Research Day

2014

The Office of Sponsored Research & Economic Development

INTRODUCTION

At the suggestion of Provost Uday Sukhatme, the Office of Sponsored Research has organized these two exciting Research days at PLV and NYC. In mirroring a practice undertaken by Pace one year ago, and most of Pace's peers, and universities in our 'neighborhood,' this is a clear signal from the Provost of the increased importance of research and scholarship in all aspects of academic life at Pace. These include promotion and tenure considerations, applying for external funding to support the research, involving students in these exciting endeavors, bringing the latest cutting edge research into the classroom (i.e., 'scholar teachers'), spreading the word within Pace of research being undertaken in the different Schools and thereby providing opportunities for interdisciplinary research, and use as a recruitment tool, just to name a few benefits.

It is rewarding to see that the faculty have risen to the occasion with over 200 scholarly participants, including authors, co-authors, and students, on both campuses. Much of this research is being supported by external funding obtained competitively. In the last complete Fiscal Year, Pace faculty and staff submitted 151 proposals, an 8% increase over the previous year. In successful awards, we received a dollar increase of 13% over the previous year. (We attribute some of these increases to the very successful First Annual Research Day of one year ago.) Those who received external funding are being recognized by Pace on Research Day(s), and also will receive 5% of the indirect costs in their awards to use to further their research. Awards will also be given to those with the best Research Day presentations (after the event), as determined by the Faculty Research Day Review Committee, with representatives from each School.

This is the Second Pace-Wide Research Day involving all six Schools, with emphasis on the faculty, staff, and students. There are other Pace-Wide events such as the Annual Undergraduate Research Showcase by The Office of Student Success which involve students partnering with faculty, and the Faculty Research Forum. Most of the individual School events emphasize undergraduate students such as Undergraduate Science Research Day (held every Spring) and the Society of Fellows Research Day (Friday, March 28th) in the Dyson College of Arts and Sciences. Others include Nursing Scholarship Day in the College of Health Professions and the Michael L. Gargano Annual Student Faculty Research Day in the Seidenberg School of Computer Science (Friday May 2nd) and Information Systems. The Lubin School of Business participates in this Research Day, as do all the Schools. Other events include The Helene and Grant Wilson Center for Social Entrepreneurship and the Pace Academy for Applied Environmental Studies. Thus, the Schools have a history of recognizing research and scholarship with an emphasis on student-faculty interaction. These Research Days are unique in that all the schools are represented in NYC and PLV at one time and in one place.

It is our hope that by bringing faculty and students from all the Schools together in one event, we will learn more of each other's cutting edge research and scholarship at Pace, and that the results will be greater than the sum of the individual Schools.

Victor Goldsmith

Victor Goldsmith, Ph. D.
Associate Provost for Sponsored Research and Economic Development

AGENDA

New York City Campus, Student Union
Wednesday, April 9, 2014 10am-3pm

Pleasantville Campus, Gottesman
Thursday, April 17, 2014 11am-4pm

NYC: 10:00 am – 11:45 am **PLV: 11:00 am – 11:45 am**	Faculty Presentation of Current Research
12:00 pm – 1:00 pm	Opening Remarks & Introductions: *Victor Goldsmith*, PhD., Associate Provost for Sponsored Research *Uday Sukhatme,* PhD., Provost & Executive Vice President, Academic Affairs *Adelia Williams,* PhD., Associate Provost, Academic Affairs *Susan Maxam,* Ed.D., Assistant Vice President, Undergraduate Education *Jennifer Bernstein* – Vice President, Development and Alumni Relations Presentation of External Funding Awards *Uday Sukhatme,* PhD.
1:00 pm – 3:00 pm	Light Lunch and Faculty Presentations of Current Research

GRANT ACHIEVEMENTS

Awards for Grants Obtained
Fiscal Year 2012-13
Presented by: Provost Uday Sukhatme

College of Health Professions

Joanne Singleton

Dyson College of Arts and Sciences

Nancy Krucher
Maria Iacullo-Bird
Shelly-Ann Richmond
Demos Athanasopoulos
Nigel Yarlett

Lubin School of Business

Ira Davidson

School of Education

Patricia Parilla
Christine Clayton
Dianne Zager
Leslie Soodak & Roberta Wiener
Jennifer Efferen

Seidenberg School of Computer Science and Information Systems

D. Paul Benjamin
Darren Hayes
Anthony Joseph & James Lawler
Narayan Murthy

Pace Law School

Jennifer Friedman
Tiffany Zezula
Thomas Bourgeois
Jessica Bacher
Jane Aoyama-Martin
John Nolan

Administration

Richard Shadick

ACKNOWLEDGEMENTS

President Stephen J. Friedman
Provost Uday Sukhatme

Schools

Dean Harriet R. Feldman, College of Health Professions
Dean Nira Herrmann, Dyson College of Arts and Sciences
Dean Neil S. Braun, Lubin School of Business
Dean Andrea Spencer, School of Education
Dean David Yassky, School of Law
Dean Amar Gupta, Seidenberg School of Computer Science and Information Systems

Faculty Research Day Review Committee Members

New York - April 9, 2014

Dr. Esma Paljevic, College of Health Professions
Dr. Nigel Yarlett, Dyson College of Arts and Sciences
Dr. Iuliana Ismailescu, Lubin School of Business
Dr. Brian Evans, School of Education
Dr. Linda Jo Calloway, Seidenberg School of Computer Science and Information Systems

Pleasantville – April 17, 2014

Dr. Esma Paljevic, College of Health Professions
Dr. John Hynes Horne Jr., Dyson College of Arts and Sciences
Dr. Richard Kraus, Lubin School of Business
Dr. Soonhyang Kim, School of Education
Professor Audrey Rogers, School of Law
Dr. David Sachs, Seidenberg School of Computer Science and Information Systems

Administration

Provost's Office

Katherine Y. Chung, Administrative Director
Patricia M. Boustany, Senior Staff Associate

Office of Sponsored Research

Edward Leight, Director of Sponsored Research Administration
Eric Torres, Director, Grant Outreach/Analysis
Beatrice Moy, Assistant Director of Sponsored Research Administration
Jose Cueto, Senior Staff Associate
Mitsuko Rendon, Coordinator of Research Grant Opportunities
Wassim K. Abedrabbo – Student Assistant

THE OFFICE OF SPONSORED RESEARCH & ECONOMIC DEVELOPMENT

The Office of Sponsored Research (SR) provides assistance in writing and submitting proposals including: searching for appropriate external funding opportunities in our databases for the faculty and staff, emailing this information through our Grant Announcement List and also through the Provost's Office. We make private appointments for one-on-one grant searches in the areas of your interest. We assist you in preparing a responsive grant proposal including assistance with the budget, technical editorial assistance, and in the submission process. Thus Sponsored Research provides "one-stop shopping" for preparing and submitting proposals for external funding. In this way, Sponsored Research has submitted over 1,500 proposals for external funding.

On any given day, there are approximately 50,000 funding sources for research and other university activities such as scholarships, laboratory upgrades, and teaching. We can help you find funding for your own specific research by refining your searches to those areas of direct interest with the use of the three computerized "search engines" that we subscribe to. We work directly with you in our offices (preferable)/email/ phone, using key word searches. The dedicated grant funding Search Engines that we use are:
I. SPIN - Sponsored Programs Information Network for both Government and Foundation funding.
II. Grants.gov– for 1,000 government grant programs and provides access to approximately $500 billion in annual awards (http://www.grants.gov/).
III. The Enhanced Foundation Center Directory Online (Foundationcenter.org) provides access to 120,000 foundations and corporate donors to choose from. Also included is a data base of over 3 million awards.
IV. Center for Undergraduate Research (CUR). All Pace Faculty are members of CUR and are free to access CUR publications, and attend their very useful events and conferences related to undergraduate research (cur.org).

The process for preparing and submitting proposals is briefly outlined by Provost Sukhatme in a letter on the web in order to streamline the process for the timely submission of research, training and service proposals. (http://www.pace.edu/provost/information-faculty-0/grant-policy-0/sponsored-research-economic-development-sred-0/designated-pace-proposal-signatory-0). This includes clearing all proposals through Sponsored Research prior to submission. Associate Provost Victor Goldsmith is designated as the official signatory authorized to sign all proposals submitted for external funding from Pace University.

Additional assistance may be obtained from "mentors" in your department (i.e. chairs and grant-experienced faculty) as well as that provided by the Pforzheimer Center for Faculty Development (described on the next page), the Pace University Library, and Corporate & Foundation Relations (Amanda Schick, Assistant Director) in the Office of Development & Alumni Relations (Jennifer Bernstein, VP).

OTHER RESOURCES

Center for Teaching, Learning, & Technology (CTLT)

The Pforzheimer Center for Faculty Development provides developmental opportunities for all faculty to improve their pedagogical skills to enable successful student learning. Some of the services include Faculty Exchange Lunches, Academic Portfolio Workshops, Tenure and Promotion Workshops, Faculty Institute and, upon specific request, a classroom observation session to help any faculty member with developing stronger pedagogical skills and teaching styles. Faculty research forums are held where full-time faculty gather five times during the Academic Year to collaborate, support, exchange research ideas and offer suggestions for individuals writing an article for a peer reviewed journal or a book chapter. Pace University is a member of The Faculty Resource Network (FRN), which is a nationwide consortium of over 50 universities and colleges that collaborate for the purpose of faculty support and development. Benefits include free access to NYU libraries, facilities, permission to audit courses for free, and invitations to attend seminars, colloquia, etc., organized by NYU and/or the FRN. Additionally at Pace, Faculty Research Workshops are offered as a hands-on session for faculty members conducting research who are interested in learning more about the resources and services available to them from the Pace Library and other local and regional libraries. Teaching consultations are also offered and if you would like to find a colleague who would be willing to talk with you about teaching concerns and insights in teaching, or perhaps sit in on a class or review a videotape of your performance, then call or e-mail us.
Please visit the website - http://www.pace.edu/ctlt/faculty-development

James F. Stenerson, Ph.D. Executive Director

Abbey L. Berg, Ph.D. Professor and Co-Director for Faculty Development

Joan Turner Walker, Ph.D. Associate Professor and Co-Director for Faculty Development

Joe Seijo, Assistant Director, Center for Teaching Learning and Technology

Pace University Library

The Pace University Library (http://www.pace.edu/library) is comprised of the Birnbaum Library on the NYC campus, the Mortola Library in Pleasantville, the Graduate Center Library in White Plains, and the Law School Library, also in White Plains, New York.

The library offers faculty a wide array of resources and services to support both your students' classroom research as well as your own professional research. Some library services of note to faculty include:

- Access to over 50,000 e-books in addition to our print collections
- Ability to search over 120 research databases from on and off campus, with access to periodicals, journals, company financial data, and more
- Consultations with a librarian to discuss library support of your professional research
- Adding a librarian to your Blackboard courses
- Scheduling a research instruction session for your students
- Citation searching of your own publications
- Borrowing items from libraries outside the Pace Library using our ILLiad Interlibrary Loan system
- Visiting regional and local libraries through special consortial arrangements

For a complete description of faculty support resources and services, please visit our Pace Faculty Resources Guide at: http://libguides.pace.edu/faculty

If you want to learn even more, consider applying for the "Faculty Research Workshop" to be held June 3-4. Learn more at: http://www.pace.edu/ctlt/faculty-research-workshop

For questions about any library resources and services, please feel free to contact in NYC, Sue Hunter, Head of Information Services and Resources, shunter@pace.edu, (212) 346-1667 and in Westchester, Rose Gillen, Head of Research and Information Services, rgillen@pace.edu, (914) 773-3382.

Steven Feyl, Associate University Librarian, Westchester Libraries

Reynaldo Racelis, Associate University Librarian, NYC

Table of Abstracts

(Sorted alphabetically by first name of author and page number)

Sickle Cell Disease: Taking a Multidisciplinary Approach

Principal Investigator(s): Stephanie Apanah, RPA-C
Co-Investigator(s): Dr. Denise Rizzolo

Department: Physician Assistant Studies
School: College of Health Professions
Campus: NYC

During 2005, medical expenditures for children with sickle cell disease averaged $11,702 for children with Medicaid coverage and $14,772 for children with employer-sponsored insurance with roughly 40% of both groups had at least one hospital stay. According to the CDC, it is estimated that SCD affects 90,000 to 100,000 of all Americans with 1 out of every 500 Black or African-American and 1 out of every 36,000 Hispanic-American being affected. This represents a large portion of society affected with the disease which leads to high medical expenditures. It is important for clinicians to understand the screening guidelines so the disease can be diagnosed before pregnancy or during routine newborn screening tests. This will allow for earlier diagnosis and potentially mitigate some of the complications of the disease. Additionally, it is important to understand any preventive measures that need to be discussed with patients with sickle cell disease. The following will provide a thorough review off sickle cell disease for clinicians so they can better understand the current screening, diagnosis and treatment guidelines of the disease.

Death Preparedness: Facilitated Communication at End of Life

Principal Investigator(s): Dr. Renee McLeod-Sordjan

Department: Graduate Studies
School: College of Health Professions
Campus: NYC

Dying trajectories, in most chronic conditions, have terminal prognostic uncertainties that are not addressed within a palliative care framework by clinicians in a timely manner. Therefore, patients with chronic disease lack end of life (EOL) care plans prior to their transition to an acute hospital setting. End of life communication is frequently relegated to an intensive care unit where technological advances create an atmosphere of ethical conflicts between technically possible, medically futile and fiscally irresponsible. Utilization of technological life sustaining treatments at EOL, coordination of EOL care and the cost of EOL care has been an ethical, political and societal issue for the past two decades. Yet, readiness to discuss advanced care plans and death attitude assessment has been incompletely conceptualized in nursing literature. In formulating greater specificity of this phenomenon it is necessary to extract the factors of death preparedness and integrate them into a single theoretical model with the purpose of creating an assessment scale. This concept analysis defines death preparedness to direct future research in an attempt to construct a measurement model capable of assessing death preparedness to objectify patient readiness for EOL communication in an adult population with chronic illness.

Kawasaki Disease: A Clinical Review

Principal Investigator(s): Meridith Beard, PA-S
Co-Investigator(s): Rebecca Benash, PA-S, Ashley Badenhorst, PA-S, Jean Covino, DHSc,MPA,PA-C

Department: Physician Assistant Department
School: College of Health Professions
Campus: NYC

Introduction - Kawasaki disease (KD) is a vasculitis of children that presents in myriad different ways. As an elusive diagnosis, treatment often begins late in the disease process, which can result in adverse outcomes for these young patients such as fatal coronary artery lesions. All pediatric patients have a chance of developing KD, however, those of Asian or Pacific Islander descent under the age of five have the highest risk. Clinical Manifestations - Healthcare providers must maintain a high index of suspicion for KD in patients with unexplained high fever who meet four of the five cardinal symptoms of KD: bilateral conjunctival injection, mucous membrane disturbances, changes to the hands and feet, skin rash, and cervical lymphadenopathy. Laboratory Testing - Relevant laboratory testing includes erythrocyte sedimentation rate, C-reactive protein, white blood cell and platelet counts, hemoglobin and hematocrit levels, liver function tests, and albumin levels. These tests, in addition to echocardiography, are recommended by the American Heart Association in order to aid in a timely diagnosis of KD. Because KD is the most common cause of acquired heart disease in the pediatric population, treatment should begin within the first ten days of disease. Treatment - Current gold standard of treatment for KD is high dose intravenous immunoglobulin infusion in conjunction with acetylsalicylic acid (Aspirin). Conclusion - Although KD can present in subtle or nonspecific ways, prompt and accurate diagnosis leads to optimal treatment, which can reduce coronary artery damage to these young patients by up to 75%. This clinical review article has been submitted to Advance for PAs & NPs journal

Shock: Early Recognition and Resuscitation Are Key

Principal Investigator(s): Hima Vadakel, RPA-C
Co-Investigator(s): Dr. Denise Rizzolo

Department: Physician Assistant Studies
School: College of Health Professions
Campus: NYC

Shock is a life threatening condition that requires continuous evaluation, resuscitation, and re-evaluation. It is defined as a severe cardiovascular failure caused by poor blood flow or inadequate distribution of flow which may lead to organ failure and death. Early identification of the cause of shock is essential in optimizing management and leading to better outcomes. If the clinician fails to recognize the signs and symptoms early, it can lead to a prolonged hospital stay, increased medical cost and poor outcome for the patient. Therefore, it is important for PAs to be able to recognize the early signs and symptoms of shock in order to be able to immediately resuscitate them whereby possibly preventing multiorgan failure.

Acute Respiratory Distress Syndrome: An Overview for Physician Assistants

Principal Investigator(s): Anita Hariprashad, RPA-C
Co-Investigator(s): Dr. Denise Rizzolo

Department: Physician Assistant Studies
School: College of Health Professions
Campus: NYC

Acute respiratory distress syndrome (ARDS) is a life-threatening condition that affects patients in the intensive care setting. It is characterized by severe hypoxemia and acute pulmonary edema. The lung injury is caused by both pulmonary (ex. pneumonia) and extra-pulmonary (ex. sepsis) etiologies. This lung injury is associated with significant morbidity and mortality. In the recent years, clinical research has focused on various mechanical ventilator strategies that can be used to improve oxygenation and reduce mortality. The following is an overview of ARDS including pathophysiology, etiology, diagnosis, treatment, and prevention.

Delayed Cord Clamping: Do the Benefits Outweigh the Risks?

Principal Investigator(s): Bracha Sachs, PA-S, Elizabeth Wallach, PA-S,
Danielle Daughtridge, PA-S, Jean Covino, DHSc, MPA, PA-C

Department: Physician Assistant Studies
School: College of Health Professions
Campus: NYC

Introduction & Background - Over the last few years, Delayed Cord Clamping (DCC) has become a controversial topic amongst patients and providers. Since studies are relatively new, there are still many differences in opinion over the optimal timing of clamping the umbilical cord. The debate stems from the benefits for the mother versus the neonate. Many studies in both the full and preterm infants vary on the ideal timing for Immediate Cord Clamping (ICC) versus DCC. Timing intervals for ICC range from immediately postpartum up to 60 seconds after delivery. Intervals documented in DCC studies range from 30 seconds to three minutes after delivery. Benefits - Favorable outcomes for the neonate, demonstrated by studies on DCC, include an increase in placental transfusion, a 30% increase in neonatal blood volume, and a 60% increase of RBC's. The increase in iron levels, Hgb, and Hct are additional benefits of DCC. The neonates that experienced DCC had a 45% higher ferritin concentration and a decreased incidence in anemia for up to 4-6 months after birth. A significant decrease in the rate of intraventricular hemorrhage (IVH) and late onset sepsis (LOS), resulting from increased blood volume and hemoglobin concentration, has also been observed in several studies. Risks - It has been hypothesized that infants from the DCC group will have a higher incidence of hyperbilirubinemia due to increased iron stores. While increased iron stores have been observed for up to six months after birth in infants with DCC, the levels measured throughout the six month period were not concerning and did not require phototherapy for treatment of jaundice. Another proposed risk of DCC has been derived from the excess blood flow to the neonate, and suggests a major concern for the development of blood hyperviscosity. It has been postulated that DCC may result in an increased potential for fetal polycythemia. Nevertheless, results of the studies on infants that experienced DCC disproved this hypothesis. Another possible risk associated with DCC in neonatal respiratory distress, however, studies have shown that DCC has no effect on APGAR scores nor does it increase the risk of respiratory distress syndrome. Maternal Outcomes - Despite skepticism for DCC stemming from the concern that it may lead to an increase in postpartum hemorrhage (PPH), statistical evidence from studies show no basis for this conjecture. Conclusion - There is an ongoing debate surrounding the optimal time to clamp the cord. ACOG endorses DCC in preterm infants. On the other hand, regarding full term infants, ACOG states that there is insufficient evidence to support a change in standard ICC practice. The WHO currently recommends cord clamping between one to three minutes after the birth. Perhaps if further research can demonstrate definite guidelines, and more advantageous outcomes in practicing DCC on the full-term infant, clinicians would be more open to implement a change and educate their patients about DCC.

Civic Engagement and the University Student: The Lived Experience of Rediscovering Marginalized Women in the Community

Principal Investigator(s): Dr. Susan B del Bene

Department: Nursing
School: College of Health Professions
Campus: NYC

While planning for the future in the universities curricula, the pedagogy of service learning was built into the curricula for all students. Service learning as defined, is a form of experiential education in which students engage in activities that address human and community needs. Design: The specific purpose of the study research is a qualitative study utilizing the research method of hermeneutic phenomenology based on in depth interviews and journaling by the university students after the students completed a Civic Engagement Course. The focus was on the lived experience of the students' involvement in the community of a selected marginalized population. Sample: Fifteen university students attending a large university located in a metropolitan Northeastern city participated in the study. The students had completed a Civic Engagement course which is a core requirement for all students. The students, all volunteers, were purposefully selected from members of the course. Results: The significance of the findings provide rich understanding of the university students ability to gain an awareness of the communities and the challenge of culture, race, lack of political power, limited resources, mental and physical limitations of the aggregate. Themes and sub themes emerged in the new pedagogy of their learning. New knowledge was generated as to the role of the student advocate, concerns about the identified health needs of the community aggregates, cohesiveness of the group process by the students from the other schools within the university, and the potential empowerment of the aggregates to make informed health care decisions. Discussion: The objective of this research is to understand the phenomenon of the university students' lived experiences in the community. The students had the capability to discuss the concepts and personal experience with a specific population in their own words, from their own experiences, through the use of journaling, reflection and in-depth interviews. This Civic Engagement blended the university with the community and addressed the solitude and marginalization of specific aggregates.

Quality and Safety - Curriculum Application

Principal Investigator(s): Dr. Martha Kelly
Co-Investigator(s): Dr. Marie Truglio-Londrigan, Dr. Joanne Singleton

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Department: Graduate Studies
School: College of Health Professions
Campus: NYC/PLV

This poster presentation illustrates an example of how a Master of Science (MS) and Doctor of Nursing Practice (DNP) education curriculum has integrated Quality and Safety into the Graduate Core Courses. All students in the MS and DNP programs take the first four graduate core courses together. The course addresses the underpinnings for practice, including a content focus regarding quality and safety. Examples of content and placement in course work are illustrated. The content, using a Blackboard on-line format, is presented as well as the discussion forum and discussion forum questions for the attention of the student. The course is offered using a blended or hybrid format. The use of Institute of Medicine (IOM) reports, the continuous quality improvement process and other quality and safety initiatives are included and presented. In addition the use of technology and selected health care information systems are included. How these systems can support decision making is also included. This poster was presented at Drexel University, Fall 2013.

Maternal Attitudes, Subjective Norms and Feeding Practices of Young Children

Principal Investigator(s): Professor Angela Northrup, Dr. Arlene Smaldone (Columbia University)

Department: Nursing
School: College of Health Professions
Campus: PLV

This exploratory study examined maternal attitudes, subjective norms and food selection behaviors of 31 mothers (mean age 29.6 years, 50% Hispanic, 34% Black, 47% ≤ high school, 31% marginal health literacy, 71% Women, Infants and Children program participants) for their 2 and 3-year-old children (n=32, 50% female, 34.4% overweight/obese, 72% breastfed during infancy) to identify factors associated with childhood overweight. The Theory of Reasoned Action was used to examine relationships between variables of interest. Subjects were recruited from two primary care sites. Measurements included 5 surveys, child anthropometric measures and a simulation exercise to identify types and quantities of food mothers offered to their child. Selected food items were weighed and organized bv food group and compared to USDA recommendations by child's age, gender and activity level. Data were analyzed using descriptive statistics, Spearman's rho correlation coefficients, and multivariate linear regression modeling. On average, mothers offered their children more fruit (237%) and meat (153%) but less vegetables (75%), dairy (79%) and grain (65%) than what is recommended. Mothers of 2 year olds selected greater quantity of food compared to mothers of 3 year old children for all food groups except dairy ($p < 0.05$). Demographic, normative beliefs, maternal attitudes and health literacy meeting criteria were entered into multivariate regression models to predict behavioral intent. Final models explained 13% (dairy- restrictive attitude); 28% (grain- child's age, maternal BMI, physical activity); 40% (fruit-child's age, maternal education, normative belief, and health literacy); 44% (calories- child's age, normative beliefs for all food groups, restrictive attitude); 38% (meat- child's age, Hispanic ethnicity, normative belief) and 51% (vegetable- child's age, television viewing, normative belief and health literacy) of the variance of behavioral intent for the respective food groups. Normative beliefs and health literacy are potentially modifiable. Therefore, appraisal of maternal normative beliefs about dietary recommendations for children and health literacy may identify children at risk for overweight and obesity.

GFCFSF: Mothers Challenge Evidence-Based Medicine & the Privatization of Motherhood

Principal Investigator(s): Dr. Emilie Zaslow

Department: Communication Studies
School: Dyson College of Arts and Sciences
Campus: NYC

Since the end of the twentieth century, mothers of children identified with neurological disorders, such as autism and sensory processing disorder, have been challenging traditional relations of power between families and the medical community by choosing to treat their children through diet and food supplements. While some mothers work with the help of alternative medical practitioners, many gain all of their knowledge, or at least their initial introduction, to the gluten-free, casein-free (and often soy free) diet through online communities or mom-blogs. Through a feminist methodology, privileging women's voices, this essay employs qualitative textual analysis to explore two online mothers' communities and several blogs to examine how mothers use narrative and experience to share information and gain knowledge about using food as a medical intervention. This essay argues that these social practices, that revolve around the everyday sharing of recipes, observations about food reactions, tips related to food and travel, and alerts about cross-contaminations, challenge medical/scientific epistemology with a feminine, and even feminist, epistemology. These commonplace communicative acts serve as a disruption of normative medical discourses and a disruption of the push to individualize and privatize motherhood by positioning mothers as authoritative experts whose knowledge is founded on shared experience and stories.

Princess Boys and Easy Bake Ovens: Contemporary News Discourses of Boys' Gender Nonconformity

Principal Investigator(s): Dr. Emilie Zaslow

Department: Communication Studies
School: Dyson College of Arts and Sciences
Campus: NYC

In recent years, major U.S. news networks have been airing stories about boys who engage in gender nonconforming acts such as wearing dresses and playing with toys marketed to girls. In this project, I use discourse analysis to examine three of these stories that aired on ABC, NBC, CBS, and CNN between 2010 and 2012. I explore how the discursive construction of the boys' actions contributes to the public narrative about gender nonconformity within a moment of historical change. As society moves toward increased awareness of gender fluidity there is a public struggle between the desire to protect children from their own gender play and to accept children for who they are as well as between the ideological reification of gender duality and the emancipatory potential of a spectrum of gendered identities.

Historical Motherhood Meets New Motherhood: Representations of Mothers in the American Girl Collection

Principal Investigator(s): Dr. Emilie Zaslow

Department: Communication Studies
School: Dyson College of Arts and Sciences
Campus: NYC

At this moment in time, when motherhood and questions of mothering and labor, are caught in a cultural firestorm, the American Girl neo-historical children's books will be a part of the cultural discourses that will impact how girls come to see themselves as women and come to identify what it means to be a mother. Despite the popularity of these series books, there has been little analysis of the narratives American Girl offers regarding girlhood and no analysis of the ways in which the work of mothers has been (re)imagined and constructed in this series. This research project explores the ways in which the popular American Girl media texts represent historical motherhood and shape a narrative of mothering for girl readers. Situating the texts both within their fictional historical time period as well as within the (post)feminist, neoliberal discourse of the girl power era in which the texts were written, I explore the narratives of the emotional and physical work of mothers both in and out of the home.

The Evolution of Immune Response in Riverine Fish Exposed to Varying Levels of Aquatic Pollutants

Principal Investigator(s): Dr. Erika Crispo
Co-Investigator(s): Miss Silvia Rodriguez, Mr. Keith Thomas, Miss Karina Shendrik

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Rivers, such as the Bow and Oldman in Alberta, are contaminated by wastewater and agricultural run-off. These contaminants are most concentrated downstream of municipalities and agricultural areas. Some of these compounds, such as those with endocrine-disrupting activity, are negatively impacting populations of a small cyprinid fish, the longnose dace (Rhinichthys cataractae). In addition to the effects of contaminants on fish, these contaminants may also influence fish pathogens. Two interesting and contrasting hypotheses exist for the effects of environmental stress on infectious disease in fish. First, environmental contaminants may negatively impact pathogens such as external parasites or those with free-swimming larval forms, such that fish from contaminated waters have reduced pathogen loads. Second, environmental contaminants may stress fish so that they are more susceptible to infectious disease in general. Conceivably, the first hypothesis might be correct for certain pathogen species and the second hypothesis might be correct for other pathogen species. An interesting question is how contamination in rivers affects the susceptibility of fish populations to infectious disease. The major histocompatibility complex (MHC) is a pathogen-specific molecule in vertebrates that binds antigens and presents them to T-cells. It is an important component of the vertebrate immune system. Several studies in vertebrates, including fish, have shown cases of both balancing and directional selection on MHC genes in populations from different types of environments. Balancing selection refers to an increase in variation within a population as it responds to a continuously evolving pathogen community. Directional selection, on the other hand, refers to selection acting on a particular allele to increase its frequency in a population. We use next-generation sequencing technology to sequence nucleotide variation in the MHC class II beta genes in fish populations occurring upstream and downstream of municipal/agricultural areas in these two rivers.

Patterns of Change in Discrimination Across Pregnancy and One-Year Postpartum: Differences by Age and Consequences for Depressive and Anxiety Symptoms

Principal Investigator(s): Dr. Lisa Rosenthal
Co-Investigator(s): Valerie A. Earnshaw, Tené T. Lewis, Allecia E. Reid, Jessica B. Lewis, Emily C. Stasko, Jonathan N. Tobin, Jeannette R. Ickovics

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: NYC

Theory and research increasingly suggest that we need to examine patterns of change in discrimination over time and focus on critical periods in the life course to better understand the effects that experiences with discrimination have on mental and physical health outcomes. Pregnancy is one critical period in the life course, and it is an important time to examine women's experiences with discrimination because they are associated with depression and stress, and increased risk of adverse birth outcomes, such as preterm delivery and low birth weight. Data were from a larger randomized controlled trial examining effectiveness of group prenatal care among 14-21 year old teens and young women receiving prenatal care in hospitals and community health centers across all boroughs of New York City, except Staten Island. Data analyses for the current investigation were conducted with 623 participants that were at one of the control sites receiving standard prenatal care. The sample included predominantly Black and Latina, socioeconomically disadvantaged teens and young women. We examined patterns of change in experiences with everyday discrimination from second trimester of pregnancy up until one year postpartum, and tested if those changes predicted subsequent changes in symptoms of anxiety and depression. Participants completed surveys that included measures of everyday discrimination, depressive symptoms, and anxiety symptoms during second trimester, during third trimester, approximately 6 months postpartum, and approximately 1 year postpartum. We found that age moderated the pattern of change in discrimination: discrimination increased from second to third trimester and decreased to lower than baseline by one year postpartum for the youngest participants aged 14 and 15, but decreased from second to third trimester and returned to similar levels as baseline by 1 year postpartum for the oldest participants aged 19, 20, and 21. Lagged analyses found that within-subjects changes over time in discrimination positively predicted changes in depressive and anxiety symptoms at later time points. Results support that a life course perspective should be taken in researching aiming to understand the effects on discrimination on mental and physical health and when to intervene, and that pregnancy is a critical period for women. Interventions could target experience with discrimination and depressive and anxiety symptoms during pregnancy and postpartum, and interventions may be most needed and effective critical time periods like pregnancy when experiences with discrimination are changing and have important consequences for health.

Communicating in a Cacophony: Possible Solutions to the Cocktail Party Problem in Treefrog Choruses

Principal Investigator(s): Dr. Joshua Schwartz
Co-Investigator(s): Ken Huth, Nicholas Crimarco, Yelena Bregman, Kaycee Umeoji, Eugenia Serratto, Dana Cirillo

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Male treefrogs advertise for mates in dense assemblages characterized by high levels of noise and acoustic clutter. Non-mutually exclusive approaches to ameliorating the "cocktail party" problem in frog choruses could involve signal production or perception. For example, male neotropical Dendropsophus microcephalus employ multi-note calls and the PI's research demonstrated that they can rapidly alter inter-note timing to reduce call overlap. Adjustments are made selectively such that interference is most effectively reduced among closest neighbors. There is evidence that intensity and perhaps spatial cues contribute to this selectivity. North American males of the gray treefrog, Hyla versicolor, do not seem to exhibit selective attention in a way that reduces call interference among nearest neighbors, and changes made in call duration and rate that occur with increasing noise levels do not aid in signal detection by females. Moreover, based on recent research with Pace students, auditory induction, by which the auditory system might perceptually restore masked or missing elements of pulsatile calls, does not seem to occur. Although, under some circumstances, differences in call frequency may help females distinguish among neighboring males, naturalistic spectral differences do not seem to help females perceptually separate the overlapping calls of neighboring males. There is evidence, however, that spatial separation of males can contribute to signal segregation by listening females during acoustic interference.

“Where to Put It?” Public Discourse On Nuclear Waste in the United States

Principal Investigator(s): Dr. Judith Pajo

Department: Sociology/Anthropology
School: Dyson College of Arts and Sciences
Campus: NYC

Since its start in the early 20th century, the exploitation of nuclear reactions for military and subsequently energy purposes was ridden with a problem: disposal of radioactive waste. The detrimental health consequences of radioactive waste were well known by the 1950s when exploitation for military purposes accelerated. They grew in visibility as exploitation for civilian purposes, mainly energy production, took off in the 1960s. Various methods of disposal were practiced and none of them provided a solution for radioactive contamination. Burying nuclear waste led to ground contamination. Burning it polluted the air. Dumping nuclear waste in the ocean contaminated marine ecosystem. No disposal method kept nuclear waste from entering the human food chain and eventually human bodies. Growing public awareness led to political action that banned ocean disposal in the 1960s. Lack of political consensus at present prevents disposal in a deep-geological repository. To understand the popular sentiment driving this political action, this paper analyzes a significant sample of the discourse on nuclear waste disposal: the unfolding representation in the pages of the New York Times of the nuclear waste story for the 75 year span, since 1945.

U.S. Energy Discourse and the Role of the University

Principal Investigator(s): Dr. Judith Pajo
Co-Investigator(s): Dylan Hirsch

Department: Sociology/Anthropology
School: Dyson College of Arts and Sciences
Campus: NYC

Stories about energy and environmental problems take up a growing amount of space and time in the US media today. In modern industrial societies like the United States, the growing need for energy has also produced ideological differences in the public. In the political and the social arenas, there are proponents of cheap energy and there are proponents of clean energy. They tend to disagree over what "clean", "green", "renewable", and "sustainable" mean, and how cheap energy really is or should be. Some argue for market solutions, while others argue for policy solutions; their interactions are at the center of the public energy discourse. The same ideologies are fueling the energy discourse, directing the economy, and redefining our relationship with the environment. As certain economic principles disrupt natural ecological systems, a social movement to protect these natural resources has arisen. In contrast to economic actors of neo-liberal bent, these new environmental actors may be understood as environmentalists of a renewist mindset. The media inform about these renewists: how they think, what actions they take, knowledge they produce and exchange. While some venues support, others clearly do not support the renewist cause. This research project tracks energy stories across a variety of newspapers, magazines, radio shows, and websites, to detect patterns in the conversation carried on between energy institutes and environmental organizations on both sides of the debate. The neo-liberal economist and the renewist environmentalist may be distinguished by the kind of language used; they speak different dialects and are coining key terms that will come to shape environmental thinking and economic actions of a much larger public. Such distinctions are employed to justify actions of the fossil fuel industries, nuclear industries, or government actors. A study of the differences in the belief systems will help inform public debate and prepare the way for democratic changes in political and social practices that define human interaction with the ecosystems on which they entirely depend. Advocates of clean and renewable energy will need to continue to develop new ways of thinking and talking about ways in which societies value the natural environment by using the media and the university as places of education and action.

Rb Association with Bax is Regulated by Phosphorylation in Breast Cancer Cells

Principal Investigator(s): Dr. Nancy A. Krucher
Co-Investigator(s): Lisa Antonucci, Jacklynn V. Egger

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

The Retinoblastoma protein (Rb) is important in the control of cell proliferation and apoptosis. Its activity is controlled by reversible phosphorylation on several serine and threonine residues that mediate binding to various cellular proteins. The role of Rb phosphorylation in the control of apoptosis is largely unknown, although several apoptotic stimuli result in dephosphorylation of Rb. Our previous work identified Rb (threonine-821) dephosphorylation as required for induction of apoptosis caused by UV light and inhibitions of cyclin dependent kinases. These studies led to the identification of proteins that bind to Rb under apoptotic conditions. One such Rb binding protein is the pro-apoptotic protein Bax. Bax, a member of the Bcl-2 family, undergoes a conformational change during apoptosis that is associated with the permeabilization of the outer mitochondrial membrane. In this study, we examined the role of Rb phosphorylation in the regulation of binding to Bax. In MCF7 cells, by activating the phosphatase responsible for dephosphorylating Rb, PP1, apoptotic death is triggered. We utilize siRNA to block the expression of PNUTS (Phosphatase Nuclear Targeting Subunit) which causes Rb dephosphorylation, and cell death. We have found that Bax binds to Rb under normal cell conditions, but when Rb becomes dephosphorylated on specific amino acid sites, Bax dissociates from Rb. Our cell fractional studies have shown that phosphorylated Rb co-localizes with the mitochondrial fraction. Further examination of the specific sites of Rb phosphorylation required for binding to Bax is underway.

Between Worlds: An Anthology of Contemporary Fiction and Criticism

Principal Investigator(s): Dr. Deborah Poe, Dr. Ama Wattley

Department: English and Modern Language Studies
School: Dyson College of Arts and Sciences
Campus: PLV

Drs. Deborah Poe and Ama Wattley, co-editors of Between Worlds: An Anthology of Contemporary Fiction and Criticism, share publication of their book by Peter Lang Publishers. Between Worlds offers novel excerpts and short stories by some of the most important and established contemporary writers: Chimamanda Ngozi Adichie, Rebecca Brown, Ana Castillo, Michelle Cliff, Edwige Danticat, Rikki Ducornet, Louise Erdrich, Maxine Hong Kingston, Ha Jin, and Helena Maria Viramontes. Readers interested in one or more of these authors, and scholars interested in multicultural and transnational literatures, can look more deeply at cultural identity with regards to home, belonging, freedom, history, and memory because the characters embody the hybrid selves that are part and parcel of an often conflicting world of cultural codes.Migrations, dislocations, displacements, exiles and relocations are more and more frequently embodied in the world and thus through literature. Increased globalization has brought with it greater cultural hybridity and experiential interrogations of singular identity and accepted norms. The characters within Between Worlds embody the increasing number of individuals 'between worlds.' Characters move between countries, between cultures, between languages, and across borders. The literary works included in this anthology, like the human beings and experiences conveyed in these works, cross and re-cross geographical and cultural borders. Close readings of the fiction writers by four contemporary scholars, Catherine Rainwater, Alwin Jones, Belinda Kong, and Lynne Diamond-Nigh, also press readers to examine identity politics, narrowly rendered social or political ideologies, the American Dream, and senses of rootedness or rootlessness on which survival may rely.

Training Empathy and Compassion Through Engagement in Fictional Worlds

Principal Investigator(s): Dr. Thalia R. Goldstein

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: NYC

This project will develop a new and innovative means of fostering empathy and compassion in young children. Teaching empathy and compassion is critical to social and societal success, and the younger the age these skills can be targeted, the more likely prosocial behaviors will develop. There have been numerous previous attempts to strengthen empathy and compassion, but these attempts have ignored the most potentially potent route: through role playing in a fictional world. Children are natural and prolific pretenders. Role play could increase empathy and compassion by exposing children to taking on multiple perspectives in a first person and playful manner. We will develop an intervention that increases empathy and compassion by inviting children to adopt multiple perspectives in the course of pretend play and test the intervention's effectiveness against other interventions. Through this project we hope to not only develop the intervention but also to engage the community of scholars and their students currently working on issues surrounding increasing empathy, compassion, and prosocial behaviors. This research will lead to a new way to develop empathy and compassion in children, a new way to think about using children's role play and pretend play, and has the potential to provide a play-based intervention that parents, teachers or anyone who works with children can use regularly to strengthen children's prosocial skills.

Ho! Ho! Who? Children's Understanding of Real Live Santa Claus

Principal Investigator(s): Dr. Thalia R. Goldstein

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: NYC

Each year starting in mid-November children are faced with a strange dilemma. They have been told about Santa Claus by their parents and peers, and now they get a chance to meet him, in the flesh, at local malls and museums. We investigated for the first time how children reconcile this 'real live' Santa with their understanding of how Santa Claus works, and how parents keep the Santa myth alive in the face of a real person enacting a fictional character. Children between the ages of 3-10 years old were interviewed after visiting a live Santa. Almost all children believed the live Santa either was the real Santa, or shared at least some characteristics with the Santa who visits their houses. Parents were found to go to considerable lengths to keep the Santa myth alive, even in the face of multiple live Santa's, but this did not predict child beliefs. A second study investigated parents' beliefs about the best way to discuss Santa with their children, and how they described live versions of fictional characters to their children.

“A More Perfect Likeness”: Nineteenth-Century African Americans Write Visual Culture

Principal Investigator(s): Professor Sarah Blackwood

Department: Department of English / American Studies Program
School: Dyson College of Arts and Sciences
Campus: NYC

Visual representations of African Americans that appeared in the popular press in the nineteenth-century were always vexed, and often frankly racist. Contemporary cultural theorists have focused mainly on how nineteenth-century African Americans were subjected to visual representations, rather than being the authors or artists of their own depictions. Yet a major archive of texts by black writers in the nineteenth century show that African Americans were fascinated by new developments in visual representation-- particularly by early photography-- and approached visual representation as potentially radically democratic. As Frederick Douglass argued, "Formerly, the luxury of a likeness was the exclusive privilege of the rich and great" but now "The servant girl can now see a likeness of herself, such as noble ladies and even royalty itself could not purchase fifty years ago." This edited collection of primary texts gathers together texts from the nineteenth-century that describe the role of the visual in African American culture and identity. Brought together, these works-- drawn from slave narratives, speeches, essays, novels, and stories-- show evidence that black writers were articulating a brand new visual theory of selfhood and community. (This project has been supported by a NEH summer institute, and portions have been published or are forthcoming in American Literature, Common-Place, and MELUS: Multi-ethnic Literature of the United States)

Reconsidering the Effectiveness of Written Corrective Feedback for Improving Students' Accuracy in Writing

Principal Investigator(s): Dr. Kristen di Gennaro
Co-Investigator(s): Dr. Monika Ekiert (LaGuardia Community College)

Department: English
School: Dyson College of Arts and Sciences
Campus: NYC

An ongoing question in writing studies concerns the effectiveness of written corrective feedback on students' accuracy in writing, including students' ability to transfer knowledge gained from feedback on one assignment to subsequent assignments. Many composition instructors, as well as faculty teaching writing-enhanced courses, provide students with written corrective feedback (WCF) when returning writing assignments, the idea being that such feedback will help students first notice, and then avoid, inaccurate forms in their subsequent writing assignments. Given the amount of time and effort required by instructors to provide WCF to students, as well as observations regarding lack of uptake by students in subsequent writing assignments, several researchers have questioned the effectiveness of WCF, especially with regard to improving students' grammatical accuracy in writing. While previous research claims to show that WCF improves students' grammatical accuracy, such research has ignored potential unintended consequences, namely, the introduction of different errors as a result of the WCF. The current study was designed to examine this area of unintended consequences on students' grammatical accuracy by examining the impact of WCF (focused on one type of error) on students' accuracy on separate, but related, types of errors. The researchers used a quasi-experimental, pre-test—immediate post-test—delayed post-test design involving intact classes. Focused WCF was provided to two experimental groups (one included additional metalinguistic explanation lacking in the other). A control group was also included for comparison. Participants completed discourse-oriented written tasks, including a picture-based description and a narrative-based missing word task in which participants inserted missing words wherever they deemed it necessary. Two commonly taught uses of the English article system (first and second mention "a" and "the") were the focus of the WCF. Results indicated that the control group matched, or even outperformed, the two experimental groups. It appears that the focused feedback led to participants' overgeneralization of the rule reflected in the WCF; that is, the WCF led them to inaccurately overuse articles in other contexts. Such findings, which may contradict teachers' expectations and intentions in providing WCF, have both theoretical and practical implications. Res indicated that the focused feedback provided to the experimental groups led to participants' overgeneralization of the rule reflected in the WCF; that is, the WCF led them to inaccurately overuse articles in other contexts. Such findings, which may contradict teachers' expectations and intentions in providing WCF, have interesting theoretical and practical implications.

The Rising Middle Class in China: A Case Study of Perceptions of Their Educated Youth

Principal Investigator(s): Dr. Joseph C. Morreale
Co-Investigator(s): Dr. Anna Shostya

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

This paper is a study of the perceptions of Chinese young adults on the rise of the middle class in China. We address four important questions: How do university students in China define middle class? How do they perceive the growth of the middle class in China? How do they perceive their own future ability to be middle class? How do they see the impact of the rise of China's middle class on contributing to future economic, political and social changes in China? We conducted a case study by distributing a 20 question survey to 97 Chinese undergraduate students (Shanghai). The questions probed their views of these main questions. The results of our study reveal that Chinese students define the middle class-based on a combination of education and median income status. We found that their perceived attributes of the middle class rest on ownership of a home or apartment, having a secure job and having health insurance. They also believe that the keys to financial success in China are hard work and determination, family and friends connections, and education. The students have a very positive and optimistic view of the continuing rise of the middle class in China and they fully expect to be a part of it. They have definite life goals for their future including having a happy family life, maintaining good relationships with friends and learning and seeing more new things in their lives. They recognize that their opportunities for advancement are better than their parents' were and they believe that they will have a higher standard of living that their parents have achieved. The students also perceive that a rising middle class in China will contribute to economic, social and political changes and that they will also be interested in gaining more political and civil rights. The results from our survey are compared and contrasted to the findings of national surveys addressing similar questions. We believe that our study provides valuable insights into the viewpoints of the next generation of educated middle class adults in China and the possible impacts of the rise in the middle class on China's society and culture.

Creating A Model for Undergraduate Research: A Travel Course Experience to China

Principal Investigator(s): Dr. Anna Shostya
Co-Investigator(s): Dr. Joseph C. Morreale

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

This paper focuses on the integration of undergraduate research and an experience in a travel course with the goal of gaining an international perspective. The authors drew from their own experience in teaching and doing research in Shanghai, China, at a major urban Chinese university. The paper discusses the research opportunities that a travel course abroad can create for students who are interested in integrating an international component into their research projects. The authors take undergraduate economics majors to China to learn about the current political, social, and economic dynamics that are impacting China's society and institutions. The paper argues that a travel course can be used as a platform for undergraduate research and that connections with a host university can create opportunities for faculty-student research in an international context. The model that we developed suggests that a travel course can help students find appropriate research topics for an international setting, be able to gather both quantitative and qualitative data that otherwise would have been unavailable to them, and form meaningful relationships between the observed phenomena. In addition, the connections with the host university help to establish longer term relationships with each of the faculty from the home university to pursue further research. We also discuss the lessons learned from using a travel course for undergraduate research activities. Our study finds that the whole experience of involving students directly in research with full-time faculty through a travel experience enhances the students' understanding of research and broadens their intellectual horizons.

The Effect of Video Games and Other Media Usage on College Students' Studying Habits and Academic Performance

Principal Investigator(s): Dr. Anna Shostya
Co-Investigator(s): Robert McLoughlin

Department: Economics
School: Dyson College of Arts and Sciences
Campus: NYC

During the last several decades, technological advance has spread out the globe at a rate previously unimaginable. One of the industries that have been growing in the U.S. particularly fast is multimedia. According to Entertainment Software Association, in 2012 alone, U.S. consumers spent $20.77 billion on video games, hardware and accessories, purchasing on average eight computer and/or video games every second. Today, more than seventy percent of American households play computer or video games, of which eighty two percent are adults. The truth is that one does not need a game console anymore in order to play games. PC, smartphones and other portable device became much more convenient and thus popular. As young people have been spending more time playing games, watching TV shows and conversing with their peers via Facebook, parents, educators, and general public have raised concerns about the trade-off between students' study time and the time they spend on multimedia. This empirical study contributes to the exploration of the effect of the time students spend using multimedia (video games, TV, social networking) on their study habits and academic performance. We distributed a 16 question survey to approximately 200 undergraduate students in NYC, assessing their weekly activities (such as studying, reading, playing games, watching TV, etc.) and time spent on them. The survey also included questions related to their parents' attitudes toward video game playing (whether or not their parents allowed them to play games; whether or not they limited the hours or censored the content; whether or not their parents play games themselves). We then ran OLS regression to test the causal relationship between productive and unproductive activities and students' performance. While the results of this study support the time-displacement hypothesis by suggesting that time spent by students in one activity prevents them from being engaged in another, more fruitful activities (studying and reading), the effect of different media on academic performance is found to be different.

WoolfOnline.Com

Principal Investigator(s): Professor Mark Hussey
Co-Investigator(s): Pamela L. Caughie (Loyola University), Peter L. Shillingsburg (Loyola University), Nicholas Hayward (Loyola University)

Department: English
School: Dyson College of Arts and Sciences
Campus: NYC

www.Woolfonline.com contains images and transcriptions of all the life-time texts of Virginia Woolf's 1927 novel To the Lighthouse. It also includes all the contemporary reviews, many letters and diaries related to the composition of the novel, and other contextual materials. The site is an archive of primary and secondary materials containing over 4500 individual records. The Mojulem framework was built from scratch to create, edit, and publish digital scholarly editions within an extensible, modular environment. This includes a structured semantic organization of material using a customizable taxonomy and metadata.

Development of a New Antibacterial Surface Based On Hemp Oil

Principal Investigator(s): Dr. JaimeLee Iolani Rizzo
Co-Investigator(s): Candy Chen

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Hemp, also known as Cannabis sativa is a widely cultivated plant recognized as a versatile crop. Traditionally, hemp serves as a source of fiber, food and medicinal products. Cannabis sativa has been used for treatment of specific human aliments such as allergies, burns, cuts and wounds, inflammation, leprosy, leucoderma, scabies, smallpox and sexually transmitted diseases. Hemp oil is comprised of linoleic (omega-6) and linolenic (omega-3) fatty acids. It has been documented by others that linolenic acid has antimicrobial effect against bacteria that causes food poisoning. Our research involves the modification of hemp oil by chemically modifying linolenic acid to develop a new surface that bears antimicrobial activity.

Figure 1 – Linolenic acid

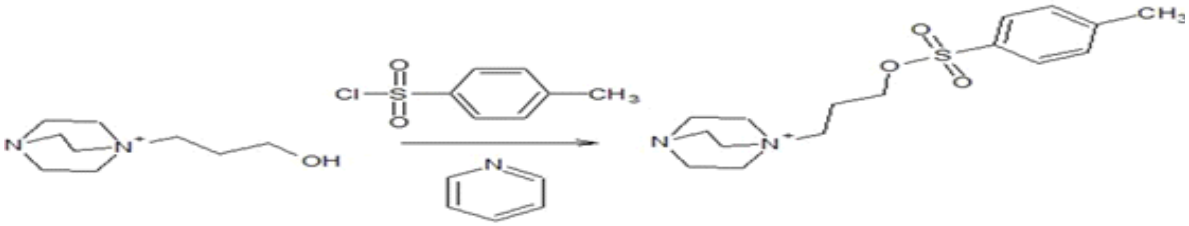

Figure 2 – Synthesis of the antimicrobial agent to be covalently attached to linolenic acid

Maple Syrup as a Potassium Ion Channel Modulator

Principal Investigator(s): Dr. JaimeLee Iolani Rizzo
Co-Investigator(s): Christopher Jue

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Potassium ion channels are found in nearly all living organisms and control a wide variety of functions. These functions include shaping action potentials, regulation of action potential duration in cardiac muscle and regulation of cellular processes such as the secretion of hormones, such as insulin. Malfunction of potassium channels can lead to a variety of problems including myotonia, arrhythmia, diabetes, etc. Prior work in our laboratory had demonstrated that specific DABCO compounds were able to open and/or close potassium ion channels. Our work herein involves the modification of maple with DABCO derivatives. Maple syrup is 95% sucrose and comes from sap from the sugar maple tree. The prepared samples were tested on mice to see if there are any changes in the potassium channels. The objective is to develop a pharmaceutical drug that prevents the closing and/or inhibition of potassium ion channels.

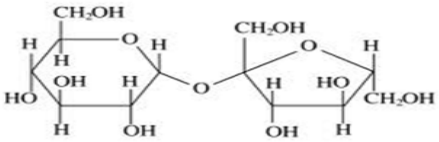

Figure 1 – Sucrose

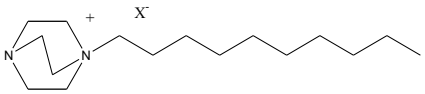

Figure 2 – DABCO C-10 agent to be covalently bound to sucrose

Women Leaders, Communication and the Financial Industry

Principal Investigator(s): Dr. Paul Ziek

Department: Media, Communications and Visual Arts
School: Dyson College of Arts and Sciences
Campus: PLV

Although there has been a great deal of research on the communication of women in organizations, the majority focuses on general organizational contexts. There have been very few studies that investigate the role of gender in different positions. Specifically, there is a clear gap in the research about communication and women leaders. To begin addressing this gap, the current study explored the communication practices of women leaders in the finance industry. Semi-structured interviews were conducted with women leaders across multiple organizations. All of the leaders hold the position of Managing Director or above, with direct reports ranging from 15 to 350. Two specific, yet inter-related, findings were identified. First, as opposed to the typical sender-oriented model of communication, the women leaders here have adopted a receiver-oriented model which emphasizes the needs of the audience. Second, even though they have adopted a receiver-oriented model, they have not abandoned all of the instrumental aspects of communication, i.e. communication as a way to transmit intended meaning accurately and effectively. To that end, the data reveals that all of the women leaders interviewed for this current project have adopted the same unique communication competency—one that is unlike the traditional approach to leadership communication which is based on information exchange, positioning (i.e., framing), and effective persuasion.

Predictors of Delayed and Chronic PTSD Trajectories Following the Virginia Tech Shootings: A Prospective Study

Principal Investigator(s): Dr. Anthony Mancini
Co-Investigator(s): Dr. Heather Littleton, Dr. Amie Grills-Taquechel, Dr. Danny Axsom

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

In this study, we applied latent growth mixture modeling to identify distinct PTSD trajectories among a college sample exposed to the Virginia Tech shootings, one of the worst school shootings in US history. Two hundred and ninety two students were assessed before the shootings occurred and at 6 weeks, 6 months, and 12 months after the shootings. Four response patterns emerged that were consistent with theoretical expectations: resilience, gradual recovery, delayed reactions, and acute and persistent distress. Pre-shooting depression, high exposure to the shooting, low levels of social support, low levels of optimism, dissociative reactions to the event, and avoidant coping all contributed to more problematic trajectories. I discuss theoretical implications of the findings and their practical application in terms of coping and treatment for PTSD.

Building a National Database for U.S. Police Shootings

Principal Investigator(s): Dr. Hasan Arslan
Co-Investigator(s): Dr. Daniel Farkas

Department: Criminal Justice and Security
School: Dyson College of Arts and Sciences
Campus: PLV

Many researchers who study the use of police force nationally have difficulty determining how many police shootings occur across the country and over time. In fact, many police departments do not keep separate records for officer-involved shootings. This project is a collaborative work of the Criminal Justice and Information Technology Departments that developed a prototype of a comprehensive database to define and consolidate information of police shooting incidences throughout the U.S. Such repository of national data will enable law enforcement officials the ability to analyze shootings and be better prepared to make the right judgment call during a hostile situation.

Molecular Mechanisms of Epilepsy

Principal Investigator(s): Dr. Zafir Buraei
Co-Investigator(s): Ksenia (Ellie) Dubrovina, Gabriella Suppa, Keith Thomas

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Calcium is a secondary messenger that regulates many important functions such as muscle contraction, cell migration, neurotransmitter and hormone release, and apoptosis. Not surprisingly, disruptions in calcium signaling can lead to devastating diseases such as autism, cardiac dysfunction, pain, migraine, epilepsy and other neurological and cardiovascular disease.

Gem Stabilizes Voltage-Gated Calcium Channels in the Inactivated State: Implications for Human Disease

Principal Investigator(s): Dr. Zafir Buraei
Co-Investigator(s): Rose-Levenson Palmer, Scott Dobbins, Jian Yang

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Voltage-gated calcium channels (VGCCs) are implicated in processes from muscle contraction to neurotransmitter and hormone released, cell differentiation, migration and death. Because of this, they are regulated by a variety of proteins. One of the strongest regulators are RGK GTPases, named after group members Rad, Rem1, Rem2 and Gem/Kir. RGK proteins strongly inhibit VGCCs, and the mechanism of channel inhibition is unclear but likely involves two separate components: a decrease in the number of channels on the membrane and, the inhibition of their activity. Our recent study (PNAS, 2010) showed unequivocal evidence that the activity of channels already residing in the membrane can be inhibited by RGK, but an important question remains: what is the mechanism of inhibition? To study this, we created different chimeric channels comprised of the PQ-type calcium channel, which is very sensitive to RGK inhibition, and different small parts of the T-type calcium channel, which is insensitive to RGKs. Some chimeras could not be inhibited by RGK proteins. Importantly, this coincided with a very slow rate of desensitization (inactivation) in those chimeras. So, we wondered whether slowed inactivation caused RGK insensitivity. Indeed, mutating residues known to increase PQ channel inactivation enhanced RGK inhibition, whereas mutating residues known to slow channel inactivation weakened or abolished RGK inhibition. Furthermore, recovery from inactivation of WT P/Q channels in the presence of RGK was markedly slower than without RGK. Thus, RGK appear to stabilize the channel in the inactivated state. Finally, we investigated RGK inhibition in mutations that cause human disease and found that familial hemiplegic migraine mutations that speed P/Q channel inactivation strengthened RGK inhibition, whereas Timothy Syndrome mutations that slow channel inactivation greatly weakened RGK inhibition. These results identify a new contributor to calcium channelopathies.

An Online Survey to Assess an "Internationalized" Psychology Course

Principal Investigator(s): Dr. Richard Velayo

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: NYC

The general objective of this online survey is to gather information on how the psychology curriculum is being internationalized in institutions of higher education throughout the United States and assist psychology instructors in determining the relevant goals and effective strategies in internationalizing their psychology course(s). This survey assesses various curricular goals (psychological knowledge, methodological issues, discipline of psychology, interpersonal understanding, global issues) and course-related strategies (lectures, classroom activities, writing assignments, and use of internet-based technologies) in infusing international content and perspective. The survey is currently in its pilot stage, with preliminary findings and feedback collected from a small pool of psychology students and instructors.

India's Bene Israel: Transformation of Identity in Israel and the United States

Principal Investigator(s): Dr. Joan Roland

Department: History
School: Dyson College of Arts and Sciences
Campus: NYC

The Bene Israel, the largest of the three Jewish communities in India, numbered at its peak perhaps 20,000. Never experiencing anti-Semitism at the hands of their hosts, they survived and maintained their identity as Jews over a period of possibly 2000 years. Nevertheless, starting in the l950s, the Bene Israel began to leave India for a variety of reasons. Many went to England, Australia, Canada, and America, but the vast majority went to Israel. In all of these countries, where Jews of European origin dominated, they faced challenges. With fewer than 5000 remaining in India, the preservation of the unique Bene Israel heritage may rest with the 60,000 to 70,000 Jews of Bene Israel origin currently residing in Israel. And yet the persistence of Indian cultural markers among the community has impeded at times its full integration and absorption into an Israeli society which initially privileged European culture. This study examines the extent to which these immigrants have retained Indian languages, values and culture, social and religious customs, family relationships, dress and cuisine. I conclude that having been Jews in India, their "motherland", the Bene Israel are now Indians in Israel, their "fatherland", and in some ways have experienced more prejudice and marginality in their new home than they ever did in India, because of their "Indian" characteristics. Whether the resolution will be the proud assertion of an Indian-Israeli identity by the younger generations within the context of new, more tolerant, Israeli perceptions of ethnicity, multiculturalism and pluralism, or the shedding of Indian identity through intermarriage is still an open question. Perhaps no more than one thousand Bene Israel live in the United States. Here, both an ethnic and religious minority, they have faced a similar set of challenges: both to become American and to be accepted as Jews by the primarily Ashkenazi (Eastern European origin) American Jewish community. To what extent do different generations feel a connectedness to India? How have they retained, or transformed, Indian and/or Indian Jewish identity? I conclude that in their strategy of adaptation to align themselves with Jews in America, many Bene Israel negotiated a transcendence of Jewish over Indian ethnicity.

The Sermons of Alexander Twilight

Principal Investigator(s): Dr. Lawrence F. Hundersmarck

Department: Philosophy and Religious studies
School: Dyson College of Arts and Sciences
Campus: PLV

Alexander Twilight (1795 – 1857) is famous for being the first African American to have graduated from an American College (Middlebury College, 1823); and to have served as a representative to a State Legislature (Vermont, 1836). As an educator and Congregationalist minister he played a central role in the educational activities of Northern Vermont and as the head of the Orleans County Grammar School he built the largest stone structure of the 19th Century, the Old Stone House, that today serves as home to the Historical Society. The importance of the work with Twilight sermons is linked to the fact that before their discovery in 2002, historians had no primary texts that offered an insight into his thinking and his basic values. Now by using these sermons we are privileged to have a very rich insight into the man. This publication has, simply put, moved Twilight out of the twilight and as such should become a valued resource for an understanding of the period and the importance of the contributions of Americans of African heritage. The 2002 report of the discovery of the Twilight sermons from the Bangor Daily News: http://news.google.com/newspapers?nid=2457&dat=20020226&id=LKJJAAAAIBAJ&sjid=Qg0NAAAAIBAJ&pg=1576,3274797 . A brief biography of Alexander Twilight from the Vermont Orleans County Historical Society: http://oldstonehousemuseum.org/twilight-bio . And, the web link to the Indexes, Introduction, and Sermons of Twilight now on line and maintained by the Orleans County Historical Society: http://oldstonehousemuseum.org/alexander-twilight-sermons-with-introduction-and-index (click on "Visit our Twilight's Sermons page to begin!")

Trade is Sublime: A Scenographic Proposition for Ethnographic Research at the WTO Geneva, Switzerland

Principal Investigator(s): Professor Luke Cantarella, Professor Christine Hegel, Professor George Marcus

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Department: Performing Arts
School: Dyson College of Arts and Sciences
Campus: NYC

Trade is Sublime is a video installation that presents three competing visions of trade as a sublime human endeavor. It asks of viewers: Which of these embodies the reality of trade in the present? Which represents how trade might be organized in the future? Which of these visions of trade is the ideal? The installation was displayed at the Centre William Rappard in Geneva, Switzerland, in June 2013 and is part of a broader ethnographic investigation of the World Trade Organization (WTO) being undertaken by team of international anthropologists including George Marcus and Jae Chung. The work is part of an ongoing research effort to use art as a medium of social scientific research. Trade Is Sublime is designed to evoke an idealized version of trade as effortless, equitable, homogenous, and beautiful in order to encourage viewers to consider its apposite or relative actualities. In particular, the installation uses temporal variation, whereby exchange activity depicted in the video is quick, laborious, or almost suspended in time, in order to ponder the real---life tenuousness of trade negotiations, operations and regimes. Website: www.tradeissublime.org

Exploring the Role of the TORC Proteins in HTLV-1 Gene Expression

Principal Investigator(s): Dr. Marisa Isaacson
Co-Investigator(s): Carl Dernell, Cristina Rubi, Bria Cuffy

Department: Biology and Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The human T cell leukemia virus type 1 (HTLV-1) is the causative agent of adult T cell leukemia and lymphoma (ATLL). The viral oncoprotein Tax is the primary transcription factor required to initiate HTLV-1 gene expression and is also required for the development of ATLL. The goal of this research is to discover the mechanism whereby HTLV-1 initiates gene expression in infected cells, particularly early in infection when the HTLV-1 Tax protein has not yet been produced. The transducers of regulated CREB activity (TORC) proteins have been demonstrated to activate HTLV-1 transcription, even in the absence of Tax. We hypothesize that these proteins are responsible for the initial activation of HTLV-1 gene expression before the viral Tax protein has been synthesized. Furthermore, we hypothesize that Tax modulates the phosphorylation, localization, and activation status of the TORC proteins. To determine the mechanism by which TORC activates HTLV-1 transcription, we have generated several TORC2 and TORC3 phosphorylation mutants. Preliminary studies suggest that TORC2 proteins which cannot be phosphorylated (constitutively active) are able to activate HTLV-1 gene expression to levels significantly above wild-type TORC. We are in the process of generating TORC1 phosphorylation mutants and examining TORC3 mutants for their ability to activate HTLV-1 transcription. Next, we plan to determine if the expression of Tax modulates the phosphorylation and localization (and hence activation) of the TORC proteins. To aid in this study we are in the process of generating a stable cell line containing the HTLV-1 promoter (LTR) followed by the luciferase gene to be used in reporter assays. Currently, the only available HTLV-1-LTR-luciferase stable cell line available is in the Chinese hamster ovary (CHO) cell background. We propose to generate human cell lines that are more relevant for HTLV-1 research including Jurkat (T cell), HeLa, and HEK 293 cells. These cell lines will be used in reporter assays to help establish the role of the various TORC proteins in HTLV-1 gene expression both in the presence and absence of Tax. By determining the exact role the TORC proteins play in the initiation of HTLV gene expression, particularly early in infection before the Tax oncoprotein has been made, we can define how the virus sets up an environment favorable for the expression of Tax and other viral proteins ultimately leading to carcinogenesis.

Public Private Affiliation Networks- Which Relationships Count in Health Care Safety-Nets?

Principal Investigator(s): Dr. Hillary Knepper

Department: Public Administration
School: Dyson College of Arts and Sciences
Campus: PLV

The recent passage of the Affordable Care Act (ACA) illustrates that Americans seek to bring balance and equity to health care. Health care in the United States is provided in a loosely grouped network of service providers (Kaiser, 2007). Historically, public health programs have relied upon service provider networks, utilizing public and private sector providers to meet program demands (Mandell, 1999). Long-term examples of public-private collaboration on the complex social issue of health care for vulnerable populations are Medicare and Medicaid. Successful strategic collaborations rely upon many factors considered fundamental to collaborative networks: environmental links, the reason for the collaborative activities, the structure of the network, the membership comprising the network, and the leadership involved (Bailey & Koney-McNally, 2000). For this reason, network analysis was applied to two large counties with large numbers of uninsured residents- Florida and California. The fundamental research question to be addressed is, which organizations are the most centrally located, arguably the most important, in the health care safety-nets in these two counties? This study suggests parallel affiliations emerge among health care safety-net providers in different counties. Perhaps these relationships are linked in part to State Medicaid funding mechanisms or are natural outgrowths of nonprofit service providers filling in health care service gaps. Thirteen health care safety-nets in California and Florida are examined and discussed here. Counties were selected as a frame for the analysis due to the pervasive involvement of county government in health care services and because nonprofit health care providers are dependent upon public sector funding and regulation. Network analysis is used to consider the dynamics of the relationships and the power distributions within these safety-nets. Collaborations were examined across organizations within each county by analyzing the paths and ties among them. Health care safety-nets evidence public-private complexity given the variation in the relationships among organization types and frequency of interactions (Levine & White, 1961). Understanding the complexity of these relationships is pivotal as the Affordable Care Act unfolds. Why is it important to consider the relationship between government and nonprofits in health care safety-nets? For practical purposes, this study identifies opportunities for strengthening linkages, furthering trust, and improving nonprofit and government relationships. While only suggestive, these opportunities may identify avenues to extend the reach of existing primary care providers for low income and underinsured individuals as ACA expands health care to millions of Americans.

Vigilante Media: Unveiling Anonymous and the Hacktivist Persona in the Global Press

Principal Investigator(s): Dr. Adam Klein

Department: Communication Studies
School: Dyson College of Arts and Sciences
Campus: NYC

Since 2008, Anonymous has been a rising presence in global affairs, though the group has remained relatively hidden behind the margins of media scrutiny. Just this past year, Anonymous' targets have included high-profile attacks that have brought down Israeli, Russian, and North Korean government websites, to the defacing of content on the Los Angeles Times and NBC News websites. As modes of communication, one could say that traditional activists and "hacktivists" are fundamentally divided in that one creates, while the other destroys. Yet, Anonymous' organized hacks (what they call #operations) appear to be as socially conscious as they are globally directed. The international collective has also made their presence known in cases of perceived social abuse, from the imprisonment of feminist punk band Pussy Riot in Russia, to the jailing of political cartoonist Aseem Trivedi in India, to an apparent cover-up of teen rapists in Steubenville, Ohio. It is within this paradox of agendas that the news media currently struggle to encapsulate Anonymous and their hacktivist movement. My study attempts to demystify that paradox by separating the global news presentation of Anonymous from the group's actual actions and declared motivations. I set out to examine the media's collective depiction of Anonymous by reviewing the coverage of their activities in 200 news articles gathered from ten countries where 56 recognized hacks have occurred. The content analysis revealed a telling disparity in how journalists chose to represent Anonymous and what they actually reported. Hacktivists were mostly characterized as malicious pranksters, even though the study found that 82% of their operations were motivated by free speech and political causes. To a lesser extent hackers were also cast as legitimate activists and global threats, however, their methods and motives suggested that vigilantism is their most fitting designation. Unveiled, Anonymous' movement resembles a group of unsanctioned justice seekers, part of a changing wind of media and politics that is challenging the old power structures, and reforming them. However, the study also investigated hacktivist methods and targets, highlighting their proclivity for crashing websites of global institutions. In considering these acts of sabotage, this study addresses a growing challenge in classifying groups like Anonymous that represent either a new strain of media activism, or a darker element in the public sphere. It is within this gray area of deciding the place of hackers and hacktivists in the global mediascape that presents the next challenge for communication scholars.

Tripodal Ligands and Their Application in Sensing and Asymmetric Catalysis

Principal Investigator(s): Dr. Zhaohua Dai
Co-Investigator(s): David Mendoza, Jonathan Oswald, Moshea Rease

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

We have successfully prepared some chiral tripodal ligands based on tris(2-pyridymethyl)amine which possesses four nitrogen atoms for the ligation of a wide variety of metal ions. By fusing methionine, a sulfur-containing binding motif for Hg(II), with quinolylmethyl amine and its derivatives, we have successfully obtained some Hg(II) sensors with high selectivity and sensitivity. Addition of mercuric ion to these ligands induces changes in UV-Vis, fluorescence and optical activity. Metal ion complexes of such chiral ligands are also used to catalyze some enantioselective chemical reactions. Converting saturated C-H bonds directly into alcohols is very important to synthetic organic chemistry, fuel industry and other industries using petrochemical feed stock. The Fe(II) complexes of tris(2-pyridylmethyl)amine (TPA) have been shown to catalyze the hydrxolyation of alkanes stereoselectively. We systematically developed TPA-base chiral podands, piperidines and quinuclidines. The Fe(II) complexes of these chiral tripodal ligands are employed as green asymmetric catalysts in enantiospecific hydroxylation of alkanes by H2O2. Silica gel column chromatography was used to purify the chiral ligands. Gas chromatography-mass spectroscopy, UV-visible spectroscopy, and polarimetry were used to characterize them. Analytical protocols to assess the results of such asymmetric analyses with these methods were developed.

On the Trail of a Potential New Drug for African Sleeping Sickness – Haskins Laboratory's Role

Principal Investigator(s): Dr. Cyrus Bacchi, Dr. Nigel Yarlett

Department: Haskins Laboratories, Biology and Health Sciences, Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

African Trypanosomiasis, human sleeping sickness is a centuries old problem affecting the health and economy of sub-Saharan Africa. An estimated 10 million people are at risk and thousands of livestock die annually as a result of a veterinary form of the disease. Safe, effective cures for these diseases, caused by Trypanosoma brucei group trypanosomes, Trypanosoma b. gambiense and T. b. rhodesiense, are urgently needed. The parasites live in the blood (Fig. 1) and tissues of the host, finally becoming established in the brain and cerebrospinal fluid. Currently used drugs, for the most part, are toxic with resistance developing after decades of use. One exception is eflornithine, developed first at Pace's Haskins Lab in the early 1980's, but although effective, requires extensive intravenous administration, impractical for mass administration in rural clinical. Since 2007 we have been part of a consortium with Drugs for Neglected Diseases initiative (DNDi) to develop a safe, effective agent for Human African Trypanosomiasis (HAT). Initially compounds were screened over a three year period at Pace in an acute T. b. brucei model infection in mice. This model kills rapidly and 146 compounds were tested - mostly oxaboroles (Fig. 2) - of which 25 were curative. Oxaboroles are novel, boron-containing small molecules. Compounds proving curative in the acute model were progressed to a long term central nervous system model at Pace which takes >6 months to resolve. Of these, 13 of 25 compounds proved curative in the CNS model (Table 1). One agent SC7158 (Fig. 2), proved orally available and able to distribute readily across the blood-brain barrier. This agent proved non-toxic in rodent and non-human primate studies (Jacobs et al. PLOS Negl. Dis. June 2011) and is currently progressing through first-in-human single ascending dose studies. SC7158 is well tolerated by humans with a mean half-life of 13.5 days after single oral doses of 20-200 mg. Following a single oral dose of 200 mg, the concentration of SC7158 in CSF was sufficient to allow a curative concentration to be maintained for 3 days after dosing (Wring et al ASTMH Poster LB2117, 14 Nov. 2013). These data project to a curative oral human dose of 280 mg over 5 days for late stage HAT. This is being investigated in a phase II clinical trial now ongoing in the Democratic Republic of the Congo. For our studies of oxaboroles in acute and CNS models, Pace University's Haskins Labroratory was awarded "Project of the year, 2011" by DNDi.

Internet Memes as 'Structures of Feeling': The Case of China's Disillusioned 'Losers'

Principal Investigator(s): Professor Marcella Szablewicz

Department: Communication Studies
School: Dyson College of Arts and Sciences
Campus: NYC

This research project analyzes the origins and nature of one of China's most popular Internet memes. Since early 2012, the Chinese language Internet has been flooded with young people who self-mockingly describe themselves as 'poor, short, and ugly' 'losers.' Known as diaosi (屌丝), these 'losers' define themselves in contrast to the idealized image of the 'tall, rich and handsome' young urbanite. With millions of young Chinese calling themselves 'losers,' the meme has also become the subject of international marketing campaigns. In early 2013 a Chinese company promoting a new massively multiplayer online role-playing game (MMORPG) unfurled a new advertisement in Times Square with the characters for diaosi featured prominently in the center of the billboard. What is the significance of this wildly popular meme? This project first reviews the state of debate about the meanings of the diaosi phenomenon, and then offers new interpretation that frames the meme in terms of Raymond Williams' notion of 'structures of feeling.' It may be tempting to dismiss the diaosi phenomenon as mere online play, but as Yang (2009) has noted, within China, contentious online activity often takes a playful form and the notion that this is 'mere play devoid of politics' is simplistic. Internet memes serve as an important emotional outlet for youth, and the author argues that the diaosi meme is one that signals young netizens' increasing disillusionment with regard to the possibilities for upward socio-economic mobility in contemporary China. As such, the diaosi phenomenon does the important work of bringing visibility to a group of young people rendered otherwise invisible by a society in which success is often defined through educational achievements and material wealth. The meme, though amorphous and at times contradictory, may also be the calling card of an emergent Internet-based counter-public through which alternative desires and forms of mobility may be imagined and enacted.

Spectroscopic Characterization of Different Bee Propolis

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Tyler K. Brescia, Eric Nguyen

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Propolis is the generic name for the complex resinous products that bees collect from various botanical sources. It is a strongly adhesive resinous product, which is collected, transformed and used by bees for hive construction and repair as well as defense structures (sealing or blocking holes and cracks, repairing combs, strengthening the thin borders of the comb and making the entrance of the hive weathertight or easier to defend). Several samples of propolis were collected from various parts of the world (Europe, Australia, USA and the Philippines). The propolis samples were extracted with ethanol and the extracts were characterized using various spectroscopic techniques such as absorbance, fluorescence, IR and Raman. Spectroscopic results were compared for possible similarities and differences in terms of the composition.

Interaction of a Protein With Tetracycline and Its Degradates

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Eric Nguyen

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The interaction of a protein, bovine serum albumin, with tetracycline (TC) and its degradates namely, 4-epitetracycline (ETC), anhydrotetracycline (ATC) and 4-epianhydrotetracycline (EATC) was investigated by spectroscopic tools like absorbance, fluorescence and infrared (IR). Results showed the reduction of emission intensity upon mixing the BSA with the TC derivatives. The reduction is more pronounced in the anhydro derivatives. IR results showed change in conformation of the protein upon binding with TC derivatives.

Anti-Microbial Properties of Different Bee Propolis

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Nadina Horril

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Propolis, a natural resinous substance collected by honeybees from buds and exudates of plants, is known for its use in the beehive as a protective barrier against intruders. It is widely used as a popular remedy in folk medicine and as a constituent of bio-cosmetics. Recently, it is extensively used in food and beverages to improve health and prevent diseases. Depending on the season, bee species, vegetation and the area of collection, the chemical composition of propolis are qualitatively and quantitatively variable, resulting in diverse biological properties. In this project, the antimicrobial activity of several propolis samples obtained from various parts of the world (Europe, Australia, USA and the Philippines) was determined. The propolis samples were extracted with ethanol and the extracts were assayed with Gram-positive and Gram-negative microorganisms. The results exhibit antimicrobial activity of several samples against some specific microorganism.

Encapsulation of Enzymes Using the Sol-Gel Process

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Maximillian P. Baria, Robert L. Marvin

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

There are many methods that have been used in the encapsulation or immobilization of enzymes. One of them is the sol-gel process, which can be used to produce porous silica materials even at ambient temperature. In this study, several enzymes, namely catalase, lipase, laccase, and glucose oxidase were encapsulated by sol-gel process using tetramethyl orthosilicate (TMOS) as alkoxide. The behavior of the enzymes encapsulated within the gel matrix, or xerogel, was monitored by fluorescence to determine the spectrochemical behavior of the enzymes. The results were compared with the enzymes in solution form. Although there are minor differences between the spectra in different matrices (xerogel and solution), the integrity of the enzymes was maintained when they were immobilized within the gel matrix.

Binding of Catalase With Different Nanomaterials Monitored by Optical Spectroscopy

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Daniel Kim, Eric Nguyen

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Nanomaterials are of great interest lately due to their wide variety of applications. The extremely fascinating and useful properties of nanomaterials, which can be exploited for a variety of structural and non-structural applications, make them versatile materials in various fields of science ranging from material science, energy, and medicine. For this reason, it is important to understand the interactions of nanomaterials with different biomolecules. This study monitored the interaction of catalase with nine commercially available nanoparticles using various spectroscopic techniques (i.e. absorbance, fluorescence, circular dichroism). Results showed the preferential binding of some nanomaterials with catalase, as seen by reduced emission intensity.

Monitoring Changes in Microorganism's Protein Content and Functional Groups Upon Treatment With a Heavy Metal

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Shreya Patel, Tyler K. Brescia, Samantha J. Pace

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Microorganisms have been known to bioaccumulate heavy metals such as mercury, nickel, copper, calcium and lead. This property allows the use of microorganisms in bioremediation treatment of soil, sediment and water contaminated with heavy metals. In this study, the ability of microorganisms to bind heavy metals was determined using instrumental analysis. A model microorganism, Pseudomonas aeruginosa, was cultured in a controlled and lead contaminated environment. The biomass from the two cultures was collected and then mixed with lead metal. The protein contents of the different cultures before and after treatment of the metal were determined using UV-Vis spectroscopy. Additionally, the functional groups in the two cultures were identified using infrared (IR) spectroscopy. Peak differences can be observed especially when both cultures were treated with lead metal.

Utilization of Nanomaterials for the Removal of Heavy Metals in Water Samples

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Hsin Yi Wang, Arianna J. Porrata-Doria, Amanda A. Falade

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Nanomaterials are materials possessing grain sizes on the order of a billionth of a meter (nanometer). Nanomaterials possess unique, beneficial chemical, physical and mechanical properties and they have been used for a wide variety of applications. They have been used as a remediation material in removing pollutants such as chlorinated solvents (polychlorinated biphenyls) and heavy metals (chromium). In this study, several commercially available nanomaterials have been utilized for binding studies with different heavy metals such as lead, nickel and cobalt ion in aqueous samples. Fixed amount of the nanomaterials were added to metal solutions of known concentrations. Atomic absorption spectroscopy (AAS) was used to determine the amount of metals binding to the nanomaterials. The effect of pH and the presence of humic acid on the aqueous solution containing the metal ions was also performed to determine the optimized conditions in the removal of lead ions out of the aqueous solutions.

Utilization of Vibrational Spectroscopy to Determine Expired Medications

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Orkhan Mammadov

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Medications usually contain active ingredients or chemicals with different functional groups. These functional groups upon interaction with water, oxygen molecules or reaction to light energy undergo changes that can alter their structures and properties. Once this alteration happens, the drug may lose its efficacy. In this study, several expired medications were analyzed using vibrational spectroscopy techniques (infra-red-attenuated total reflectance and Raman) side by side with new ones to determine if there is a way to differentiate them. Difference in the spectra of the new and expired medications was observed and can be correlated in identifying whether the medication analyzed is expired or not. Mass spectrometric analysis also showed differences in the new and expired medications.

The Amyloidogenic Potential of hIAPP22-29 is Altered By Aromatic Ring Substituents on Phe-23

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Dr. Adam Profit (CUNY York College), Dr. Ruel Desamero (CUNY York College)

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Amyloid fibril formation is involved in such diseases as Alzheimer, Type II diabetes, Creutzfeldt-Jakob disease. Amyloid fibril formation is a complicated process promoted by different factors. One of possible causes of the amyloid fibril formation is pi-stacking of aromatic residues of the amino acids. In our work we study aggregation of very short peptide fragment NFGAILSS which was determined in previous works as one of the units causing the aggregation in amylin or islet amyloid polypeptide (IAPP). We study the effect of various substituents on the aromatic ring of phenylalanine, which alter electronic structure of the ring. Aggregation rates were determined by using UV turbidity measurements at 405 nm. The result of the experiment showed that substitution on the aromatic ring of phenylalanine has an affect on the rate of aggregation. We also did fluorescence measurements to correlate the turbidity data with changes in the environment of the aromatic ring.

Solid Phase Extraction of Amphetamine Using Different Commercially Available Molecularly Imprinted Polymer (MIP) Sorbents

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Robert L. Marvin, Maximillian P. Baria, Eric Nguyen

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Analysis of illicit drugs such as amphetamines are typically done by chromatographic methods like gas chromatography (GC) and liquid chromatography (LC). However, even with the introduction of LC-MS and GC-MS, sampling pretreatment still plays a very important role in drug analysis. Solid phase extraction (SPE) materials were developed to capture illicit drugs and their metabolites in complex samples such as urine. They have become commercially available to improve drug analysis. Molecularly imprinted polymers (MIPs) are among these materials; they are a class of polymer-based recognition elements tailored to target a specific chemical or class of structurally related compounds. In this study, analysis using sample pretreatment method (SPE) with MIP was compared with analysis without treatment. In addition, the performance of two commercially available MIPs to extract amphetamine from water and synthetic urine was compared. Results showed a higher recovery of amphetamine in complex samples was obtained with the use of the sample pretreatment method (sorbents) as opposed to analysis without pretreatment. Similar results were obtained for both sorbents in regard to percent recovery of the amphetamine in both water and synthetic urine samples.

Application of Vibrational Spectroscopy in Probing Sol-Gel Transition

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Samantha J. Pace, Maximillian P. Baria

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The sol-gel process is a convenient and versatile method of preparing transparent materials under ambient temperature. This study probed the sol-gel mechanism by observing the liquid to solid transition of a xerogel containing cyanoethyltriethoxysilane (CNTEOS) and tetraethoxysilane (TEOS). The functional group cyano was chosen because of its unique vibrational signature. Thin films of the gels were prepared and each step was monitored by vibrational spectroscopy (IR and Raman). Results showed that the vibrational modes of the cyano functional group shifted to a higher wavenumber once transformed to solid (gel). In addition, broadening of the peak was observed during the process implying a heterogeneous environment. Computational calculations were also performed and compared with the obtained experimental data.

Oxytetracycline Interaction With Nanoceramics (Silicon Oxide and Zinc Oxide)

Principal Investigator(s): Dr. Elmer-Rico E. Mojica
Co-Investigator(s): Alfredo Dumalsen, Hillary Bundick

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Tetracyclines (TCs) are among the antibiotics that are used extensively for disease control and in livestock feed for several decades due to their great therapeutic values. The widespread use of TCs and other antibiotics has led to dissemination of these compounds into the water and soil environments. Oxytetracycline (OTC) is one of the most common members of TCs. Its electron-rich ketone, carboxyl, amino, and hydroxyl groups contribute to their strong tendency to complex with metals. In particular, several studies have demonstrated the strong adsorption of TCs with aluminum oxide surfaces. In this study, the interaction of OTC with nanoceramics specifically silicon oxide and zinc oxide was monitored y using UV-Vis absorbance and fluorescence. Results showed a change in the absorbance profile and a reduction in emission intensity in both OTC solutions with nanoceramics. This can only mean that there is some interaction taking place between OTC and nanoceramics.

The Ethics of Voluntourism and Alternative Spring Break

Principal Investigator(s): Dr. Emily Welty
Co-Investigator(s): Elena Marmo

Department: Peace and Justice Studies/Political Science
School: Dyson College of Arts and Sciences
Campus: NYC

This project explores how to ethically organize and orchestrate Alternative Spring Break programs at undergraduate universities. Utilizing the theoretical frameworks of Slavoj Zizek's writings on cultural capitalism and violence and Mary Anderson's Do No Harm, this project seeks to alter the way we discuss and understand the purpose and results of Alternative Spring Break programs. Drawing upon qualitative data analysis of two New York City universities including interviews, observation and discourse analysis of promotional materials, we argue that Alternative Spring Break programs must focus on learning rather than doing and deconstruct preconceived notions of the Other/beneficiary. Ultimately we conclude that such programs may be beneficial if they do not elevate the Self at the expense of the Other or promote commodification of suffering.

Nitric Oxide Production by Trichomonas Vaginalis

Principal Investigator(s): Dr. Rita K. Upmacis
Co-Investigator(s): Kelsey D. Jordan, Dr. Nigel Yarlett

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Trichomonas vaginalis is a sexually transmitted parasite that causes the infection trichomoniasis in females, but is asymptomatic in males. The parasites are also sometimes infected with mycoplasma in a host. Our research shows that T. vaginalis is capable of producing nitric oxide upon incubation with L-arginine – a known substrate for nitric oxide synthase (NOS) enzymes. Furthermore, pre-incubation of T. vaginalis with L-NMMA (L-N-monomethylarginine), a non-specific NOS inhibitor, reduced nitric oxide production. Notably, the parasite's genome does not encode for any NOS enzymes. To ensure these data were not a result of mycoplasma infection, the DAPI nucleic acid stain was used to ensure that no bacterial DNA is present. Fluorescence microscopy confirmed that mycoplasma were not present in the cell or cell culture, leading us to conclude that the nitric oxide is the product of T. vaginalis.

Mass Spectral Analysis of the Chemical Composition of Fingerprint Residues

Principal Investigator(s): Dr. Rita K. Upmacis
Co-Investigator(s): Ivelisse Dyson

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Even though great strides have been made in DNA analysis, fingerprints remain one of the best forms of evidence. A latent fingerprint is an impression left on a surface and comprises a pattern of ridges and furrows from the human finger. Since the print is unique to the individual, it is used for identification purposes, and may involve automated comparisons with marks in databases. However, if the print is only partial or smeared, it may not be suitable for use in identification. In recent years, there has been a push for more statistical validation in fingermark analysis. While fingerprints have discerning characteristics for each person, two individual's prints could be sufficiently similar that they could be confused. The composition of lipids in fingermarks may be determined by one's diet or by genetic and environmental factors. It is believed that this variation provides us individually with a unique scent that certain dog species can discern and track. We propose that the fatty acid composition of a fingermark or latent fingerprint (which may also contain sweat and other possibly discerning contaminants) provides identifying information. Preliminary data indicate that it is possible to obtain electrospray ionization mass spectra of fingerprint oils

Antioxidant Mechanisms of Docosahexaenoic Acid

Principal Investigator(s): Dr. Rita K. Upmacis
Co-Investigator(s): Steven J. Miller

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

Docosahexaenoic acid (DHA) is an omega-3 polyunsaturated fatty acid and an essential structural component of the human brain, skin, retina, and sperm. It is also prevalent in breast milk and fish oil, which serve as sources of nutritional intake. DHA can bind free radicals, possibly preventing them from destructively oxidizing living tissue. This quality may lead to health benefits and thus, understanding the nature and degree of DHA's chemical reactivity is important. In this study, we sought to understand the antioxidant potential of docosahexaenoic acid (DHA) by tracking molecular changes when exposing it to (i) oxygen, by leaving the substance exposed to air over time, and (ii) nitric oxide (NO) radical released from NO-donor compounds. The resulting products were analyzed by mass spectrometry, which indicated the presence of a vast array of compounds.

Calcium and Magnesium Levels in Atherosclerotic Tissue Samples: Influence of Gender and Diabetes

Principal Investigator(s): Dr. Rita K. Upmacis
Co-Investigator(s): Steven J. Miller, Dr. Paul Yang (Beth Israel Hospital)

Department: Chemistry and Physical Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

This study investigates the effects of gender and diabetes on cellular magnesium and calcium levels within atherosclerotic legions. Atherosclerosis is a chronic cardiovascular disease characterized by the narrowing and hardening of arteries, secondary to the build-up of plaque. As a result, blood flow to distal organs becomes constricted or disrupted, and the risk for cardiovascular incident and stroke is increased. Magnesium and calcium are thought to play key roles in the pathogenesis of the condition. These levels may be quantified using atomic absorption spectroscopy. Since established literature has been largely limited to the study of males, the study analyzes the tissue chemistry of both genders to evaluate differences in disease progression. Furthermore, since diabetes may aggravate comorbid illnesses, the study also examines the effect of this comorbidity on magnesium and calcium levels. Understanding the chemistry behind atherosclerosis is important to enhancing our insight into other risk factors. The results may light the way to better preventative awareness within the community.

Vocal Responses to Facial Expressions of Emotions

Principal Investigator(s): Dr. Sethu Karthikeyan
Co-Investigator(s): Dr. Vijayachandra Ramachandra (Marywood University)

Department: Communication Sciences and Disorders Program
School: Dyson College of Arts and Sciences
Campus: NYC

Communication involves the exchange of information between signal transmitters and receivers via vocal, tactile, visual, and even olfactory modalities. In a communicative context, the vocal and verbal signal conveyed and received comprises not only the semantics of the message but also includes information about various aspects of the communication partners; one's speech and language may be affected or modified depending on both kinds of information. The speaking fundamental frequency (f0)—the objective measure of perceived vocal pitch—is one of the acoustic parameters that appears instrumental in such vocal modifications. For example, it has been demonstrated that women's average speaking f0s vary depending on the perceived attractiveness of the male listener; men's speaking f0s vary depending on the perceived dominance of another male in a competitive situation. Along the same lines, the current study examined whether potential cues to speakers' empathetic tendencies may be embedded in their voices, specifically f0. In a simulated partly interactional set up, forty one females' speech was recorded as they spoke to another woman thrice i.e. to photographs of the same individual displaying three different facial expressions associated with the following emotions: happy, sad, and neutral (all previously validated). Women's f0s demonstrated statistically significant shifts in the predicted directions. Additionally, associations were found between a variability measure of frequency and a standardized measure of empathy. Discussion of results will consider pragmatics and the potential role of prosody in social communication.

Neuromythology of Einstein's Brain

Principal Investigator(s): Dr. Terence Hines

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

The claim that Einstein's brain was different from normal brains in both cellular structure and external morphology is based on studies that are full of statistical, methodological and conceptual errors. Diamond et al. (1985) claimed that Einstein's brain had more glial cells than control brains. This study used inappropriate controls, suffered from the multiple comparison fallacy and did not perform comparisons blind. Anderson and Harvey (1996) found greater neuronal density but not more neurons in one small area of Einstein's brain. This study, too, suffers from flaws similar to that of the Diamond et al study. Falk et al. (2012) examined photographs of Einstein's brain and compared its pattern of gyri and sulci to those of control brains. In their excruciatingly detailed analysis they did find differences in these patterns between Einstein's brain and control brains. But who would have expected anything else? Human brains differ in their external morphological patterns. The differences found between Einstein's brain and control brains varied from fairly large to very small with many in between. This distribution of differences is what would be expected when comparing any two brains. Further, the differences found were not ones that would have been predicted based on Einstein's cognitive abilities, although Falk et al. try very hard to make them appear so. Similar problems exist for the claim by Men et al (2014) that the morphology of Einstein's corpus callosum reflected his greater intellectual abilities. In summary the claims that the structure of Einstein's brain reflected in some way his intellectual abilities is a neurological urban legend.

Children Take Longer to Add and Subtract, but not Multiply, Odd Compared to Even Single Digit Numbers.

Principal Investigator(s): Dr. Terence Hines

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

An analysis of the results of thirteen early 20th Century studies of children's difficulties with the basic addition, subtraction and multiplication problems were re-examined to see whether the parity of the operands influenced the difficulty of the problems. "Basic" problems were those involving operations on only the single digits 2 through 9. Parity did influence the difficulty of addition and subtraction, but not multiplication problems. Specifically, addition and subtraction problems involving non-identical odd digits (i.e., 5 & 3) were more difficult that problems in which even digits (i.e., 6 & 8) had to be processed. In children solving even simple addition and subtraction problems involves more non-retrieval cognitive processing than does solving multiplication problems, which are generally learned by rote. Thus solving the latter type of problems involves only a straightforward memory retrieval process. It is these non-retrieval cognitive processes used in addition and subtraction that rely more on internal representations of number that are sensitive to the parity status of the numbers being processed. These results extend the earlier finding that adults take longer to make judgments about odd than even digits (Hines, Memory and Cognition, 1990). All these results are consistent with a model in which the internal representations of even numbers are closer to each other in semantic memory while the representations of the odd numbers are more diffusely organized. The results also falsify models that attempt to explain the slower processing of odd digits by assuming that such slowing is due to a requirement to make explicit odd versus even judgments of numerical stimuli. Results published in: Hines, T. (2013). Parity influences the difficulty of simple addition and subtraction but not multiplication problems in children. Psychological Reports, 113, 36 - 53.

Postal Data as a Windown Into 19th Century Economic Activity at the Local Level.

Principal Investigator(s): Dr. Terence Hines, Dr. Thomas Velk (McGill University)

Department: Psychology / Economics
School: Dyson College of Arts and Sciences
Campus: PLV

An unsolved problem for economic historians interested in economic activity in the United States during the 19th century is finding data sets that give reliable data at the local (microeconomic) level and that are continuous over both time and geography. In this presentation we highlight how data from two obscure government publications and a class of rare post office ledger books, completed daily by every local postmaster, provide the sort of data required. The Official Register (OR) was published every other year from 1816 to 1911. It listed the salary of every government employee, including every local postmaster. Since local postmasters' salaries were direct functions of the amount of business the postmaster's post office did, it is possible to use these salaries to derive a reliable and valid index, called postal business, of the economic activity of every town and village across the country every two years for the greater part of the 19th century. Greater postal business reflects greater economic activity for the local in question. The Annual Reports of the Postmaster General lists the total number and value of postal money orders issued and paid in each state starting in 1866 when money orders were first issued. We have used these data to examine the speed of economic recovery in the former Confederate States after the Civil War. Other analyses will be described. Several types of money order ledger books were kept by local postmasters. Our analysis of the Money Order Cash Book of the post office at Center Barnstead, New Hampshire for the period 1894 to 1897 showed clear seasonal changes in the pattern of inflow and outflow of funds from this small farming community. Additional ledger books of different types will be discussed for the additional type of economic data they can provide. One book from Woodville, OR for 1898 to 1905 lists each money order issued and the location of the payee. The 3700+ money orders listed will provide data on the pattern of outflow of funds as functions of season, value and distance to the payee.

Time Course of Activation of Frequent and Infrequent Words in Semantic Memory and a Bilingual Twist.

Principal Investigator(s): Dr. Terence Hines
Co-Investigator(s): Adam Ranellone

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

It is well known that it takes subjects longer to make judgments of common (i.e., robin) than of rare (i.e., aardvark) words. The question we are investigating is the reason for this phenomenon. One possibility is that it takes the internal representations of rare words longer to become active in semantic memory. To examine this hypothesis we are using Posner's encoding paradigm in which subjects see a prime word, in this case a category name (i.e., animal) followed by another word which is either a member or the named category or not. In addition, this second word can be either high frequency or low frequency. The time between the onset of the category name and the second word, a variable termed stimulus onset asynchrony (SOA) is varied from 0 to 150 milliseconds. Reaction time (RT), the time it takes the subject to indicate the response by pressing one of two keys, is measured from the onset of the second stimulus. As SOA increases, subjects have more time to use the category name to activate the members of that category. If it takes longer to activate the names of rarer members of the category, RT should decrease more slowly as a function of SOA for rare as opposed to common words. If the results of this study are as predicted, we plan to extend it to the study of activation in bilingual semantic memory. Previous work has shown that highly skilled bilinguals take much longer (about 70 milliseconds) to make judgments about even very common words in their second language. If this is due to slower activation of these words, a bilingual version of the encoding paradigm should reveal this.

Alphabetization Speeds Searching for Targets in Lists of Names and TV Stations

Principal Investigator(s): Dr. Terence Hines
Co-Investigator(s): Adam Ranellone

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

What variables affect the speed with which a list of items can be scanned to find a specified target item? Obviously physical characteristics such as color and type face make a target item stand out and make it easily found. But if there are no physical cues, does the list have to be scanned item by item until the target item is found? In this study we investigated whether it took less time to scan for a target if the items in the list were in alphabetical order compared to lists in which the items were arranged at random in terms of their initial letter. Two types of lists were used – a list of 60 TV station names and their associated numbers and a list of 60 names and the associated office numbers. The subjects' task was to find the channel number associated with six of the channels and the office number associated with six of the individuals' names. Subjects were significantly faster finding the target items in the alphabetized lists. This is presumably due to the fact that with alphabetized lists it is possible to go directly to the portion of the list that matches the first letter of the target item. From a practical point of view, these results show that lists of TV stations as commonly found on hotel room cards and office directories as found in large buildings should be arranged alphabetically. Doing so would make finding the desired channel or individual much more efficient.

Differential Priming by Odd and Even Digits

Principal Investigator(s): Dr. Terence Hines
Co-Investigator(s): Adam Ranellone

Department: Psychology
School: Dyson College of Arts and Sciences
Campus: PLV

Previous work has shown that it takes longer to make judgments about odd than about even digits. The effect is especially strong when judgments are made in which two digits, or digit names, must be compared. A possible explanation for this "odd effect" is that the internal representations of the even digits are more compactly organized than are the representations of the odd digits. To test this hypothesis a priming paradigm with reaction time (RT) as the dependent measure was used. Subjects saw a single digit prime on a computer screen. This was followed by a pair of digits. The task was to decide if the digit pair were the same or different in terms of their parity (odd/even status). If both digits were both odd or both even, subjects pressed a key denoting "same". If the digits did not match in parity, a key denoting "different" was pressed. RT was the time from the onset of the digit pair until the subject's response. If the hypothesis is correct, an even digit prime should produce more priming (speeding of RT) for decisions about non-identical even digit pairs than an odd prime would produce for a pair of non-identical odd digits. Preliminary studies have supported this hypothesis.

Metagenomic Analysis of Summer Phytoplankton and Microzooplankton in Lower Hudson River Surface Water

Principal Investigator(s): Professor Michael Levandowsky
Co-Investigator(s): A. Liberato (American Museum of Natural History), A. Yang (American Museum of Natural History), B. Sprung (American Museum of Natural History), E. Kim (American Museum of Natural History), S. Scheinbach (American Museum of Natural History)

Department: Haskins Laboratories
School: Dyson College of Arts and Sciences
Campus: NYC

We extracted DNA from a sample of saline surface water of the lower Hudson River taken in June 2013. Two size fractions, 80 – 20 um and 20 – 0.2 um, were obtained by sequential filtration of a liter of river water. DNA was extracted and amplified by Polymerase Chain Reaction (PCR) using 2 primer sets for the 18S small subunit ribosomal gene regions, and then sequenced using the Illumina MiSeq platform. The 2 primer sets yielded similar results, and many taxa were found in both size fractions; however dinoflagellates only appeared in the larger fraction. Greatest species richness was found in diatoms, ciliates and Rhizaria (chiefly cercozoa). About 200,000 paired end reads per sample were quality trimmed, merged and clustered using automated data processing pipelines, with a 97% identity threshold for clustering. Sequence clustering and annotation were based on a tool called USEARCH and the reference 18S SILVA database. This resulted in 250 - 350 clusters per set. We focus here on the 50 largest clusters in each set. For comparison, we also analyzed net plankton from a plankton tow with a 20 um mesh net. This material was examined live using phase contrast microscopy and 16 taxa were noted, mostly diatoms. Hydrographic variables were also measured in situ.

Cryptosporidium Parvum Has an Active Hypusine Biosynthesis Pathway

Principal Investigator(s): Professor Alison Quirch, Professor Mary Morada, Professor Nigel Yarlett
Co-Investigator(s): Rentala Madhubala, Myung Hee Park

Department: Haskins Laboratories, Chemistry and Physical Sciences.
School: Dyson College of Arts and Sciences
Campus: NYC

The protozoan parasite Cryptosporidium parvum causes severe enteric infection and diarrheal disease with substantial morbidity and mortality in untreated AIDS patients and children in developing or resource-limited countries. No fully effective treatment is available. The parasite undergoes several morphological and biochemical stages upon infecting the host, however detailed knowledge of what controls this transformation is not known. Hypusination of eIF5A is an important post-translational modification essential for cell proliferation and morphological differentiation. This modification occurs in a two-step process catalyzed by deoxyhypusine synthase (DHS) followed by deoxyhypusine hydroxylase. An ORF of 1086 bp was identified in the C. parvum (Cp) genome that encodes for a putative polypeptide of 362 amino acids. The recombinant CpDHS protein was purified to homogeneity and used to probe the enzyme's mechanism, structure, and inhibition profile in a series of kinetic experiments. Sequence analysis and structural modeling of CpDHS were performed to probe the differences with respect to the DHS of other species. Unlike Leishmania, Trypanosomes and Entamoeba, Cryptosporidium contains only a single gene for DHS. Phylogenetic analysis shows that CpDHS is more closely related to apicomplexan DHS than kinetoplastid DHS. Important residues that are essential for the functioning of the enzyme including NAD+ binding residues, spermidine binding residues and the active site lysine are conserved between CpDHS and human DHS. N1-guanyl-1,7-diaminoheptane (GC7), a potent inhibitor of DHS caused an effective inhibition of infection and growth of C. parvum in HCT-8 cells.

Anti-trichomonad Potential of a Series Bis-Benzimidazoles

Principal Investigator(s): Professor Emmanuel Bujans, Professor Travis Korosh, Professor Mary Morada, Professor Nigel Yarlett
Co-Investigator(s): Jean Jacques Vanden Eynde, Annie Mayence, Tien Huang

Department: Haskins Laboratories, Chemistry and Physical Sciences.
School: Dyson College of Arts and Sciences
Campus: NYC

Trichomonas vaginalis is the most common sexually transmitted parasite with an estimated 170 million people infected worldwide according to NIH-NIAID. Current treatment utilizes the 5'-nitroimidazole, mertonidazole (FlagylÒ), however there is a 10% failure rate on first treatment which requires follow up treatment with excessively high doses of the drug which can be carcinogenic. New therapeutic compounds are desperately needed that are effective against metronidazole refractory parasites and lack potential carcinogenicity. A series of bisbenzimidazoles with increasing aliphatic and aromatic chain length, containing a meta- or para-benzimidazole linkage to the phenylene ring was tested for ability to inhibit the growth of metronidazole-susceptible (C1) and –refractory (085) Trichomonas vaginalis isolates under aerobic and anaerobic conditions. Compound 3m (2,2'-[α-ω-propadiylbis{oxyphenylene}] bis-1H-benzimidazole) was found to have a minimum inhibitory concentration (MIC) value under aerobic and anaerobic growth conditions of 13 μM and 52 μM, respectively for the metronidazole-susceptible isolate (NIH-C1). By comparison 3m had MIC values of 26 μM (aerobic) and 52 μM (anaerobic) for the metronidazole-resistant isolate (085). The aerobic MIC value for compound 3m towards isolate 085 was considerably less than that determined for metronidazole (145 μM). Compound 3m was further evaluated using a subcutaneous mouse model infected with the metronidazole-susceptible (NYH-286) and -resistant isolate (CDC-085) and was found to cure 4 of 5 animals at a dose of 10 mg/kg per day for 4 days, and 5 of 5 mice at a dose of 25 mg/kg for 4 days. Both 3m and 6m were weakly reduced by pyruvate ferredoxin oxidoreductase but unlike metronidazole were not dependent upon added ferredoxin. It is concluded from structure-activity relationships that the length of the center aliphatic chain and the meta-position of the bisbenzimidazole was a critical structural determinant of the active compound. The results of this study indicate compound 3m is a candidate for pre-clinical development for the treatment metronidazole-refractory cases, which have been demonstrated to have oxygen dependent metronidazole-resistance.

Hijacking Host Spermidine: Spermine N'-Acetyltransferase is Critical to Development of the Intestinal Parasite, Cryptosporidium Parvum

Principal Investigator(s): Professor Mary Morada, Professor Juan Castiblanco, Professor Nigel Yarlett
Co-Investigator(s): Salim Merali, Lakshmi Pendyala

Department: Haskins Laboratories, Chemistry and Physical Sciences.
School: Dyson College of Arts and Sciences
Campus: NYC

Cryptosporidium parvum is one of the most commonly identified waterborne intestinal parasites throughout the world. It is responsible for a severe and life threatening illness in young children, elderly people and immuno-compromised individuals, particularly HIV-positive. In sub Saharan Africa deaths amongst children from Cryptosporidium contaminated water is estimated to be 52% of the 2.1 million HIV positive children, and 8% of the 390 million HIV negative. In the US about 20% of the 1.3 million HIV positive patients are diagnosed with Cryptosporidia. The disease is only limited by a healthy immune system, as no effective therapy exists. The goal of this study was to examine the biochemical changes that occur during parasite development within the host epithelial cell as a means to identify targets for drug development. We show that Infection of human intestinal cells by the waterborne parasite Cryptosporidium parvum results in a cascade of host cell biochemical events culminating in apoptotic death and release of the parasite, thus propagating the infection. Polyamines are cationic molecules that are essential for the growth and development of all living cells. Spermidine:spermine N'-Acetyltransferase (SSAT), a key enzyme in the regulation of polyamine metabolism is upregulated by the parasite resulting in increased production and excretion of acetylated polyamines by the host cell. This event does two things: 1) It provides polyamines for C. parvum, which lack key biosynthetic enzymes for polyamine biosynthesis; 2) It is the trigger for apoptosis releasing the parasite from its intracellular location in the host cell. These observations provide important clues to the host-parasite relationship that ultimately will lead to a targeted chemotherapeutic strategy for treatment of this debilitating disease. Supported by NIH-NIAID

Effects of Task Complexity on Written Production in English as a Second Language

Principal Investigator(s): Dr. Kung-Wan Philip Choong

Department: English
School: Dyson College of Arts and Sciences
Campus: NYC

This study explores the relationship between causal reasoning demands of tasks and the performance dimensions of complexity, accuracy, and fluency in the written production of L2 English learners. The study was motivated by Robinson's Cognition Hypothesis (2007) and Skehan's Trade-Off Hypothesis (1998) as well as previous studies investigating the relationships between task complexity and second language production. The Cognition Hypothesis posits that the task characteristic of reasoning demands serves as a resource-directing vehicle, directing attentional resources to the accuracy and complexity of learner output. The Trade-Off Hypothesis, on the other hand, posits that complexity and accuracy compete for the same pool of attentional resources and cannot be advantaged simultaneously during language production. The participants of the study were 43 high-intermediate to advanced level ESL students and 17 native speakers of English, forming experimental and control groups, respectively. Task complexity was operationalized by manipulating one independent variable – causal reasoning demands - in a video-retelling task. The task comprised four prompts that differed in the amount of causal reasoning required to interpret the events told by the video, thus creating four different conditions. The dependent variables were the participants' output complexity, accuracy, and fluency. The participants' responses were screened for functional adequacy. The results from many-faceted Rasch measurement, central tendency analysis, and retrospective data show that causal reasoning demands in the study were found to have an effect for syntactic complexity and grammatical accuracy, depending on the proficiency of the participants, degree of task complexity, and the measures employed to operationalize complexity and accuracy. As task complexity increased from the threshold of no causal reasoning demands to some causal reasoning demands, syntactic complexity increased while accuracy decreased when assessed through certain measures. Other patterns emerged when examining different degrees of task complexity and when employing other measures. No effect for fluency was found for task complexity in this study. The findings have implications for TBLT research and pedagogical task sequencing, which are discussed.

Music-Induced Hearing Loss (MIHL): What Do College Students Know?

Principal Investigator(s): Dr. Abbey L. Berg
Co-Investigator(s): Hind Ibrahim, Samantha Sandler, Stephen Salbod

Department: Biology & Health Sciences
School: School: Dyson College of Arts and Sciences
Campus: NYC

Approximately 25% of the young adult (ages 18-44 years) population has some degree of hearing loss, primarily due to inappropriate and unsafe use of personal listening devices (PLDs; e.g. iPods, MP3 players) according to the New York City Department of Health and Mental Hygiene. What is not known is adolescents and young adults understanding of problematic listening behaviors when using PLDs. Without this knowledge, it is difficult to develop effective hearing conservation strategies that would target this challenging population. Thus, the aim of this study was to examine college students' knowledge of safe listening levels when using PLDs. The Pace University Institutional Review Board (IRB) approved this study. Four hundred (400) participants (100 freshman, 100 sophomores, 100 juniors, and 100 seniors), age range approximately 19-22 years), were asked to complete a survey to determine their knowledge of the effect of listening to excessive levels of music on their hearing as well as safe levels. Results are currently under analysis.

Mapping Sperm Membrane Protein-Protein Interactions to Understand Sperm Function During Fertilization

Principal Investigator(s): Professor Matthew R. Marcello
Co-Investigator(s): Marina Druzhinina (Rutgers University), Andrew Singson (Rutgers University)

Department: Biology & Health Sciences
School: Dyson College of Arts and Sciences
Campus: NYC

The interaction and organization of proteins in the sperm membrane are important for recognition of and fusion with the egg. We have determined the interactions between all known sperm membrane proteins in a model system for reproduction, the nematode Caenorhabditis elegans. Identification of the interactions between sperm membrane proteins will improve our understanding of and ability to characterize defects in these processes. To identify interacting proteins, we are performing pair-wise split-ubiquitin yeast two-hybrid analysis of the full-length gene products. Our analysis revealed novel interactions between sperm membrane proteins known to have roles in spermatogenesis, spermiogenesis, and fertilization. For example, we found that a protein known to play a role in sperm function, SPE-38 (a predicted four pass transmembrane protein), interacts with proteins necessary for spermiogenesis and spermatogenesis. These novel interaction pairings will provide the foundation for understanding membrane protein interactions during spermatogenesis, spermiogenesis, and sperm function during fertilization. The data collected provides a more comprehensive view of sperm membrane protein interactions and the rationale for investigating previously unrealized connections.

Film Review/Essay, "Totó (Peter Schreiner, 2009)."

Principal Investigator(s): Dr. Frank P. Tomasulo

Department: Film and Screen Studies / English
School: Dyson College of Arts and Sciences
Campus: NYC

This extended film review/essay, published in the Italian American Review, deconstructs the recent complex, avant-garde "documentary," Totó. The main focus is on explaining the complicated pattern of visual and aural motifs that tell the "story" of a real-life Italian man who returns to his roots in Italy after living in Vienna for over twenty years. The stark black-and-white imagery displays the small coastal town of Totó's birth and his re-acquaintance with its rugged beauty. Intermeshed with his wanderings on foot and by train are poetic meditations on nationality, music, and family that only begin to fill out a portrait of a man whose occupation at the Vienna Opera House is not even fully delineated for the audience. By making this ostensibly "difficult" film more accessible, the director's theme and cinematic techniques can be brought to the fore and explicated to spectators.

Book Review/Essay, Murray Pomerance's Michelangelo Red Antonioni Blue: Eight Reflections on Cinema.

Principal Investigator(s): Dr. Frank P. Tomasulo

Department: Film and Screen Studies / English
School: Dyson College of Arts and Sciences
Campus: NYC

This book review/essay critiques the methodological premises of the noted film scholar Murray Pomerance, at least as they are utilized in his most recent book on the color films of Michelangelo Antonioni. Although the volume is extremely well-written and erudite, the author relies on an outmoded "Impressionistic" style of film analysis that emphasizes an almost "stream-of-consciousness" paradigm of personal associations, rather than on a more semiotic and carefully researched series of conclusions. Along the way, Dr. Tomasulo provides his own interpretation of the Antonioni color canon and counterposes his own readings of color (and other aspects of cinematic style) to those of Professor Pomerance -- in an effort to continue and advance the academic debate about the Italian filmmakers oeuvre.

The Guinea as Gangster Hero: The Complex Representation of Italian Americans in The Sopranos.

Principal Investigator(s): Dr. Frank P. Tomasulo

Department: Film and Screen Studies / English
School: Dyson College of Arts and Sciences
Campus: NYC

This book chapter in The Essential “Sopranos” Reader investigates the controversial depiction and representation of Italian Americans in the long-running and award-winning HBO series, The Sopranos. Although the series' "show-runner," David Chase is of Italian heritage, the mixed portrayal of his own ethnic group might convey additional cachet because of his national roots. More important than the simple "images of Italian Americans" displayed is the system of sterotyped and offensive televisual representations used to convey what has been called an "ethnic minstrel show." In particular, the author analyzes The Sopranos' "multifaceted vision of ethnicity" through several lenses: (1) how the Italian characters view African Americans and other minorities; (2) the depiction of women and the male characters' relationships with them; (3) the attitudes of the main characters toward homosexuality, including the major gay Mafia figure in their very midst; (4) tropes of costumes and wardrobe used to establish class (and lack thereof) in the "guinea" mentality; (5) the theme of violence and lawlessness associated primarily with the Italian characters; and (6) the mangled use of the English language ascribed to these Italian characters, a rogues' gallery of jumbled syntax and malapropisms that recall similar demeaning examples from Amos and Andy.

Teaching Film Studies within a Production Context.

Principal Investigator(s): Dr. Frank P. Tomasulo

Department: Film and Screen Studies / English
School: Dyson College of Arts and Sciences
Campus: NYC

This book chapter in the MLA anthology Teaching Film: Essays on Cinematic Pedagogy is a practical guide to how to devise lesson plans, paper assignments, examinations, and even entire curricular structures and degree programs in order to best incorporate the study of cinema history, theory, and aesthetics into a degree program that is primarily devoted to film production and screenwriting. Starting with an historical overview about the introduction of film "studies" classes into extant university filmmaking programs, Dr. Tomasulo discusses how the tensions between cinema scholars and film "practitioners" has marked (and impeded) that extended history for almost a century. Relying on general pedagogical principles developed by Jerome Bruner, Paolo Freire, Herbert Read, George Bernard Shaw, Alfred North Whitehead, John Dewey, and the Association of American Colleges and Universities, AND more specialized writings on teaching the discipline of film by Diane Carson, Peter Bukalski, Louis Giannetti, Vlada Pettric, and Greg Smith, the essay broadly suggests (1) what should be taught, (2) how it should be taught, and (3) the role of television/media studies in a primarily film-oriented curriculum.

Eros and Civilization: Sexuality and the Contemporary International Art Cinema

Principal Investigator(s): Dr. Frank P. Tomasulo

Department: Film and Screen Studies / English
School: Dyson College of Arts and Sciences
Campus: NYC

This essay examines Eros (2004), a cosmopolitan co-production composed of three short films directed by three internationally acclaimed directors: Wong Kar-wai (Hong Kong), Steven Soderbergh (U.S.A.), and Michelangelo Antonioni (Italy). One purpose of this analysis is to determine whether the concept of a distinctive erotic "national character" still applies in an era of "globalization," particularly as those national traits are expressed in the sexual representations of a nation's system of customs and cinema. In addition to the depictions of love and erotic mores, the cinematic techniques of the filmmakers are investigated to explore whether or not an International Style is at work in the current episteme, a "one-size-fits-all" paradigm of sexual and cinematic representation or if the "national character" (Siegfried Kracauer's term) of a country is revealed in its films.

Roger Ascham's The Schoolmaster: Arrows, Eloquence and Shakespeare's Love's Labor's Lost.

Principal Investigator(s): Dr. Daniel Bender

Department: English
School: Dyson College of Arts and Sciences
Campus: PLV

Our educational system values general education. Studying a range of subjects is said to develop diverse skills and modes of reasoning. My research into Roger Ascham's The Schoolmaster explores an alternative model of education: learning that is intensive and cultivates a small set of skills. The guiding question in writing about Roger Ascham's The Schoolmaster will be: Is the intensive (narrow) model of education one that current educational theory should take seriously and consider implementing in the 21st century. Before writing The Schoolmaster, Ascham had written a popular book on the art of archery. For those who practiced archery were not only patriots (archery as homeland defense) but were also concerned with concentration, technique, and the clear progress toward a "perfect shot." The next book, The Schoolmaster, is concerned with skills in debate and practical wisdom: What is the better policy? Whose speech is more compelling? Who can win more listeners through eloquent and moving words? Ascham's Schoolmaster was clearly successful in turning out graduates with excellent debate skills; one graduate of the curriculum was William Shakespeare, famous for eloquence and winning over listeners. Yet there are costs to the benefit of intensive, specialized education. In Shakespeare's comedy Love's Labour's Lost, the men and women have little time to get to know each other, since they are too concerned to win points, to be competitive. The article concludes that intensive and narrow education is a path to educational success, though at the cost of a balanced and broader education.

An Assessment of Mercury Exposure to Women and Children in Galamsey Gold Mining Communities in Ghana, West Africa

Principal Investigator(s): Professor Ebenezer Peprah

Department(s): Environmental Studies, Philosophy and Religion
School: Dyson College of Art and Science
Campus: NYC

Workers in Ghana's small-scale gold-mining sector use mercury more than in any other single sector in the country (Swain 2007). Between 1994 and 1999, of the approximately 25,100kg of mercury imported from Europe and North America, 97% was destined for the small-scale mining sector (Amegbey and Eshun 2003). Since its legalization in the 1980's, 90% of small-scale gold mining occur illegally in Ghana. These Illegal miners, popularly known as "galamsey" operate in remote locations, including the concessions of large-scale gold mining companies in Ghana. Because their operations are unregulated and their locations are inaccessible for research, limited information exists on the extent to which they are exposed to mercury. Sadly, over 50% of the estimated 200,000 small-scale gold mining workforce are women and children.

Through cross sectional and exploratory methods, this research sampled a total of 30 women and children in the Tarkwa-Aboso mining communities and assessed their history of gold mining operations and potential mercury exposure. The results were that seventy-two (72%) participants were full time galamsey miners who have had an average of 4 years gold extraction experience. Sixty-six percent (66%) had processed gold with mercury. Eighty-nine percent (89%) of the amalgamation occurred in the field where children are usually present. Eleven percent (11%) occurred at home (inside the kitchen, living room, backyard etc.). When asked about their knowledge of the toxic effect of mercury, 58% were knowledgeable, yet an average of 45 minutes was spent to amalgamate the gold without wearing protection. Only 2% of the respondent used some protection, which included covering their nose with handkerchiefs and standing a few meters away from the mercury vapors.

Inspite of the study's small size and non-random sample, these findings highlight the need for further research and public health interventions regarding mercury toxicity and its prevention in gold mining communities in Ghana.

Physics of Philosophy: Structure of Physical (R)Evolutions

Principal Investigator(s): Dr. Mohsen Shiri-Garakani

Department: Chemistry and Physical Sciences
School: Dyson College of Art and Science
Campus: PLV

The three main revolutions of physical theories in the 20th century (theories of special and general relativity and the quantum theory) have a suggestive family resemblance: each introduced a new type of non-commutativity previously not present in physics. Further study reveals a much deeper connections: Each theory removed one or more fundamental infinities from physics through relativizing one or more absolutes.

There are other distinctive features: each theory reproduces an old working theory is the appropriate limit (and hence, justifying *E*volution vs. *R*evolution); each theory unifies a few of the previously disjoint concepts (such as time and space); each theory exhibits a higher degree of symmetry through introducing a new connection between the fundamental concepts of the theory; each theory introduces a new fundamental physical constant (such as the speed of light or the Planck constant); and each theory has a more *stable* mathematical structure.

Chances are that the next big evolution in physics will follow the same pattern. One would look for infinities (or absolutes) in current major theories (namely the Standard Model and general relativity) and apply the same process observed in the evolution of the theories mentioned above to remove the infinities. The emerging theory would then have a much higher degree of finiteness while more physical concept would become unified.

There are also philosophical and logical implications: the same way that quantum theory showed the limitations of classical object-based philosophy and logic, the next theory in physics would help revise the currently adopted semi-objective inductive philosophy and logic. We follow the idea that "logic is empirical" and explore the logical-causal order in light of the new perspective that evolution of physical theories offers.

Force-Sensing Amyloids in Yeast Adhesins Mediate Adhesion and Biofilm Formation

Principal Investigator(s): Professor Cho X.J. Chan
Co-Investigator(s): Melissa C. Garcia-Sherman (CUNY Brooklyn College), Desmond N. Jackson (CUNY Brooklyn College), Ivor G. Joseph (CUNY Brooklyn College), Caleen B. Ramsook (CUNY Brooklyn College), and Peter N. Lipke (CUNY Brooklyn College)

Department: Chemistry and Physical Sciences, Biology
School: Dyson College of Art and Science
Campus: NYC

The *Candida albicans* adhesin Als5p has an amyloid-forming sequence that is required for aggregation and formation of model biofilms on polystyrene (Alsteens et al., 2010 PNAS 107:20744; Garcia et al., PLoS One 6:e17632). Similarly, *Saccharomyces cerevisiae* Flo11p and Flo1p adhesins have amyloid-forming sequences (Ramsook et al., 2010 Eukaryot. Cell 9:393-404). These amyloid sequences can form high avidity surface arrays of adhesins called nanodomains. Because amyloid formation can be triggered by force, we investigate whether mechanical turbulent flow from vortex mixing and laminar shear flow could induce formation of amyloid nanodomains. We test whether amyloid formation from force could increase cellular binding to surfaces and biofilm formation. Vortex-mixing cells expressing $Als5p^{WT}$ for 60 seconds increased aggregation and adhesion of cells to BSA-coated beads 1.7-fold compared to cells that were not vortex-mixed. There was little shear-activated increase in adhesion or thioflavin fluorescence in cells expressing an amyloid-impaired V326N substituted Als5p. Shear from laminar flow at 0.8 dynes/cm^2 increased quantity and strength of cell-to-surface and cell-to-cell binding, compared to shearing at 0.02 dynes/cm^2. Shear-induced binding led to formation of robust biofilms. Thioflavin T fluorescence showed that the vortex-mixing and laminar flow also induced surface amyloid nanodomains in Als5p-expressing cells. Inhibitory concentrations of amyloid-dyes thioflavin S, Congo red, or a sequence-specific anti-amyloid peptide decreased activation of adhesion. Similarly, *S. cerevisiae* cells expressing Flo1p and Flo11p flocculins showed 2.0-fold increases in the flocculation rate following vortex-mixing. Flocculin-expressing cells also showed shear-dependent binding, amyloid formation, biofilm formation, and inhibition by anti-amyloid compounds. The effects of vortex-mixing were replicated in heat-killed cells as well. Together these results show that shear force exerted by laminar or turbulent flow leads to formation of amyloid nanodomain on the surface of cells, which in turn mediates aggregation of yeast cells, adhesion to surfaces, and biofilm formation.

Lipobead- Encapsulated Drug Delivery Systems

Principal Investigator(s): Dr. Sergey V. Kazakov

Department: Chemistry & Physical Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

A lipid bilayer membrane supported by elastic polymer network (hydrogel) is the one of unique achievements of Nature in constructing multifunctional, flexible, and dynamic machineries, called cells. Diversity of natural hydrogel/lipid membrane structures in bacterial cell envelopes is shown and their types are systemized and discussed as prototypes of a new class of drug delivery systems. Artificial spherical configurations of the lipid bilayer/hydrogel assembly, called lipobeads, can be synthesized by two ways: polymerization within liposomal reactor and hydrogel particle-liposome mixing. New properties of thus prepared lipobeads were discovered. Bipartite structure of lipogels makes them attractive as stable drug delivery container with capability of controlling load release. In particular, it was shown that reversible and irreversible aggregation of lipobeads can be used for designing two types of combined multifunctional containers: (i) different drugs entrapped in different lipobeads can be simultaneously delivered as one aggregate to the targeted organs in the body and released in desired order; (ii) several nanogels loaded with different pre-drug reagents are trapped under the one lipid membrane ("giant lipogel") to react inside without damaging surrounding organs and to be delivered to the targeted site in this "giant" container. The fluorescent giant lipobeads (GLBs, ~Æ3-500 mm) were prepared for direct observation and modeling their properties as drug delivery systems using optical and confocal microscopy. The use of lipobeads for delivery of doxorubicin and curcumin is proposed. The properties of these curing agents and possible mechanisms of theirs loading in and release out of lipobeads are discussed.

Lead Hematoxylin-Tartrazine Yellow Depicts Connective Tissue Changes in Rat Aorta After Balloon Angioplasty

Principal Investigator(s): Dr. Charlene F. Blando-Hoegler
Co-Investigator(s): Carolyn J. Smith (New York Medical College), Carl Hoegler (Mount Saint Mary College)

Department: Biology & Health Sciences
School: Dyson College of Arts and Sciences
Campus: PLV

Hematoxylin and eosin (H&E) is part of an array of stains traditionally used to highlight the morphology of elastic arteries (Presnell & Schreibman, 1997). In the present study aortic rings of one year old male Sprague-Dawley rats that had undergone balloon angioplasty (BAL) were stained with H&E and compared with lead hematoxylin-tartrazine yellow (LH/TY) stained rings. The rings had been harvested at 24 hours, 7 days and 14 days after BAL. In comparison to H&E, the LH/TY stained rings clearly depicted smooth muscle and connective tissue elements in the vessel layers. Twenty-four hours after BAL, infiltrating macrophages were evident. Microarchitectural changes of all three layers persist for at least 14 days with evidence of neo-intimal thickening, distension of small blood vessels (vasa vasorum), neutrophil migration, cell necrosis and a spongy appearance of the smooth muscle layers. It appears that the LH/TY method more clearly discerns changes in connective tissue in the media during the post-BAL period.
Research support from Keenan Fund of Pace University

The Association Between Students' Evaluation of Teaching and Grades

Principal Investigator(s): Professor Peter Hoefer, Professor Jack Yurkiewicz, Professor John Byrne

Department: Management and Management Science
School: Lubin School of Business
Campus: NYC

A recent article in the New York Times (February 5, 2014) entitled A Solution for Bad Teaching claims that "students rarely favor teachers who grade leniently." This is posed in the context of students' evaluation of teaching ("SET") at institutions of higher education. Is this statement true? False? Somewhere in between? What about at Pace? Our paper deals with this question based upon information gleaned from a large set of data made available in the Lubin School of Business. We probe the general relationship between students grading of teachers (SET) in the mature Lubin student evaluation of teaching questionnaire, and teachers grading of students. Our conclusions have implications warning all to be careful about how they use the SET information.
Reference: Grant, Adam, "A Solution for Bad Teaching", NY Times Online, The Opinion Pages, February 5, 2014.

The Rise of the Renminbi From Convertible to Reserve Currency Status and Its Impact on the China-U.S. Trade Relationship

Principal Investigator(s): Dr. Robert G. Vambery

Department: Marketing
School: Lubin School of Business
Campus: NYC

An increasing portion of China's international trade moved away from being denominated in US Dollars to being denominated in Chinese Renminbi. This is in part the result of China's many years of trade surpluses with the US which enabled the PRC to build a $ 3.5 trillion financial hoarding of hard currency assets. Though further reforms to its internal financial system need to be made before the Renminbi will be held in significant quantities by central banks, the acceptance of the Renminbi by a number of China's trading partners as a unit of account in trade, reduces dependence on the Dollar in international trade. This paper examines some of the measures pursued by the PRC that enabled its currency to progress from inconvertibility to convertibility and now toward reserve currency status. It also examines some of the reasons for the relative decline in the Dollar's dominance. The paper concludes with findings on what both economic powerhouses should do to enhance their respective positions as they compete against each other in international trade.

Strengthening American Competitiveness and Reenergizing Globalization: From What Washington Needs to do to Issues the World Needs to Be Concerned About Now

Principal Investigator(s): Dr. Robert G. Vambery

Department: Marketing
School: Lubin School of Business
Campus: NYC

In 2012, under the direction of Professor Michael Porter, the Harvard Business School completed an elaborate study entitled Competitiveness at a Crossroads: Findings of Harvard Business School's 2012 Survey on U.S. Competitiveness. Among other research tools the study surveyed about 10,000 executives who over many years graduated from Harvard's MBA programs. Among the accomplishments of the study is the creation of a set of eleven proposals related to actions to be taken by the business community in working toward the goals of not just maintaining but enhancing America's economic competitiveness. Subsequently, in 2013, Professor Porter and his associates constructed a list of eight items to be actionable by the U.S. Government in order to unblock government created impediments and in order to stimulate economic growth. After a brief consideration of the proposals, this paper turns to considering a series of challenges related to conditions and practices that in 2014 still inhibit business and economic performance not only in the U.S. but also in many countries of the globe.

Article – "Testing for Thin Capitalization Under Section 163(j): A Flawed Safe Harbor" 67 The Tax Lawyer (Fall 2013)

Principal Investigator(s): Professor Philip G. Cohen

Department: Legal Studies & Taxation
School: Lubin School of Business
Campus: NYC

This Article discusses why the current Code balance sheet safe harbor in section 163(j), which is based on the taxpayer's tax basis in its assets and not their fair market value, is conceptually incorrect. Section 163(j) limits the deduction for interest expense in certain cases with a major impact on many U.S. subsidiaries of foreign corporations. Section 163(j) does not however limit the interest expense deduction where the issuer's ratio of debt-to-equity does not exceed 1.5-to-1, which is why it is important that the statute be amended to measure assets at their fair market value. This Article also discusses, outside of the section 163(j) context, why fair market value, and not book or tax basis, is the proper measure for assets in testing as to whether the taxpayer should be thinly capitalized. Thin capitalization is one factor the courts look to in determining whether an instrument purporting to be debt will be respected as such.

Does Cashflow Volatility Explain Dividend Policy? Evidence from Exporting and non-Exporting Firms in India

Principal Investigator(s): Dr. P.V. Viswanath
Co-Investigator(s): Dr. Elena Goldman

Department: Finance and Economics
School: Lubin School of Business
Campus: NYC

Theories of dividend determination suggest that firms with greater cashflow volatility should pay lower dividends. This hypothesis has been conventionally tested by looking cross-sectionally at the relationship between payout ratios and realized volatility measures. We look at a sample of firms consisting of Indian firms and exploit the fact that exporting firms tend to have lower cashflow volatility because of the low correlation between their domestic and foreign sales. This allows us to use export intensity as an ex-ante proxy for cashflow stability, in addition to realized volatility measures. We find strong support for the cashflow volatility hypothesis, even after adjusting for differences in access to capital and investment opportunities.

Illegal Corporate Activities and Their Effect on Financial Statement Disclosures: How Forensic Accountants Can Help

Principal Investigator(s): Dr. Michael Ulinski, Dr. Roy J. Girasa
Co-Investigator(s): Anthony Finnelli

Department: Accounting
School: Lubin School of Business
Campus: PLV

The researcher examined recent sanctions and legal actions taken against multinational corporations in emerging markets by the Securities and Exchange Commission (SEC) and other non-US regulatory agencies to develop an exploratory study to determine the effects of illegal activity on financial statement disclosures. In addition, the researchers proposed that Forensic Accountants can help the independent auditor and those in charge with corporate governance, to properly determine if an illegal act that has occurred should be disclosed. The Foreign Corrupt Act and international security agencies efforts to help signatory members enforce security laws is used as the prism for determining whether an illegal activity has occurred and if any financial statement disclosure is required. Conclusions are drawn and recommendations for further studies are recommended

BRIDGES: Building Resources Through Integrating Disciplines for Group Effectiveness in Science

Principal Investigator(s): Dr. Theresa Lant
Co-Investigator(s): Dr. Martiza Salazar (Claremont Graduate University)

Department: Management and Management Science
School: Lubin School of Business
Campus: PLV

Finding solutions for many of society's most challenging problems requires the collaboration and integration of teams of individuals from diverse fields of science. Millions of dollars are spent in the public and private sectors to support research collaborations among scientists who possess the breadth and depth of expertise to address these complex problems. An increasingly prevalent approach to integrating diverse expertise is the use of interdisciplinary science teams. Although interdisciplinary scientific collaboration has many success stories, evidence suggests that in many cases these teams do not achieve the goal of successfully integrating knowledge to solve a joint problem. The goal of knowledge integration among diverse scientists is often elusive due to the make-up of the teams, lack of understanding about best practices for managing collaborations, and team leaders who are scientific experts but have not been trained to lead diverse teams of professionals. The consequence can be a costly investment in scientific endeavors that do not reap the expected benefits. Prior research suggests that interdisciplinary teams must develop an integrative capacity, a capability that is sustained through an interactive system linking social, psychological, and cognitive processes and emergent states in the team that can provide them with the resources needed to succeed (Salazar, Lant, Fiore & Salas, 2012). This National Science Foundation supported research investigates how the development of a team's integrative capacity and subsequent knowledge outcomes are impacted by two types of interventions: (1) strategic team mapping and (2) communication principles. We argue that exposure to these interventions (developed based on our prior study of sixty interdisciplinary research teams in one medical center) can nurture team members' trans-disciplinary orientation, the enduring values, beliefs, skills, and behaviors that support collaboration with teammates who have diverse disciplinary backgrounds, which in turn fosters the development of integrative capacity. The study uses a longitudinal quasi-experimental design, which tests the influence of the interventions (separately and together) on integrative capacity and innovativeness of the team's work as compared to teams in a control condition. During the first year of this two year study we are piloting the interventions and survey items in student teams at Pace University and Claremont Graduate University. During the second year of the study, we will be running the study using interdisciplinary medical research teams at four major medical schools; two in the Mid-Atlantic region of the U.S. and two in California.

Incentives For the Audit Committee to Signal Their Monitoring Activities Using Voluntary Disclosure in the Audit Committee Report

Principal Investigator(s): Dr. Matthew Reidenbach

Department: Accounting
School: Lubin School of Business
Campus: NYC

This study considers whether the audit committee report is used as a signal for the audit committee's monitoring effort. Prior audit committee report research suggests that a shift toward greater voluntary disclosure occurred after the passage of the Sarbanes-Oxley Act (Pandit et al. 2006). Using agency theory and signaling theory, this study considers several incentives for voluntary disclosure for audit committees to signal their monitoring activity to shareholders: their financial expertise, their reputation, and their compensation structure. Studying a high litigation industry, this study tests whether these incentives are associated with greater voluntary disclosure, providing evidence that both financial expertise and compensation structure are significantly associated with voluntary disclosure. Building upon a small stream of audit committee report literature, this study contributes to the literature by studying voluntary disclosure in a non-traditional setting and providing evidence that audit committees may use their report to signal their unobservable monitoring effort.

Elementary Mathematics Teacher Beliefs

Principal Investigator(s): Dr. Brian Evans

Department: Mathematics
School: School of Education
Campus: NYC

The purpose of this study was to understand teacher beliefs about teaching mathematics over the course of an elementary mathematics teaching methods course. The participants came from three groups of in-service and preservice teachers in master's degrees programs at a university in New York: New York City Teaching Fellows, Teacher Education Assessment and Management program, and traditional preservice teachers. Findings revealed an increase in positive beliefs about teaching mathematics over the semester, but there were no differences in participants' beliefs between the three programs.

There's an App for That, but Not This: Students' Use of a Tablet Application to Learn Multiplication Facts

Principal Investigator(s): Dr. Shobana Musti-Rao, Dr. Tom Liam Lynch, Ms. Erin Plati

Department: Special Education, EducationTechnology
School: School of Education
Campus: PLV

As the use of mobile devices such as tablets and electronic readers becomes more prevalent in K-12 schools, little research exists to provide evidence of their effective use in the classroom. A study was conducted in a third-grade classroom located in an elementary school classroom in Westchester County. Using an alternating treatments design, the authors compared two methods to learning multiplication facts. In the first method, students used an iPad®-based app, Math Drills®, as a tool to assist with gaining fluency with their multiplication facts. In the second method, the teacher conducted small-group sessions using a more traditional paper-pencil method, namely Detect, Practice, Repair (DPR). Video recordings of students were coded using a unique multi-modal data collection and analytical technique to analyze and account for students' interaction with both hardware and user interface. Results from the study with implications for teachers and parents are highlighted.

An Analysis of Teachers' Use of Technology in Elementary Reading Lessons

Principal Investigator(s): Dr. Peter McDermott
Co-Investigator(s): Kathleen Gormley

Department: School of Education
School: School of Education
Campus: NYC

I examined technology use in the reading lessons of elementary teachers in an urban school building. A qualitative research method using multiple data sources was used; this included observations of 25 reading lessons, interviews with teachers, and informal and spontaneous discussions with teachers and children. Results revealed that technology was used in the teachers' reading lessons in these ways: (1) as multimedia displays of literacy skills and lesson content; (2) interactive learning activities involving physical movement; (3) focusing student attention on learning tasks; (4) displaying shared texts for classroom discussions, copying, and quizzes. Although collaborative and multimedia composing activities are frequently cited as affordances of the new technologies, little of this was observed in these lessons.

Exploring East Asian International Students' Academic Challenges Related to Oral Classroom Participation: Research-Based Teaching Strategies

Principal Investigator(s): Dr. Soonhyang Kim, Marcella Caprario
Co-Investigator(s): Alison Wofford, Sukyun Lee

Department: Education & English Language Institute
School: School of Education
Campus: NYC & PLV

The presentation brings the research findings of three studies related to specific academic challenges associated with oral classroom participation that East Asian international students face as they enter university study in the United States in order to provide research-based teaching strategies for faculty in higher education. One little-understood element of diversity and inclusion in American universities is oral classroom participation of East Asian international students (Kim, 2008; Liu, 2001). East Asian students, the largest international student group in the U.S., are, as a group, typically labeled reticent, and their reticence tends to be interpreted primarily, without much empirical research evidence, as related to linguistic deficiency or cultural interference (Cheng, 2000; Holmes, 2004; Huang, 2005; Kim, 2008; Liu & Littlewood, 1997; Morita, 2004). The three similar studies were conducted by the four co-presenters together and separately through two university-wide online surveys as well as individual and group interviews to rebut stereotypical explanations of students' classroom behaviors, to reveal the true challenges they encounter, and to find solutions to incorporate their full participation in a new academic community. The results suggest several pedagogical implications for university instructors to help them create more inclusive classroom environments where the linguistic and cultural diversities of East Asian students are understood and their participation is encouraged. The study also provides useful pedagogical suggestions for ESL teachers to better prepare Asian students with language and cultural skills needed in American university courses. It also suggests practical strategies for all instructors across the curriculum in order to facilitate students' classroom participation. The paper presentation will begin with a brief description of the studies, followed by practical suggestions for instruction and material development.

Testing an Innovative Approach to Developing Teachers' Home-School Communication Skills: Multimedia, Online Case Studies

Principal Investigator(s): Dr. Joan Walker

Department: School of Education
School: School of Education
Campus: PLV

Teachers regularly engage with families about sensitive and often high-stakes issues surrounding student learning yet they have few opportunities to develop their collaboration skills--either on the job (Darling-Hammond et al., 2009) or at the pre-service level (Epstein & Sanders, 2006). As a result, when teachers interact with families they tend to take a jargon-laden, business-like approach, out-talking parents in conference settings by a 10:1 ratio (Martin et al., 2006). Given this, it is sad but not surprising that many parents express a need for teachers with a "humane demeanor" who value their ideas and perspective (Pruitt et al., 1998). Establishing rapport between teachers and families is important because through their social interactions with teachers and their children, parents make interactive and unique contributions to students' educational outcomes. In previous work I developed a set of inquiry cycle, multimedia case study materials focused on demonstrating effective and less effective models of parent-teacher communication. Using an expert panel, I established the case materials' content validity and a set of benchmarks for evaluating beginning teachers' relative readiness for home-school communication (Walker & Dotger, 2012). When I compared beginners' and experts' responses, three findings emerged. First, beginners were confident in their ability; however, they made limited use of a narrow range of potential communication strategies. Further, beginners could discriminate between contrasting video models of professional practice; however, experts and beginners differed in their choice of which model was best. Building on this work, I added opportunities to make decisions, explore resources, and receive feedback into the online environment's architecture to see if I could prompt positive change in their problem-solving approaches. Results for 63 beginning teachers replicated prior mismatch between beginners' confidence and problem-solving abilities. After completing the online exercise, beginners' use of key communication strategies increased. The largest gains were seen for strategies that oriented candidates to parents' perspectives and needs. This project is important in four ways. Practically, the online learning environment offers teachers professional development tools that may not be available in their local context. Ethically, the project's use of vicarious experience offers teachers opportunities to learn about a complex facet of teaching under no-fault conditions (rather than learning by conducting actual conversations with students' families—conversations with potentially high-stakes consequences). Empirically, this work connects research on teacher learning to scholarship on cognitive psychology and the development of expertise, and the rich tradition of case-based instruction as professional preparation in the fields of medicine and law.

Improving the Life of the Poor: Grace Dodge's Membership on the New York City Board of Education, 1886 – 1889

Principal Investigator(s): Dr. Mary Rose McCarthy, Dr. Sonia Murrow (Brooklyn College)

Department: School of Education
School: School of Education
Campus: PLV

This paper examines Grace Dodge's experience as one of the first women on the New York City Board of Education. Unlike her involvement with service organizations and Teachers College, this aspect of her career has never been studied in depth. When she took her seat on the Board in 1886, Dodge brought with her over a decade of involvement in two early Progressive Era reform movements—one that emphasized social change through moral reform and another that stressed the need for the expertise of "professionals" to resolve social problems. Differences and conflicts between these two reform agendas emerged when Dodge became a major figure in the bitter struggle over the reappointment of the superintendent of schools, John Jasper, in 1888. He was accused of failing in his duty by not investigating charges of immorality made against a teacher. For her involvement in the issue, Dodge was attacked by newspapers, teachers and some Board members as a wealthy woman who harmed a poorer woman's reputation unjustly. Other reformers interested in professionalizing educational administration lamented the prominence the issue was given and claimed the backlash ensured the superintendent's reappointment. Even though the charge against the teacher was proven true and Dodge's role in the issue was shown to have been limited to referring the allegation to appropriate authorities, she never returned fully to the good graces of the public or other reformers. Her contributions to improving the curriculum of New York City schools, teachers' salaries, and evaluation procedures have rarely been acknowledged. She was not reappointed to the Board in 1889. In tracing the history of urban public education in the late nineteenth century historians often have described efforts to change the system as conflicts between the representatives of entrenched interests and their critics. Less frequently examined are the interplays between and among the competing interests of reformers. This study addresses that gap and provides a perspective from which to consider similar issues with regard to contemporary efforts at educational reform.

The Game of Life Science: Self-Directed Learning in the Middle School Classroom

Principal Investigator(s): Dr. Gerald Ardito

Department: Educational Technology/Adolescent Program
School: School of Education
Campus: NYC

During the 2011-2012 and 2013-213 school years, the author reconfigured the New York State Regents Living Environment (Biology) curriculum as a set of self-directed experiences for his 8th grade students. The students were free to move through the collection of units in whatever order they wished; spend as much time as they needed to in order to meet the learning objectives; demonstrate learning via a variety of technology based performance assessments; and form ad hoc partnerships and groups with other students. These self-directed experiences have included several technology tools: a virtual classroom and learning management system in Moodle; designing presentations and animations in Scratch and Etoys; and programming and prototyping with Arduino boards. The students have demonstrated significantly higher levels of engagement and participation as compared to a more traditional classroom environment. They have also reported feeling "freed up" to explore, both within and outside the classroom, the various big ideas in the course. In addition, their performance on mandated state assessments (the Regents exam) were at or above that of their peers in more traditional classroom settings. As the year progressed, it became clear that many students were relating to this set of self-directed learning experiences as an open-ended, multi-player game: developing unique strategies for meeting the necessary challenges; forming ad-hoc and/or long-term partnerships with other students; advising each other on "Easter eggs" and other tricks and tips; and celebrating accomplishments as rites of passage. This study has implications for the design of learning environments, the use of technology to enhance/foster/promote student independence, and the preparation of teachers.

Helping Students With Cognitive Disabilities Improve Writing Through E-Mail Scaffolding

Principal Investigator(s): Dr. Xiao-lei Wang
Co-Investigator(s): Mr. Mike Voron

Department: School of Education
School: School of Education
Campus: PLV

In recent years, scientists have found that IQ is not as fixed as once believed and that intelligence is malleable and susceptible to environmental influences. The purpose of this study is to determine to what extent, manipulating writing instructional input can affect the writing quality of students with cognitive disabilities. In particular, the study explores to what extent, writing scaffolding via the medium of email exchanges with mature writers can help students with cognitive disabilities improve their writing ability. Since writing is a recursive and complex set of cognitive processes, students with all abilities need teacher guidance, but students with intellectual disabilities especially need it due to their intellectual functioning limitation. Ten adolescent students (mean age = 19;3) with an average of IQ of 55 and ten pre-service teachers in a university teacher education program participated in the study. The results suggest that after weekly writing modeling and instructional scaffolding via emails by the pre-service teachers over a period, the ten students with intellectual disabilities were able to holistically improve their writing. Specifically, the students showed various degrees of improvement in the areas of planning, organization, writing mechanics, grammatical precision, syntactic complexity, and pragmatic appropriateness. Most of all, the students made significant progress in their lexicon, such as lexical diversity (different types of words), lexical density (proportions of lexical items such as nouns, verbs, adjectives, and adverbs), and lexical complexity (polysyllabic words). However, the figurative use of language seemed to remain unaffected by the scaffolding and writing experience. The study indicates that the environmental impact on the writing of students with cognitive disabilities is most effective at the lexical level, moderately at the writing planning, structural, grammatical, pragmatic levels, and least at the figurative level of language use. Moreover, the study suggests that internet-mediated formats such as email can reduce the anxiety some students, such as those with autism, can experience from face-to-face communication and can motivate them to engage more actively in email exchanges, thus improving their virtual social communication through writing. The paper concludes with several educational implications derived from the study.

Honoring Competencies: Conferencing Opportunities to Support Struggling Middle Grade Readers' Attitudes and Achievement

Principal Investigator(s): Dr. Francine Falk-Ross

Department: Literacy Education
School: School of Education
Campus: PLV

Not all students who have challenges to their learning perceive these difficulties as limiting, and many are unaware of, or unwilling to engage in, behaviors that will improve their literacy development (Alaoutinen 2012; Lew, Alwis, and Schmidt 2010). If literacy is viewed as person-directed attempts to gain information and personal satisfaction from texts in all forms/formats, then students need feedback and guidance to direct their efforts. Research has indicated that development of self-assessment strategies may lead to improved goal setting and motivation (Bingham, Holbrook, and Meyers 2010). In addition, marginalized students may not have insight into elements of their reading weaknesses and strengths or to new literacies (e.g., technology) that will help build their literacy knowledge and thrust them forward in achievement. Discussions with these students can be revealing related to their perceptions of their strengths, knowledge, and motivation. This is especially true for young adolescent students in the middle grades (i.e., 5-8 in the United States). In this study, eight middle school students having diverse challenges to literacy development, including linguistic differences, cultural differences, speech/language difficulties, and learning disabilities from two school districts were assessed for reading competencies and their attitudes and interests toward reading at the discussion tables in their classroom and asked to respond to their performance results on a passage of reading. Interviews using open-ended questions about their attitudes and interests documented perceived literacy competencies, and retrospective miscue analysis provided data for feedback.

Tilting Towards Inquiry: Implications for Teaching, Learning, and Professional Development

Principal Investigator(s): Dr. Christine D. Clayton
Co-Investigator(s): James Kilbane (Tulane University), Dr. Mary Rose McCarthy

Department: School of Education
School: School of Education
Campus: PLV

Inquiry has long held appeal as a strategy to promote both teacher and student learning (Weinbaum, Allen, Blythe, Simon, Seidel, & Rubin, 2004). It requires an "ambitious pedagogy" (Windschitl, Thompson, & Braaten, 2011) rooted in important disciplinary ideas and key skills. This session will examine the development of a professional development program, over four years and funded through the Teacher Leader Quality Partner Grant from New York state. Set within a high-stakes assessment context that creates both opportunities and complications for learning through inquiry, this program will be presented in a symposium session at the upcoming Annual Meeting of the American Educational Research Association through a presentation of program documents, facilitator's perspectives, teacher's perspectives, and evidence from teacher work samples. While much is known about the characteristics of high-quality professional development (Peneul, Fishman, Yamaguchi, & Gallaher, 2007; Supovitz, Mayer, & Kahle, 2000), less is known about the experiences of participants as they tilt towards inquiry learning in today's assessment context. This project showcases a variety of perspectives on the program to understand the space created by such professional development within the boundaries of current assessment environments and to explore its impacts.

Objectifying Teaching: Reading edTPA and Danielson Rubrics in the Context of High-Stakes Teacher Evaluation

Principal Investigator(s): Dr. Christine D. Clayton

Department: School of Education
School: School of Education
Campus: PLV

Recent reforms in both K-12 and teacher education in New York focus on teacher evaluation as a means to improve both teacher quality and student achievement. As manifested in legislation establishing the Annual Professional Performance Review (APPR) for K-12 education and in directives that are implementing new certification exams, including an extensive performance-based task known as the edTPA, the current push seems intended to link evaluation of teacher practice more explicitly than ever before with student outcomes. At the heart of these policies are rubrics that purport to systematize and objectify the evaluation of teaching. What makes these efforts to articulate and measure teacher effectiveness distinct are both the assumptions about what counts as good teaching, and the high-stakes consequences attached to evaluations by these measures. This line of research begins with a critical analysis of the rubrics at the heart of new teacher certification and the APPR in New York State. These rubrics are examined through the lens of a complex view of teaching (Fenstermacher & Richardson, 2005; Schulman, 1987) and utilizing signature texts from key movements in teaching and teacher education (Cochran-Smith & Fries, 2001; Ladson-Billings, 2009; Zeichner, 2003) through which to read these critical artifacts of current teacher evaluation policy in New York.

A Comprehensive Study of Disability Film Media At a Major Metropolitan University

Principal Investigator(s): Dr. James Lawler
Co-Investigator(s): Ms. Val Iturraide

Department: Information Technology and Service-Learning
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

College curricula do not afford frequent engagement with individuals with disabilities. Disability can be an alarming and even frightening consideration for college students without disabilities. The authors of this study analyze the benefits of disability films for a community film festival of individuals with developmental and intellectual disabilities at AHRC New York City and students without disabilities at Pace University, a major metropolitan university. The authors attempt to learn from focus groups of students without disabilities if disability film media enables discernable engagement and advocacy of the students for the rights of individuals with disabilities. The authors also attempt to learn from focus groups of individuals with disabilities if the disability film media facilitates engagement and self-advocacy of the individuals for themselves. The study might confirm the benefits of disability film media in representing authentic and credible portraits of individuals with disabilities. The study might disclose further the benefits of engaging students without disabilities on disability media projects, in learning of others without disabilities through proper realities and representations in the disability film media. Lastly, the study might divulge proper portrayals for others with disabilities in the Hollywood mainstream media that is often flavored by fear, focus on impairment, and prejudice. This study might be helpful to faculty and outreach personnel in universities that intend to have more students without disabilities as participants on projects of public service. Overall, this study might be a model for the mainstream media in the proper representations of those with disabilities in society.

N-Dimensional Checkerboards (An example of array thinking)

Principal Investigator(s): Dr. Ronald I. Frank

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

Using the just the shape list and index list defining an array, we find a simple algorithm for coloring N-dimensional checkerboards. A side effect is a color characterization of diagonals that differs between even & odd dimensions. The mathematics used is less than high school algebra.

A New Scheme to Evaluate the Accuracy of Knowledge Representation in Automated Breast Cancer Diagnosis

Principal Investigator(s): Dr. Juan Shan

Department: Computer Science
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

In the field of breast cancer diagnosis, computer-aided diagnosis (CAD) systems can provide doctors important second opinions, relying on the advanced computation ability and artificial intelligence of computing systems. Knowledge representation is an important chain for any artificial intelligence system, including automated breast cancer diagnosis. The breast cancer experts' knowledge of distinguishing benign and malignant lesions is well described by Breast Imaging Reporting and Data System (BIRADS). Many digital formulas have been proposed to quantify BIRADS features. However, there is no direct evaluation scheme for these digital features. A common way that people evaluate digital features is using them as the input for classifiers, such as machine learning methods, and then evaluating the performance of classifiers, which indirectly serves as the evaluation of digital features. The performance of a classifier is affected by the digital features, but also affected by other factors. It is inaccurate to use only the performance of classifiers as the metric to evaluate digital features. The vision of this work is to separate the evaluation of digital features from the evaluation of classifiers, with the purpose of providing an accurate feature measurement procedure and improving the quality of knowledge representation. An independent feature evaluation scheme without using any automatic classifier is proposed. Such a scheme can directly evaluate how precisely experts' knowledge is represented in computerized systems. Several commonly used digital features and newly proposed digital features in this work are evaluated using this scheme on a breast ultrasound image database. Pathological results and radiologist's opinions serve as the ground truth for evaluation purpose.

The Security Risk Perception Model For the Adoption of Mobile Devices in the Healthcare Industry

Principal Investigator(s): Dr. Li-Chiou Chen, Alex Alexandrou

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: PLV

The adoption of smartphones and tablets has changed our everyday lives. Information that took time to find now is in one-step away when we "google it" or use an "app". As healthcare technology has advanced with the adoption of Electronic Medical Records (EMR), mobile devices quickly became one of the technology choices among medical practitioners. The use of smartphones has gained its popularity among doctors, nurses and medical students, even though many institutions do not support this practice. Because of the trend, information technology (IT) departments in health care organizations need a strategy to support these devices. One of the most important and challenging issues that medical practitioners must deal with is how to secure the personal information of patients and to address their privacy concerns when mobile devices are used in the healthcare environment. The widespread use of mobile devices in the healthcare environment can potentially become an attractive target for collecting personal information on a massive scale. Regulations, such as Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health Act (HITECH), require protection of medical records but specific mechanisms are not described. This study aimed to understand the security risk perception of medical practitioners regarding mobile devices and how the perception would affect their behavior intention in both using the devices and adopting security controls required for the devices. Through the study, we expected to provide healthcare administrators insights on how to manage the use of mobile devices in the healthcare environment. We focused on two scenarios: the Bring-Your-Own-Device (BYOD) scenario that medical practitioners are allowed to use their personal mobile devices in the workplace to access EMR and the Hospital-Provided-Device (HPD) scenario that the mobile devices are provided and maintained by the health institutions. BYOD poses additional security challenges for healthcare administrators. A previous survey[1] showed some difference in opinion between what IT managers and employees think are the most important requirements for BYOD devices. To provide further understanding on this issue, our study examined a set of hypotheses related to security risk perception for both BYOD and HPD scenarios.

Technology Entrepreneurship in Computer Science

Principal Investigator(s): Dr. Anthony Joseph
Co-Investigator(s): Dr. James Lawler

Department: Computer Science and Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

This paper describes the benefits and rewards of integrating technology entrepreneurship related courses into a university computing curriculum as well as discusses the difficulties and challenges that could hinder such integration from an implementation perspective. These courses address workforce needs by providing computing students with requisite professional skills upon graduation. These skills include teamwork, critical thinking, problem solving, communication, and information processing obtained through student teams solving open-ended niche based practical problems of their choosing under the guidance of professors, entrepreneurs, and other professionals. The technology entrepreneurship courses train students in becoming well-rounded business-minded technologists. Introducing these courses into the computing curricula in competition with disciplinary courses requires that students, faculty, staff, and administrators strongly support them; otherwise they might not obtain the requisite enrollment for viability. This challenge of achieving relatively high enrollment in newly created technology entrepreneurship courses is further compounded under the conditions of having a small number of computing majors across computer science and information technology. Four technology entrepreneurship related courses (Technology Entrepreneurship, Entrepreneurial Health Informatics, Financial Computing and Entrepreneurship, and Modeling Financial Processes and Systems) were designed and developed for an urban university's computing curriculum with the intentions of attracting students from other disciplines to create multi-disciplinary teams that would then work on niche based products or services from idea to algorithmic design and thereby replicate how computing is typically done in industry. Each team was guided by a mentor. In addition to mentors, each course's lessons were supplemented by guest lectures on such topics as business plans and project management. While Financial Computing and Entrepreneurship and the first offering of Technology Entrepreneurship were taught in the traditional lecture format, Entrepreneurial Health Informatics, Modeling Financial Processes and Systems, and the second offering of Technology Entrepreneurship were taught in the project-based learning format where instead of in-class exams, student teams focused on presenting deliverables at designated times. Overall, student enrollment was lower than expected. The anticipated enrollment of both computing and non-computing majors was below the target number of at least 15 students. Many factors appeared to have contributed to this lower than expected enrollment. One of the factors was the slow rebound in computing majors from the bust experienced a few years ago and another factor was the competition from a newly created curriculum.

A Study of a Small Island Nation's Secondary Education Level STEM Exit Examination Data and Possible Implications

Principal Investigator(s): Dr. Anthony Joseph

Department: Computer Science and Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

This study investigates the secondary STEM education of a small island nation under four hypotheses: 1) males out-perform females in selected single gender schools; 2) more recently offered exit examinations were most frequently taken by the higher performing schools; 3) single gender schools out-perform mixed gender schools; and 4) regardless of family socio-economic status, students have equal access to the best educational opportunities in STEM subjects. Twenty-six years of STEM exit examination data were collected from the archives of the Ministry of Education. The unit of analysis was the annual percentage of students passing each subject's examination in each school. The data were separated into main STEM subjects (Mathematics, Biology, Physics, and Chemistry) and other STEM subjects. Moreover, the 11 schools were separated into single gender and mixed-gender, as well as government and privately funded. Descriptive and inferential statistics were used to analyze the data. It was found that an all-girls public high school with an economically diverse student population had the highest overall average percentage of students passing the main STEM subjects. These results seem to suggest that girls out-perform boys and that single sex public secondary schools with diverse socio-economic populations tend to outperform private and mixed-gender secondary schools.

An Exploratory Study of Nonprofit Organizations' Use of the Internet for Communications and Fundraising

Principal Investigator(s): Dr. Namchul Shin

Department: Information Technology
School: Seidenberg School of Computer Science and Information Systems
Campus: NYC

The importance of the nonprofit sector for the U.S. economy is continually growing. The sheer number of nonprofits and its growth rate for the past decade show that the operating environment of the sector has become more and more challenging. In the market of increased competition, greater demand for services, and fewer resources, nonprofits need diverse ways of achieving their social goals. Online fundraising was a new option and has been performed by nonprofit organizations (NPOs) through their websites. However, few studies have examined what online practices or strategies can boost public recognition and increase fundraising. This research aims to examine how nonprofits use the Internet to build public relations and increase charitable giving by analyzing the content of the websites of various nonprofit organizations (NPOs). The key questions we raise for this research are: What fundraising and communication practices (or characteristics) have NPOs incorporated into their websites? Are there differences in the presence of the website characteristics among NPOs with different levels of fundraising? And what are the website characteristics that are associated with the difference in the level of fundraising? In order to tackle these questions, this research conducts a content analysis of the websites of NPOs listed in the top 100 NPOs published by the Nonprofit Times. The content of websites is coded on variables identified in previous research based on online fundraising, communication practices, accountability, and security. We found that there is no difference for most variables of fundraising and communication practices between the two groups of NPOs split by the level of fundraising. The differences are found in such variables as campaign summary and volunteer opportunities provided to the public (information dissemination) and information sharing among the public (interactive communications). These findings suggest that certain communication practices are positively associated with the level of fundraising. We also found that there is no difference across sectors for the presence of most website characteristic variables. Compared to the findings of previous research, however, our findings show that the presence of most variables related to communications and fundraising has increased. This indicates that by recognizing the importance of the Internet, NPOs are increasingly using it as a medium for communications and charitable giving.

A Graph Whose Vertices Are All the Divisors of a Given positive Integer

Principal Investigator(s): Dr. Sung-Hyuk Cha, Dr. Edgar G. DuCasse, Dr. Louis V. Quintas
Co-Investigator(s): Ms. Liana Brancati

Department: Computer Science, Mathematics
School: Seidenberg School of Computer Science and Information Systems, Dyson College of Arts and Sciences
Campus: NYC

This is a report on current research being done on the graphs described in the title. This work is interdisciplinary/interdepartmental, number theoretic, probabilistic, topological/geometric, and employs computer methods extensively. Three manuscripts are being developed with two already having been submitted for publication in peer reviewed journals. The third is similarly being prepared for publication. The first paper gives the fundamental properties of these graphs including a theorem characterizing their structure. The second contains many original theorems and new interpretations of known results. These were obtained both theoretically and by computer methods. The third paper assigns probabilities to the arcs and nodes (states) of these graphs (now directed graphs) yielding structures called Markov chains. Applying Markov chain techniques should yield additional insights. Each of these papers contains open problems suitable for further research. Finally, it is noted that the co-investigator is a Pace University Mathematics Honors Graduate.

Suicide Among College Students of Color Who Identify as Lesbian, Gay, or Bisexual: An Empirical Analysis

Principal Investigator(s): Dr. Richard Shadick
Co-Investigator(s): Dr. Faedra Backus, Dr. Baptiste Barbot, Amber Addessi

Department: Counseling Center
School: Administration
Campus: NYC

Suicide has been identified as the second leading cause of death among college students (Schwartz, 2011). A central component of suicide prevention efforts is the identification of risk and resilience factors, including those associated with social identities that may contribute to suicidal risk in college students. Broader epidemiological research on suicide has identified particular populations that may be at higher risk for suicide, including those who identify as lesbian, gay, or bisexual (LGB). Definitive research on rates of suicide among LGB individuals in general and specifically among LGB college students remains limited. Race and ethnicity represent two other factors that warrant further exploration. As college campuses continue to become increasingly diverse in terms of students' racial and ethnic backgrounds, research has begun to look at how race and ethnicity impacts suicidal behavior (e.g., Brownson, Becker, Shadick, Jaggars, & Nitkin-Kaner, in press). However there is no literature that looks at how race and ethnicity interact with other identities such as sexual orientation to impact suicidal behavior. Meyer's (2003) model of minority stress posits that marginalization creates challenging and hostile social environments that in turn contribute to negative mental health outcomes. Given this perspective and the overall lack of literature on this topic, further research is needed specifically on risk for suicide in LGB college students of color. The purpose of the present study was to gather information on differential rates of suicidality among students, based on membership in one or more marginalized groups. The first hypothesis of the present study is that students who identify as LGB will endorse higher risk for suicide than their heterosexually-identified peers. The second hypothesis is that students who identify both as racial and sexual minorities will endorse the highest risk for suicide, compared to White and heterosexually-identified peers. Analyses with data provided by 4,999 first year students at Pace collected over 5 years confirmed both hypotheses. Implications of the results will be discussed.

Prescription Drug Abuse With Diverse College Students

Principal Investigator(s): Dr. Richard Shadick
Co-Investigator(s): Dr. Faedra Backus, Dr. Heather Dawson

Department: Counseling Center
School: Administration
Campus: NYC

In recent years, the increased utilization of non-medical use of prescription drugs (NMUPD), including stimulants, sedatives, and painkillers, has been framed as a public health crisis, particularly among young people and college/university students. After alcohol and marijuana, prescription drugs are the most commonly abused substances among teenagers, young people, and adults (National Institute of Drug Abuse, 2013). Further, the rates of NMUPD have risen drastically over the past two decades (Mohler-Kuo, Lee, & Weschler, 2003). Prescription drug misuse among college students can have grave consequences, including poor academic performance (Arria et al., 2008), significant mental health concerns (Teter, Falone, Cranford, Boyd, & McCabe), and even death (Hingson & White, 2010). The Clinton Health Matters Initiative, which has set the goal of decreasing by one half the number of college students misusing prescription drugs for the first time, has estimated that meeting this goal would save 10,000 lives (Clinton Foundation, 2014). Additional research is needed on patterns and reasons for use among diverse college students, in order to continue the development of effective prevention and intervention efforts tailored for these populations. The Counseling Center has collected data from incoming first year students that examined rates of NMUPD over the past 5 years. Data will be presented on rates of NMUPD of 5,000 college students from a variety of diverse backgrounds. Emphasis in this poster will be on prevalence and patterns of use with students of color and students who identify as Lesbian, Gay, Bisexual, or Questioning. Reasons of use will also be examined as this data is frequently absent in the literature.

Pro Bono Legal Project

Principal Investigator(s): Jane Aoyama-Martin, Esq
Co-Investigator(s): Natalie Sobchak, Esq., Natanya Briendel, Esq., Santa Santiago-Ramos (Paralegal)

Department: Women's Justice Center
School: Pace Law School
Campus: PLV

Pro bono attorneys, trained volunteers, and law students play a vital role at PWJC and donate an average of 9,200 hours of time each year. The value of this contribution is estimated to be over 1 million dollars. The Pro Bono Legal Project cultivates and trains PWJC's volunteers, coordinates volunteer activity, ensures proper supervision of volunteers, and carefully matches the skills of incoming volunteers with the programs that need them. Volunteers help provide a wide range of services, including answering PWJC's Legal Helpline, which receives an average of 2,000 phone calls per year. Pro bono attorneys, paralegals and other volunteers are an integral part of the Family Court Legal Program, which assists domestic violence victims and survivors with emergency family court proceedings. Volunteers also assist our domestic violence clients with uncontested divorces, which they could not otherwise afford, so that they can fully separate from their abusers and move forward with their lives. The use of pro bono attorneys, paralegals and law students who are well-trained and supervised by staff attorneys, enables PWJC to provide high quality legal services to a large volume of clients, in a highly cost efficient manner. The Pro Bono Legal Project is funded by the Westchester Community Foundation, the New York State Unified Court System, the US Department of Justice Office on Violence Against Women, and private donations.

Bridge the Gap: Legal Assistance for Victims (”LAV”)

Principal Investigator(s): Jane Aoyama-Martin, Esq
Co-Investigator(s):Laurie Epstein, Esq., Karen Johansen, Esq.

Department: Women’s Justice Center
School: Pace Law School
Campus: PLV

Bridge the Gap: Legal Assistance for Victims provides a full range of comprehensive civil legal services to low-income victims and survivors of domestic violence in Westchester and Putnam Counties. The program’s attorneys help with matters including orders of protection, custody, visitation, child support, spousal support or maintenance, property issues, divorce and immigration. The project has three main goals and objectives: 1. To provide and expand delivery of comprehensive legal services for survivors of domestic violence, sexual assault, dating violence and stalking; 2. To continue and expand collaborative services through partnerships with community-based organizations (The Bridge the Gap program is a collaborative partnership with four community organizations); 3. To continue and expand outreach and service provision to the traditionally underserved Latino community. PWJC partners on this grant with the Hispanic Resource Center of Larchmont and Mamaroneck, Victims Assistance Services, Hope’s Door, and the Putnam/Northern Westchester Women’s Resource Center. The project is funded by a grant from the US Department of Justice Office on Violence Against Women.

Grant to Encourage Arrest in White Plains

Principal Investigator(s): Jane Aoyama-Martin, Esq
Co-Investigator(s) Cindy Kanusher, Esq., Ellen Gatins, Esq., Tracey Alter, Esq.

Department: Women's Justice Center
School: Law School
Campus: PLV

Pace Women's Justice Center, in collaboration with the City of White Plains Department of Public Safety, El Centro Hispano and the Westchester Independent Living Center, are partners on this grant . The goal of the project is to improve the coordinated response to sexual assault, domestic violence, stalking and dating violence in White Plains, specifically among victims and survivors from underserved populations including older individuals, individuals with disabilities and the Latino community. The project will maintain a specialized team that will be responsible for monitoring domestic violence and sexual assault offenders. The grant provides for specialized training to police officers to improve their response to older individuals, individuals with disabilities and Latino victims of domestic violence. The project also includes funding for a bilingual attorney to provide legal assistance to Spanish speaking victims. The project is funded by the US Department of Justice, authorized under the Violence Against Women Act. The grant is part of the federal government's initiative to "Encourage Arrest Policies and Enforcement of Protection Orders", through the Office of Violence Against Women.