, it survives within the human body by inducing apoptotic pathway. Its virulence plasmid encodes protein IpaB that activates caspase 1 causing a cascade effect leading to apoptosis. Our goal is to further understand the cytotoxic, neurotoxic, and enterotoxic factors involved in the development of the clinical complications in shigellosis. The pathogenicity of *S. flexneri 1c* was studied in primary neuronal cells. We intend to further comprehend and possibly identify the neurotoxic factor(s) involved in the pathogenicity of this infection. In our preliminary studies, extracts from *Shigella flexneri* cells was found to inhibit neurite outgrowth (an assay for neurotoxicity) of cerebellar granule neurons.

Title: Microbial Diversity in the Gowanus Canal
Student Researcher: Kenneth Paneto
Faculty Mentor: Prof. Nasreen Haque

Every Living organism has a specific role in maintaining the balance of the ecosystem. As a result of this balance, all organism including bacteria can contribute to a healthy and balanced ecosystem. When this balanced is disturbed, the ecosystem can suffer.

Gowanus Canal, an estuary in New York City is infamous for its level of pollution. We are studying the microbial populations colonizing in the water body. In spite of measures being taken, various microbes survive in this environment. The metabolic activity of these organisms plays a significant role in their survival. Understanding these factors will aid in the identification of new therapeutics. Our hypothesis is that the microorganisms in the canal may yield molecules that may be of value in modulating diseased conditions. Our aims are (1) to identify and characterize bacteria that may show an antibiotic effect on Eshcerica coli and Staphlococcus aureus.

Title: Chemokines in Atherosclerosis
Student Researcher: Erika Green
Faculty Mentor: Prof. Nasreen Haque

The response of the arterial vascular wall to injury is characterized by vascular smooth muscle cell migration. This migration is induced by cytokines, however the agonists involved are not fully defined. Chemokines are chemotactic cytokines that are known to attract leukocytes to the sites of infection and inflammation. The CC chemokine receptor 8 (CCR8) is expressed on monocytes and T-lymphocytes and is the sole receptor for the human CC chemokine CCL1 (I-309) and for the viral chemokine, vCCL1 (vMIP-1). The induction of CCR8 and CCL1 under conditions associated with vascular smooth muscle cell proliferation and migration raises the possibility that CCR8 may play an important role in vessel wall pathology. We aim to define 1) how chemokines enhance cell survival, motility and proliferation and 2) the mechanisms by which chemokines influence cell remodeling. We will be using protein gel electrophoresis to identify protein that influence these parameters

Title: Matrix Metalloproteinases: Chemical-Biological Functions and QSARs
Student Researcher: Ravneet Singh,
Faculty Mentors: Profs. Nasreen S. Haque and Niloufar Haque

Matrix metalloproteinase's (MMPs) are a large family of calcium-dependent zinc-containing end peptidases, which are responsible for the tissue remodeling and degradation of the extracellular matrix (ECM). They are regulated by hormones, growth factors, and cytokines, and are involved in ovarian functions. MMPs are excreted by a variety of connective tissue and pro-inflammatory cells including fibroblasts, osteoblasts, endothelial cells, macrophages, Europhiles, and lymphocytes. These enzymes are expressed as zymogens, which are subsequently processed by other proteolysis enzymes to generate the active forms. Matrix metalloproteinase's are considered as promising targets for the treatment of cancer due to their strong involvement in malignant pathologies. However, the presence of an inherent flexibility in the MMP active-site limits dramatically the accurate modeling of MMP–inhibitor complexes. The interest in the application of quantitative structure–activity relationships (QSARs) has steadily increased in recent decades and it may be useful in elucidating the mechanisms of chemical–biological interactions for this enzyme. In the present review, an attempt has been made to explore the in-depth knowledge from the classification of this enzyme to

the clinical trials of their inhibitors. A total number of 92 QSAR models are presented to understand the chemical–biological interactions.

Title: Imitation, Mirror Neuron and Autism
Student Researcher: Shavon Clenkian
Faculty Mentors: Profs.Nasreen S. Haque and Niloufar Haque

Autism spectrum disorders (ASD) are largely characterized by deficits in imitation, pragmatic language, theory of mind, and empathy. Understanding the intentions of others while watching their actions is a fundamental building block of social behavior. The neural and functional mechanisms underlying this ability are still poorly understood. The fact that brain disorder can impair social interactions in different ways suggests that social competence has multiple components that have foundations in brain systems. The physiological basis of one aspect of social cognition, theory of mind, is just beginning to be understood. Brain-imaging studies suggest that a network of areas linking medial prefrontal and temporal cortex forms the neural substrate of metalizing, that is, representing one's own and other people's mental states. The medial prefrontal areas are prominent also in tasks that involve self-monitoring, whereas the temporal regions are prominent also in tasks that involve the representation of goals of actions. We understand actions and intentions of others through a direct matching process. This matching process activates a complex brain network involving the mirror neuron system (MNS), which is self-related and active when one does something or observes someone else acting.

Title: Why is your spouse so predictable? Mirror Neuron System and Self-Expansion Model of Love
Student Researcher: Lynn Derika Jean,
Faculty Mentors: Profs.Nasreen S. Haque and Niloufar Haque

Because social psychology admits that mutual intention's understanding grows in close relationship as love grows, we hypothesize that mirror mechanisms take place in love relationships. The similarities between the mirror matching process and the mutual intention's understanding that occurs when two persons are in love suggest that exposure to love might affect functional and neural mechanisms, thus facilitating the understanding of the beloved's intentions. The modern procedures and techniques of socio-cognitive neuroscience make it possible to understand love and self-related experiences not only by the analysis of subjective self-reported questionnaires, but also by approaching the automatic (non-conscious) mirror experiences of love in healthy subjects, and neurological patients with a brain damage within the mirror neuron system. Although the psychology of love is now well admitted, the systematic study of the automatic facilitation effect of love through mirror mechanisms might open a new avenue towards the social mind and also self consciousness.

Title: Cultural Neuroscience: Cultural Influences on Brain Function
Student Research: Jameel Lancaster
Faculty Mentor: Profs. Nasreen S. Haque and Niloufar Haque

The study of psychology has traveled down some interesting roads during the last century. For the totalitarian state, the idea that all people are born biologically equal and that, with the right prodding, they could be guided to be good citizens, became an article of faith in some parts of the world. Genes do not so much determine our behavior but influence our responses to the environment. During childhood our brains are incredibly plastic. The developing brain requires the right mix of nutrients, sensory, emotional and intellectual stimulation to realize its potential. Children first learn to develop in order to learn the social rules that help them to conform. During adolescence and early adulthood, this conformity is usually replaced by increasing individuality and drives to leave the parental nest. This leads to gradual attempts to shape the environment to fit with the structure of his or her brain and mind. Yet some plasticity remains throughout life, and we are likely able to create new neural connections and even new neurons into old age. And these new neurons and connections develop not only in response to the external environment, but also in response to our thoughts and emotions. To these three findings - that genes predispose but do not determine; that our brains are malleable and plastic throughout life and third, the impact of our thoughts and beliefs on our brains - we can now add a fourth: the interplay of culture and society on our minds and genes, and the effects of our minds and genes on society. Input from the world around us helps fashion our brains and we in turn shape the world around us, which again shapes and changes the brain, leading to an endless dance between the brain, the mind and society.

Title: Learning Through Serving: Cancer and Genetics.
Student Researcher: Gessel Morales
Faculty Mentors: Profs. Arrigoni-Restrepo and Ter-Mikaelian

According to the National Center for Health Statistics, 23.2% of all deaths occurring in the United States has been attributed to the recurrence of multiple types of cancers within individuals across the country. Cancer has become a major concern for many, as it sometimes emerges unexpectedly without any noticeable symptoms or warnings; and although science and technology has been moving forward to help in diagnosing and treating various forms of cancers, not much is known about the possibility of predicting its occurrence. However, many scientists believe that predicting its occurrence within certain individuals may become possible, starting with the simple notion of inheritance. Accordingly, this research project will examine the possibility of genetic predisposition to cancer as well as how this conception could later help uncover and perhaps find better treatment to this dreadful disease. This will be done through the help of several scientific journals and past scientific research that has been performed on this specific subject area. A known case study will also be used in order to better understand the idea of genetic susceptibility to cancer. This study is part of an ongoing project co-mentored by Professors Arrigoni-Restrepo and Ter-Mikaelian, which engages each student in scholarly research allied to a pertinent volunteer experience. The volunteer experience will enrich the research paper as well as provide insight into practical applications of the problem under study.

Title: Learning Through Serving: Common Invasive Pests in the Metro Area.
Student Researchers: Pablo Mota and Anna Soyfer

Faculty Mentors: Profs. Arrigoni-Restrepo and Ter-Mikaelian

The purpose of this project is to investigate common pests that are currently infesting the metropolitan area and presenting possible solutions to get rid of them. These pests can be categorized as invasive species, residing in areas enclosed with trees such as forests and parks. Invasive species generally include plants, animals, and pathogens that are non-native to a particular ecosystem and bring harm to the environment and/or to human health. Currently, the most common invasive insects species in the NY metro area include the Asian Long-horned Beetle and the Emerald Ash Borer. We will discuss in detail the main characteristics of each species of insects, including the means by which they have managed to infest our woods and forests, the kinds of trees that are preferentially colonized by these organisms and, most importantly, the methodologies that are currently being employed to prevent these species from spreading further and complete their devastating colonization of the vegetation in New York. This study is part of an ongoing project co-mentored by Professors Arrigoni-Restrepo and Ter-Mikaelian, which engages each student in scholarly research allied to a pertinent volunteer experience. The volunteer experience will enrich the research paper as well as provide insight into practical applications of the problem under study.

Title: Learning Through Serving: Pathophysiology and Treatment of Asthma and Cervical Cancer
Students Researchers: Michelle Perez and Anton Peterkin
Faculty Mentors: Profs. Arrigoni-Restrepo and Ter-Mikaelian

Our poster examines two common diseases affecting the human respiratory and reproductive systems, respectively: asthma and cervical cancer. Asthma is a chronic inflammatory condition that affects 300 million people worldwide and causes approximately 250,000 deaths per year. Cervical cancer also causes about 250,000 deaths yearly, making it the fifth most deadly cancer in women worldwide. Each of these diseases also has a personal significance for us, as it has impacted our lives and the lives of people we know. Asthma is believed to be caused by a complex combination of environmental and genetic factors, making prevention of the disease difficult. On the other hand, cervical cancer has been linked to infection with human papillomavirus (HPV), making the HPV vaccine an effective method of prevention. Treatments of cervical cancer depend on the stage of the disease and include chemotherapy, radiation therapy, or surgery. Management of chronic asthma consists of a combination of medication and lifestyle modification. In this project, we will investigate the disease symptoms and mechanism and relate these to the anatomy and physiology of the relevant organ system. We will also examine the treatments currently in use and patient prognosis. This study is part of an ongoing project co-mentored by Professors Arrigoni-Restrepo and Ter-Mikaelian, which engages each student in scholarly research allied to a pertinent volunteer experience. The volunteer experience will enrich the research paper as well as provide insight into practical applications of the problem under study.

Title: Recreating Ecosystems
Student Researchers: Emmanuel Gutierrez, Christine Kim,

Faculty Mentor: Prof. Tatiana Voza

An adequate amount of microorganisms within the pond system from a previous project were collected and identified. However, in order to make these findings available to students, several aquarium and terrestrial tanks are needed. This project was focused on recreating self-sustaining ecosystems in tanks that will be displayed in Biology labs. These living tanks will serve as visual tools and hands on experience to biology students.
A short study of the diversity and adaptations of different organisms within the Eukarya domain (Animal, Plant and Protist kingdoms) was conducted before establishing them in water tanks. Several macroscopic organisms were successfully implanted and their natural undisturbed behavior can be easily observed. Among these, many planaria (flat worms; phylum Platyhelminthes), gammarus (scuds; phylum Arthropoda, class Crustacea), copepods and daphnia (water-fleas;), as well as snails (phylum Mollusca) can be seen feeding and interacting. Another relevance to this research is to cultivate autotroph organisms such as plants (Elodea, Cabomba, Sagittaria) and algae (kingdom Protista), crucially necessary in creating a hospitable environment but which photosynthetic organelles and activity can also be observed and studied. The aquatic tanks recreating pond ecosystems have been a success and they are now ready to be displayed in different Biology Laboratory rooms.

This semester, our project has been extended to terrestrial ecosystems. Within our first terrestrial tank we have included garden soil and small rocks at the base to “ventilate” and prevent the soil from rotting and becoming non livable. The terrarium was then seeded with earthworms (Phylum Annelida), sow bugs (phylum Arthropoda Class Crustacea), slugs and snails (phylum Mollusca), small ants and cicada larvae (Phylum Arthropoda, class Insecta). Most of these organisms are detritivores. They are decomposers of organic matter, their feces serve as fertilizers for plants and they continuously enrich their environment allowing other organisms to survive. We therefore expect our terrestrial ecosystem to persist and to soon have many organisms thriving without much disturbance and maintenance.

Hopefully this research continues throughout the years at City Tech and an outcome of multiple clones of these tanks can be expected.

Title: Algae, the Possibilities
Student Researcher: Diya Sarsour
Faculty Mentor: Prof. Zongmin Li

Algae are a large group of simple, usually autotrophic organisms that can vary from unicellular to large multicellular organisms. Like plants, algae are photosynthetic organisms, but they are considered "simple" because they lack the many distinctive organs found in more common land plants. Algae are among the fastest growing plants in the world, and about 50 percent of their weight is oil. They also produce sugar after photosynthesis. That lipid oil can be used as means to make bio-diesel for cars, trucks and airplanes and their sugars can also be found in various applications in our lives. In

this project, we reviewed the ongoing research topics in exploring the possibilities of using algae as alternative source of energy and food.

Title: Establishing a Chemistry Laboratory Information System
Student Researcher: Hamesh Rafaqat
Faculty Mentor: Prof. Diana Samaroo

A chemical laboratory information system (LIS) is an important aspect of any departmental laboratory safety program. The chemistry department of New York City College of Technology will use the MyLIS system to establish an online database and will contain information such as: chemical name, hazard warnings, storage location, quantity, name of manufacturer, CAS number, etc. In addition, this will be a shared system among all researchers in the department and can be access from anywhere using the internet. Also in case of a fire, firefighters will know what kind of chemicals they are facing and what procedures they can use to eliminate
them. This inventory will also aid in following the regulations set up the fire department. The use of a chemistry LIS system will also expedite the removal of unneeded, excess or outdated chemicals and offer efficient use of laboratory storage space.

Title: Representations of Women's Oppression and the Pathways to Independence in *The Bell Jar* by Sylvia Plath
Student Researcher: Arielle Moxey
Faculty Mentor: Prof. Jody Rosen

In our research, we identify and dissect ways in which women's oppression and their quest for independence are depicted in Sylvia Plath's 1963 novel, *The Bell Jar*. The protagonist, Esther Greenwood, experiences a series of disappointing circumstances that have an impact on her psychological, emotional, familial, and romantic well-being. This project traces her downward spiral through textual analysis and through research of secondary sources. These will include examining the web presence of the novel, using the MLA International Bibliography to identify scholarly resources, and blogging about the findings. The blog presents viewpoints on the novel's themes and highlights these themes in key passages in the novel. We hope that the blog will attract readers from City Tech and beyond to share their reactions and scholarship about *The Bell Jar* and engage with each other in this virtual community.

Title: Interactive Iconography: Scaffolding Writing Across Cultures
Student Researcher: Bernita Wynn
Faculty Mentor: Prof. Reneta D. Lansiquot

This research presents a unique approach to creating and developing discussions around interactive iconography (interactive: two-way multimedia communication between user and software; iconography: identification, description, and the interpretation of the content of images) to foster good writing skills. Originally used with middle school students, this application is now being introduced to first-year college students with

modifications to suit their level of learning. *Scope Out* (www.scopeout.info), an online revision tool, allows students to interact and explore iconography from different cultures around the world. In an attempt to identify the objects or activities depicted in the artifacts, students use their research findings to write and produce a museum label.

The artifacts used have been selected from the areas related to the Seven Wonders of the World in order to have a theme centered on the project that would provide a wide cultural difference between the artifacts. Research was important in order to locate four additional artifacts to add to the initial three which were not widely known or had figures that could be easily interpreted based on what is commonly known in most cultures. Research websites and museums were a great resource to locate photographs of these artifacts. Once found, the photograph of the artifacts will go through the process of being converted from a bitmap graphic into a vectorized version. Bitmap images such as photographs are defined by pixels that are squares of color arranged on a grid while vector images are defined by shapes such as circles and squares. Their shapes are precise mathematical descriptions of the image and can be scaled without becoming blurry or "pixelated." This process involves the photograph being traced in Adobe Illustrator. The vectorized image is then made interactive via the Adobe Flash program to be an interactive part of the *Scope Out* application. The benefit of having a vectorized image is that it allows selected areas on the artifact to be extracted and expanded so that users are able to see the images more clearly, to gain multiple perspectives.

Title: Interactive Iconography: Scaffolding Writing Across Cultures
Student Researcher: Anjelin Martinez
Faculty Mentor: Prof. Reneta D. Lansiquot

This project is in its third semester. The purpose of this research study is to analyze how reading interactive iconography will affect critical writing skills. Using an interactive iconography application designed by Prof. Lansiquot called *Scope Out* (www.scopeout.info) allows students to layer selected sections of a narrative, save the results, and review multiple revisions of museum labels written for ancient artifacts. Using this online revision tool, student groups examine iconography from its new theme of The Seven Wonders of the World and write museum labels. Selected iconographies are open to interpretation because even experts do not agree on their true meaning.

The goal this semester was to redesign the website because, in its initial creation, it was targeted primarily to middle school students. For example, the top banner portion of the website is a thumbtack board theme. The current logo is a chalkboard with the words *Scope Out* surrounded by children of all ethnicities. The website is now being redesigned to fit the interests and styles of college students and general audiences in the humanities, while relating to the Seven Wonders of the World. The branding and look of the website are important because the level of interest the students will have will be affected by the look of the site, and we want it to be recognizable and visually interesting. Many things are being analyzed during the re-branding of the website, including the identity of the website as a research and writing tool, and the target audience, which is now middle school to college students and even general audiences in the humanities. The look and

style were chosen for the theme of the Seven Wonders of the World. Although the website is going to be visually interesting, the iconography page will be kept simple so that it does not distract the viewer and the iconography remains the primary focus; Prof. Lansiquot agreed with my idea to choose neutral colors such as tan, light yellow, gray, and shades of blue and green. When designing thumbnails for the logo, I was looking for a modern look, applying scientific and technology style, something that could represent research across cultures. The website is currently under construction and will be updated soon.

Title: The Narrative of Computing
Student Researcher: Meleny Perez
Faculty Mentors: Profs**.** Reneta D. Lansiquot and Candido Cabo

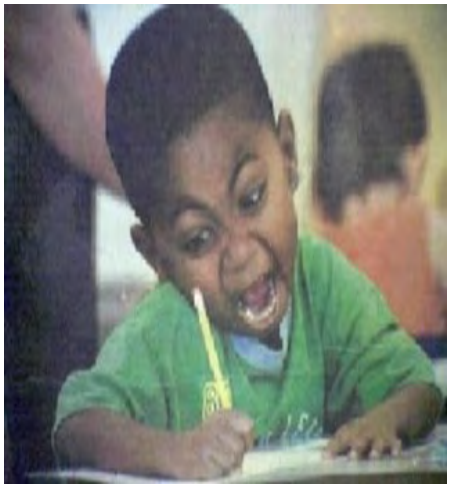
This semester, the highlight of my work with Prof. Lansiquot from the English Department and Prof. Cabo from the Computer System Technology Department was a student focus group. Ten students from the college computer club, and all Computer System Technology majors, took part in this focus group to improve a ten-question Problem Solving questionnaire used to gather research data. First, students completed this brief questionnaire; then they were asked their opinion on each question and asked to provide suggestions on how to improve the questions so that they would be better understood by future students.

My task in this project was to grade these questionnaires and to record the results in a Microsoft Excel spreadsheet. I was also asked for my opinions on how clarify this questionnaire. When I first started grading the questionnaire about a year ago, I was not too sure on how to answer the questions. After grading them many times and looking at the answers, I learned how to do each question bit by bit. But there was one question—number 8—that I did not understand until the focus group discussion. Another question gave me a little trouble was question 4. I believe if the question was given first, followed by the instructions, I would have been able to figure out the answer. While grading these questionnaires in the past, I noticed some errors that students were repeatedly making. For instance, students often got simple questions wrong (i.e., question 5). All it required was for the student to follow a given procedure. I believe students got this answer wrong because they thought it was a trick question.

After all the students took the Problem Solving questionnaire, we went over the questions that the students had the hardest time with. By a show of hands, we concluded that the hardest question on this questionnaire was number 8. It was extremely vague. Some of the students admitted that they got answers wrong because they were a bit too overconfident, so they didn't review their answers. This was an important statement because it shows us that students can easily miss out on easy points just because they don't bother to review their answers. One student pointed out that the students participating in the focus group were not first-year students like students who are given this questionnaire. After witnessing and participating in this focus group, I believe that it will help improve the Problem Solving questionnaire and clarify future results.

Title: Writing Therapy in the Classroom
Student Researcher: Stephanie Caraballoso
Faculty Mentor: Prof. Robert Leston

Writing therapy practiced in the classroom is the idea of exploring personal trauma through writing in composition courses with the stated objective of helping students learn to write better. The practice of exploring personal trauma in writing assignments allows the student to confront personal issues and deal with traumatic events. In doing so, students reach a point of self disclosure, a process of revealing deeply personal and traumatic issues to the class and the teacher, which is believed to be vital to the process of becoming a better writer. Scholars (Berman, Bracher, Alcorn, Chandler, and others) believe that students must grow emotionally before they can grow intellectually. Self disclosure occurs when students are able to work through their "emotional block" that keeps them from growing intellectually. It is theorized that this kind of emotional growth is a necessary step in order for students to become more competent writers.



Writing professors practicing writing therapy in the classroom believe that this type of writing not only sharpens the writing skills of students, but also helps them to become better people by teaching students to become more emphathetic and less judgmental. As a result, it is common for such classes to develop strong bonds among students and a strong sense of community.

Along with its benefits, writing therapy also has its limitations. The lasting effects of writing therapy have been put into question by a variety of scholars. Will the sense of community extend outside the classroom? Is the students' self disclosure something they will carry out into other classes and aspects of their lives after graduating? If a traumatic experience has affected a person her entire life, can it be adequately addressed in a single semester? The argument has also been made that students can and have been re-traumatized by "risky" writing and even by listening to their peers' essays. For instance, students reported having the desire to commit suicide after reading Sylvia Plath's *The Bell Jar*. Andrew Solomon adds that suicidal thoughts can be spread like an infectious disease throughout the class (in Berman 250).

Another issue arises when writing about emotional topics. In the same way one can easily ignore or miss the errors in a paper full of emotion when reading, students can become distracted by the emotion and lose the importance of the writing itself. Other scholars (McGee, et al.) have argued that professors become distracted and forget the importance of teaching actual writing skills. When a student has a deep connection to the writing, and the emotion in the paper is strong, the professor is cornered into a

situation, a situation where he is not able to correct the student's writing because doing so would be too invasive to the student's ego. As a result, he cannot address the writing to the extent necessary. The student's personal thoughts and feelings about a traumatic experience cannot be challenged the way a student's writing should be; thus the professors are left to correct only grammar. According to James Williams, this lack of criticism of the students' writing may be contributing to what has been described as Narcissitic Personality Disorder (NPD), where a student feels unduly unique, powerful, and entitled. By coddling students, professors prevent them from realizing that everything does not come easy.

In the end, arguments can be made in favor of both that writing therapy has no place in the classroom and that it should be incorporated. There are too many unanswered questions in regard to the short and long term effects of writing therapy. Further research would ask the following kinds of questions: Is there a significant change in the student's writing? Do students write to please their professors? And do these "risky" topics give the professors too much insight into the students' personal lives? Without the answers to these essential questions the efficacy of writing therapy in the college classroom will continue to be in question.

Title: Analyzing the EPA Greenversations
Student Researcher: Ryan Moore
Faculty Mentor: Prof. Justin Davis

This pilot study focused on the EPA Greenversations Blog (http://blog.epa.gov/blog/) to better understand the content, ideas, and usership of the blog. As the EPA Greenversations Blog identifies itself: the "blog is written by EPA employees (and occasional guests) about the things they bring to their jobs every day" (EPA, 2010). The EPA Greenversations Blog was founded in January of 2008, and is available to both EPA employees as well as the general public via technologies including the World Wide Web as well as email. This project is a multi-semester study; the tasks for this semester involved: (1) collecting all of the Blog posts from January 2008 until December 2010 and (2) analysis of the blog posts (n=78) from 2008.

Title: The Energy of Graphs
Students Researchers: Elizabeth Mills, Tarik Johnson, Dennis Nguyen
Faculty Mentor: Prof. Andrew Douglas

To any undirected simple graph G, we may associate an adjacency matrix M(G). The energy of a simple undirected graph G is the sum of the absolute values of the eigenvalues of M(G). In this project we examined the energy of simple undirected graphs. In particular, we used linear algebra to prove mathematical properties for the energy of graphs. These properties include a precise formula for the energy of complete graphs and an upper bound for the energy of path graphs. We also discuss open problems in the field and highlight topics for future research. We used the computer algebra system MAPLE, including the creation of simple algorithms, to assist with this project.

Title: The Mathematics of Invisibility
Student Researcher: Elizabeth Mills
Faculty Mentor: Prof. Boyan Kostadinov

As anyone who has read a Fantastic Four comic knows, invisibility is one of the most useful superpowers, certainly better than stretching or catching on fire. Recent work on the mathematics behind invisibility has led to viable technologies which can prevent detection by electrical impedance imaging (using electric current), heat or even electromagnetic imaging. The latter offers the possibility of making an object invisible even to the human eye. In this project we have explored the essential mathematical ideas behind invisibility which lead to the attributes of a specially engineered "metamaterial" which must be used to surround the object of interest in order to make it invisible to the particular imaging technique. This man-made material behaves like an anisotropic electrical conductor with a very special electrical conductance matrix. The form of this matrix is derived from the mathematics behind making an object invisible. These special properties of the metamaterial allow the electrical current induced by the imaging technique to be redirected around the object in a way that renders the object undetectable by this imaging technique. Our project is based on the recent paper "Impedance Imaging, Inverse Problems and Harry Potter's Cloak" by Kurt Bryan and Tanya Leise published in the SIAM Review Journal, vol. 52, 2010. In this project, we aim to understand and re-derive some of the key mathematical steps that form the foundations of mathematics of invisibility.

Title: Retirement Benefits Projection Model
Student Researcher: Moez Ahmed
Faculty Mentor: Prof. Boyan Kostadinov

In this project, we build a retirement benefits projection model and implement it in MATLAB. The computer model allows us to simulate quickly thousands of scenarios and make projections for the future. The model is realistic and based on an initial investment into the retirement plan at a given age, before the retirement age, fixed annual investments until the retirement age, using random money market interest rates with monthly compounding (and a given distribution) (reflecting the time-value of money) used to model the growth of this investment over time. At retirement age, the model assumes the beginning of periodic pension payments, that is annual cash withdrawals, at a given in advance amount, until death, In our computer simulations, we use the Actuarial Life Table of conditional probabilities of death during any given year at any given age, provided online by the Social Security Administration. The main goal of this project is to investigate the amount of money the retiree will have left at death, given all the model assumptions, with negative amount meaning debt. One can then vary all amounts assumed by the model to simulate thousands of outcomes for the future, histogram and analyze the results. We are interested in the terminal amount left in the retiree's account at his/her death. By simulating thousands of scenarios, we can histogram this terminal

amount at death and analyze its sampling distribution. In particular, we can find the average (mean) value of this terminal amount at death.

Title: Computer Simulations of Random Walks and Gambler's Ruin
Student Name: Enmanuel Almanzar
Faculty Mentor: Prof. Boyan Kostadinov

Using simple random walks to gambling is an attempt to understand the rise and fall of a gambler's fortune over time. In fact, probability owes its origins to gambling, as evidenced from letters exchanged by Pierre Fermat and Blaise Pascal about gambling problems. In this project, we create a computer program that simulates many possible scenarios for a game of chance. The computer simulation for this game is implemented in MATLAB using a mathematical model called "Random Walks". The essential feature of the random walk model is that we assume a given probability p to move one step to the right relative to the current position and probability 1-p to move one step to the left, relative to the current position. This model naturally fits into a gambling game when p is the probability to win a game against the house and the current position is simply the accumulated cash position up to that game, provided that only $1 is being exchanged at each game (going from loser to winner). For any given values of the probability p of winning a single game against the house and the initial amount of money that both the player and the house have, we can simulate thousands of game scenarios and histogram the total number of games until one or the other party goes bankrupt. This gives us the sampling distribution of the length of the sequence of games until someone goes bankrupt and in particular, we can find the average length of such a sequence. We can also histogram the winnings of the player at the end of each simulated game, for thousands of games, and this way we can get the sampling distribution of the final winnings of the player. This allows us to compute the player's average winnings for such a sequence of games. Knowing the player's long run average profit is an estimate for how much the house should be charging the player to play the game, provided the player's average profit is positive. If it is negative, the player should be demanding a compensation for playing this game. In general, using computer simulations, we can investigate features of random walks, which would be very difficult to understand and derive analytically.

Title: The Binomial Model for Pricing European Options in MATLAB
Student Name: Thomas Cheung
Faculty Mentor: Prof. Boyan Kostadinov

The discrete time Binomial Model for option pricing is very popular in the financial industry because it allows for relatively easy software implementation as well as embedding of complicated optionality into the model, unlike continuous time models. We implemented the Binomial model for pricing European options in MATLAB by vectorizing the code, a technique that makes the code very compact and efficient. The Binomial model is derived from the idea of a dynamic replication of the option payoff at maturity, during the life of the option, using a dynamic portfolio of stock underlying the option and cash. This idea of dynamic replication of the option payoff at maturity allows

us to compute the price of the option today by starting from the option payoff at maturity and working backwards recursively until time zero, leading us to the price of the option at time zero. This solution approach comes from the fundamental theorem of risk-neutral pricing, which states that the price of the option at time zero is the discounted (at the risk-free rate), expected option payoff at maturity, using a special probability distribution, called the risk-neutral distribution, to compute the expected value above. In addition to the analytical approach, we also implemented a Monte Carlo approach for simulating thousands of possible paths, as Binomial random walks, for the underlying stock. For each of these paths, we then compute the value of the option at maturity and average over all simulated paths. Finally, we discount this average value from maturity to time zero using the risk-free interest rate with continuous compounding and this Monte Carlo solution gives us an estimate for the option price at time zero. Using the simulation approach, it is also easy to histogram the sampling distribution of the terminal stock prices and we show empirically that it is a Log-Normal distribution, in accordance with the general mathematical results, which are much more difficult to derive analytically. We also implement a Monte Carlo simulation-based pricing of a Call option based on the Geometric Brownian Motion model, which is the most commonly used model in the financial industry.

Title: Secret Sharing
Student Researcher: Kwasi James
Faculty Mentor: Prof. Delaram Kahrobaei

Secret sharing schemes are multi-party protocols related to key establishment. The idea of secret sharing is to start with a secret, and divide it into pieces called shares which are distributed among users such that the pooled shares of specific subsets of users allow reconstruction of the original secret. This may be viewed as a key pre-distribution technique, facilitating one-time key establishment, wherein the recovered key is re-determined, and, in the basic case, the same for all groups.

Title: Mathematical Modeling and Simulation of Prescribing Drug Dosage
Student Researcher: Lorenzo Lares
Faculty Mentor: Prof. Huseyin Yuce

How much of a drug dosage to prescribe and how often the dosage should be administered pose an important question in pharmacology. The drug concentration in the bloodstream is also very important because it determines effectiveness (or dangerousness) of the drug. The main goal of this project is to model, solve, and simulate the problem of prescribing drug dosage while maintaining safe but effective concentration of the drug in the blood.

Title: Testing for Prime numbers using Calculus
Student Researchers: Elizabeth Mills and Yi Ming Yu
Faculty Mentor: Prof. Satyanand Singh

We will discuss some important uses of primes and show how to test for primes by using the calculus of derivatives. We will also consider their distributions and some ramifications in connection with cryptography and security. We will touch on cutting edge topics such as quantum computers and we will run some programs via computer to test and verify our results.

Title: Mapping the Cantor Ternary set to higher dimensions
Student Researcher: Elizabeth Mills
Faculty Mentor: Prof. Satyanand Singh

We will investigate some of the properties of the Cantor ternary set. We will also show how to map the Cantor set continuously onto the unit square. We will make an explicit construction of such a function and prove that it has the desired property. We will also code the Cantor set and use this idea to generalize our method to map the Cantor set onto the unit cube and to higher dimensional hypercubes.

Title: The Standard Model of Particle Physics
Student Researchers: Andrey Galper, Etiosa Obasayi,, Vladimir Monpremier
Faculty Mentors: Giovanni Ossola, Andrea Ferroglia

The project started with a study of the current model for the description of particle interactions and of the characteristics of the various particles and fundamental forces. The work was structured as a journal club, with weekly student presentations followed by a discussion. After acquiring a basic understanding of the topic, students are involved in calculations of particle interactions, using programming languages (Fortran90, C++) or software for algebraic manipulation (Maple, Form, Mathematica).

Title: Applying String Theory to the Quark-Gluon Plasma
Student Researchers: MD. Razikul Islam and Jóse A. Jímenez Jr.
Faculty Mentor: Prof.Justin F. Vázquez-Poritz

The quark-gluon plasma that is being created at Brookhaven National Laboratory presents theorists with the challenge of calculating the transport properties of quarks at strong coupling. An emerging approach for modeling strongly coupled plasmas is gauge-gravity duality. According to this novel approach, particles correspond to the endpoints of strings moving within the background of a black hole in five dimensions. The fifth dimension corresponds to the energy scale of the field theory. This enables us to understand various dynamical processes of the particles in terms of the differential equations which govern the motion of the strings.

Gravity dual models have already uncovered analytical connections between a wide variety of dynamic variables that were not realized with conventional techniques of quantum field theory. We will attempt to resolve a number of puzzles involving strongly coupled quark dynamics. In particular, by perturbing steadily-moving string configurations, we will investigate the possible physical mechanism that enforces the

subluminal speed limit of quarks, which arises as an unexpected universal prediction of gauge-gravity duality.

Title: Investigation on the SRS Cross-talk in WDM Distributed Raman Amplification
Student Researcher: Thinh H Le
Faculty Mentor: Prof. Lufeng Leng

SRS cross-talk in WDM Distributed Raman Amplification has become an interesting research topic due to the fact that it is always a limiting factor in the performance of distributed Raman Amplifiers. In order to investigate the effect of SRS cross-talk on distributed Raman amplification and optimize the designs of distributed Raman amplifiers, the numerical model of Raman amplification, which involves a large number of coupled equations, has to be solved by using MATLAB code. The work in this project is to check the convergence of the solution yielded by the iteration method to the very complex boundary values problem formed by such model. Different parameters in the algorithm are varied to compare the result s and the percent difference between consecutive iterations.

Title: The kinetics of polariton condensate in amicrocavity.
Student Researcher: Ananthakrishnan Nair
Faculty Mentor: Prof. Oleg Berman

We studied the Bose-Einstein condensation of polaritons fromed by quantum well excitons and photons in an optical microacvity. We analyzed the time-evolution of the polariton condensate profile in a quantum well embedded in a microcavity. We solved numerically Gross-Pitaevskii equations with the imaginary terms corresponding to the losses of polaritons due to the leakage of the cavity photons.

Title: The localization of microcavity polaritons in a trap.
Student Researcher: Clareno Rosias
Faculty Mentor: Prof. Oleg Berman

We studied how the external trapping potential influences on the localization of the polariton condensate due to the disorder caused by the impurities in the quantum well. The polaritons are formed by the excitons in a quantum well embedded in an optical microcavity and microcavity photons. The Gross-Pitaevskii equations for the polariton superfluid in the presence of the trapping potential and the random field were solved numerically.

Title: The superfluidity of microcavity polaritons in high magnetic field.
Student Researcher: David Persico
Faculty Mentor: Prof. Oleg Berman

We found the spectrum of collective excitations in the polariton Bose condensate in a microcavity in a high magnetic field. The magnetopolaritons are formed by magnetoexcitons in a quantum well embedded in an optical microcavity and microcavity

photons. We studied the dependence of the Kosterlitz-Thouless phase transition in the polariton superfluid on magnetic field.

Title: The localization of polaritons in a microcavity
Student Researcher: Michal Faryniarz
Faculty Mentor: Prof. Oleg Berman

We consider Bose-Einstein condensate of polarions formed by a quabtum well embedded in an optical microcavity. We have solved numerically Gross-Pitaevskii equations for the polariton condensate in the presence of the random field caused by the structural disorder in the quantum well. We studied the influence of the disorder and localization on the kinetics of polariton superfluid.

Title: Polariton condensates at the different shapes of microcavity.
Student Researcher: Sandy Ponticel
Faculty Mentor: Prof. Oleg Berman

We considered polariton condensate in a quantum well embedded in an optical microcavity. The dependence of polariton condensate profile on the shape of the microcavities was analyzed. The generalized Gross-Pitaevskii equations with the non-homogeneous shape of microcavity were solved numerically.

Title: The influence of the external trapping potential on the polariton superfluid.
Student Researcher: Seyedhamidreza Sadatian
Faculty Mentor: Prof. Oleg Berman

We considered polariton superfluid in a microcavity in the trapping potential. The polaritons are fomed by the excitons in a quantum well embedded in an optical microcavity and microcavity photons. The trapping potential acting on the excitons is induced by mechanical stress. We applied Thomas-Fermi approximation to estimate the influence of external trapping potential on the polariton superfluid in a trap.

Title: The time evolution of the exciton and cavity photon condensate profiles in the microcavity.
Student Researcher: Steven Lora
Faculty Mentor: Prof. Oleg Berman

We studied the kinetics of the exciton condensate coupled to the photon condensate in an optical microcavity. The excitons are located in a quantum well. The quantum well is embedded in an optical microcavity. We solved numerically the generalized Gross-Pitaevskii equations for exciton condensate coupled to Gross-Pitaevskii equation for the photon condensate.

Title: Tracking the Black Male Initiative Programmatic Activities: Keeping an Eye on Intervention Assessment

Student Researcher: Karl Garcia
Faculty Mentors: Profs. Reginald A. Blake, Reneta D. Lansiquot, and Janet Liou-Mark

The legacy a student establishes during his or her college years tells a lot not only about that particular student, but the trends and patterns followed in his or her role as a student. These trends and patterns can be analyzed to see how one factor affects another, and then compared with other students. Through this comparison, one can begin to see which activities or factors can be statistically proven to improve a student's college experience. For example, I noticed students who are part of the Technology and Design club have a tendency to do better in technology-related courses, and students who are a part of the Math club tend to do better in their math courses. One can conclude from this correlation that a student who takes an active role in a subject and is exposed to peers who share similar interests, ultimately end up doing better in said course. So why not start a new initiative to encourage students struggling in certain courses to participate in the corresponding club? Deductions such as these can improve student learning. And it is fundamentally through research that we will be able to find out what patterns are effective.

My task for this project was to create a database using Microsoft Access that would include information on student members of Black Male Initiative (BMI) for research purposes. This database contains fields to record academic information such as current student GPA and grades for a variety of courses, as well as student activity information such as participation in college club activities, BMI activities, or work within and outside the college. Although the database has been created, the student records have yet to be entered. Notwithstanding, I believe that this research will ultimately help improve students' college experience.

Title: Pupillometry and Visual Attention
Student Researcher: Ruth Ruben
Faculty Mentor: Profs.Daniel Capruso, and Kara Pasner, OD

Objective: The aim of the study was to determine if there are gender differences in pupillary diameter while viewing complex stimuli.
Background: Changes in pupillary diameter occur not only in response to light, but also in response to variation in visual attention.
Method: Data were from male (n=15) and female (n=11) college students. Pupillometry was performed as they viewed complex stimuli which had been demonstrated to produce differences in visual attention based on gender. Pupillary diameters of the left and right eyes were measured separately to within .01mm, at the beginning, and at the end of viewing the visual material. The data from both eyes was then averaged. A difference score was computed to measure change in pupillary dilation or constriction occurring from onset to termination of the visual stimulus.
Results: There was no gender difference in pupillary change when viewing a stimulus that elicited greater visual attention from either males ($F(1, 17) = 1.16$, not significant) or

females (F (1, 14) = 1.37, not significant). Contrary to expectations, female subjects actually showed a constriction of pupillary diameter from initial viewing (M = 4.19, SD = .61) to termination of viewing (M = 3.71, SD = .63).
Conclusions: The results suggest that group differences in visual attention do not necessarily produce significant changes in pupillary dilation or constriction. This interpretation must be tempered by the methodological limitations and low statistical power produced by the small sample size used in this study.

Title: Exploring the Intersection of Psychology and Religion
Student Researcher: Neishalee Perez
Faculty Mentor: Prof.. Eric M. Rodriguez

For my Fall 2010 Emerging Scholars Project, I explored the intersection of psychology and religion by examining the different ways the Bible can be interpreted and how these different ways can influence someone's opinion towards the gay and lesbian community. This project builds upon Dr. Rodriguez's early research on identity conflict and integration in gay and lesbian people of faith. I explored the differences between the three major ways of interpreting the Bible: 1) Fundamentalist, 2) Historical-Critical (or Historical-Contextual) and 3) the Bible as the "Living Word" of God. Each of these three methods of studying the Bible is connected to a specific theological approach to Christian belief and can lead to very different psychological attitudes towards gays and lesbians. Though there are different ways of studying the bible, and varying opinions about the morality of homosexuality, we are all human beings and we all deserve respect. We are always going to have our opinions and disagreements, but that does not mean that we should look down on other people or degrade them. Everyone lives their life according to what they believe, and instead of bringing people down we need to learn to accept differences and love everyone for who they are and who God made them to be. I took interest in this academic exercise because I come from a religious Christian family and I have family members who are trying to integrate being gay while growing in faith at the same time. Reading Dr. Rodriguez's articles and applying what he wrote to my own family's experiences, I feel that I not only have a better understanding of how types of Biblical interpretation can influence psychological attitudes, but I can also now better appreciate what my gay family members are going through as they try to integrate their sexual orientation and their Christian religious beliefs.

Key Words: Religion, Sexual Orientation, Identity Integration, Fundamentalist, Living Word and Historical-Critical Methods of Interpreting the Bible

Title: Euthanasia: An in-depth look at euthanasia
Student Researcher: Tiffany Clarke
Faculty Mentor: Prof. Hugh McDonald

According to May 2004 Gallup poll, 69% of Americans supported the legalization of euthanasia. In this essay I will talk about euthanasia; taking an in depth look at euthanasia and how it is perceived by the world. I will define euthanasia: breaking it up into the four sections that euthanasia can be classified under: Involuntary, voluntary,

active and passive euthanasia . There are many patients who fallen victim to euthanasia and many doctors who have committed but, I will only spend time talking about five cases that stood out in my studies; that of Nancy Cruzan and Terri Schiavo and few of the doctors: Harold Blazer, Joseph Hassman and Dr Jack Kevorkian. I will talk about The *Hippocratic Oath* and the book it came from, The *Hippocratic Corpus* and finally I will speak about euthanasia in the United States and also how euthanasia is affected by different religions.

Title: Cognitive Appraisals in Written Traumatic Intervention
Student Researcher: Olena Romanyshyn
Faculty Mentor: Prof. Pa Her

Research demonstrates that cognitive appraisals about a traumatic experience may be associated with well-being. This study examined the trauma writings from individuals participating in an intervention study to understand the role of religion, meaning-making, and emotional tone in trauma adaptation. College students were randomly assigned to one of three experimental groups. One group was given conventional instructions for writing about a traumatic experience; another was instructed to write about the trauma from a religious/spiritual perspective; and a control group wrote about a trivial topic. Narratives in the writing conditions for the conventional and religious group were coded for religious appraisal, emotional tone, and meaning-making appraisal. Reliability was good (K=.89). There were no significant differences in baseline measures for religiosity, optimism, and depressive symptoms. T-tests analysis will be used to examine whether participants in the religious writing group had a more positive adjustment. These findings may have important implications in augmenting the health-promoting effects of cognitive appraisals in written narratives.