new york city alliance
ISSUE FOCUS: BRIDGE TO THE DOCTORATE
NEWS

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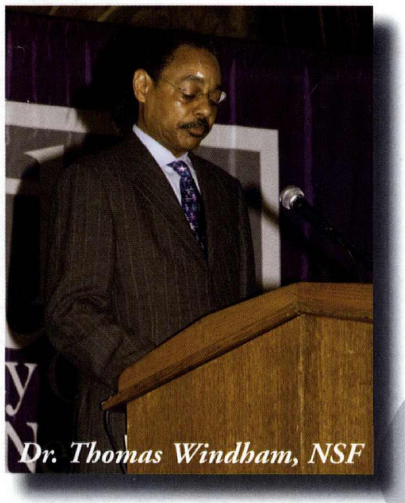
Broadening Participation

(Highlights of Keynote Address Transitions 2005, City College April 15)



Dr. Thomas Windham, NSF

The National Science Foundation has four overarching strategic outcome goals- People, Ideas, Tools and Organization Excellence. Each is directed toward and responsive to the needs of the nation. Several performance indicators have been identified for each strategic goal. Key indicators include:

1) Promoting greater diversity in the science and engineering workforce through increased participation of underrepresented groups and institutions in all NSF programs and activities (People).

2) Enabling people who work at the forefront of discovery to make important and significant contributions to science and engineering knowledge (Ideas).

3) Expanding opportunities for U.S. researchers, educators, and students at all levels to access state-of-the-art science and engineering facilities, tools, databases and other infrastructure (Tools) and

4) Operating a credible, efficient merit review system (Organizational Excellence).

The Bridge to the Doctorate Program is key to achieving our Broadening Participation Goal. It has the potential to rapidly accelerate the number of competitive PhDs from underrepresented groups and more importantly, increase the doctoral parity ratio from 63 to 100 percent. We recognize this as a formidable challenge. We know it to be one that is achievable! The Bridge to the Doctorate program must capitalize on our recognition of the importance of the interdependence between education and research, and the power of critical mass, i.e., 12 or more LSAMP students per Bridge to the Doctorate Center.

To the University

The university's job is to practice, demonstrate and disseminate effective strategies for recruiting, retaining, educating and training well-informed, highly competitive PhDs. They must have benefited from appropriate research experiences; robust coursework; individual and group mentoring; workshops on scientific writing, communication strategies and research proposal writing; and travel to student and professional conferences to network and present original research.

To pursue the frontiers of science and engineering we must discard outmoded structures and concepts, try new approaches, and take appropriate risks.

Education has always been vital to the success of individuals, families, communities and nations. And now, more than ever, our

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National Science Foundation,
Louis Stokes Alliance for Minority Participation

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nation's future depends more and more on the quality of our new ideas, the vitality of our intellectual discourse, and the innovative use of new knowledge generated through our research and education enterprise. This is the bedrock that underpins our prospects for economic prosperity and well being.

To the Bridge Scholars

Minority students must participate in rigorous, disciplinary study and interdisciplinary training that facilitates effectively transitioning into the larger scientific community. You must be proactive; your behavior must be intentional. It is highly important that you carefully choose your research area, thoroughly investigate the programs to which you are applying, and obtain experiences in labs where you are being mentored by Principal Investigators who are a part of a larger network of researchers, such as in a National Laboratory or the National Academies of Sciences or Engineering.

To the Nation

We must constantly be reminded that any American left behind is a signal that many Americans, families and communities are being left behind and that our nation is sowing the seeds for losing ground in the international market of ideas. These lost ideas will directly impede the progress of American ingenuity, science and technology and slow if not stagnate our national health, prosperity, welfare and defense. I am talking about the national need to extend opportunities for individuals, particularly individuals from underrepresented groups and underserved communities but, also ways to create expanded, reasonable opportunities for the United States to nurture and sustain its competitive edge and economic prosperity.

Doctoral Parity Ratios

My colleagues and I at the University of Colorado at Boulder observed that from 1985-2003, the percentages of doctoral degrees awarded to non-American students from abroad increased from roughly 27% to about 45% for the natural sciences and engineering (NS&E). Roughly 7,500 of the 17,500 doctoral NS&E degrees were awarded to students from abroad. Of the total 17,500 doctoral NS&E degrees awarded in 2002, about 750 were awarded to Americans from underrepresented, underserved populations - notably African American, American Indian and Chicano-Hispanic-Latino. The all time high was in 1998 and 1999 when 784 NS&E PhDs were awarded to underrepresented minorities (URMs).

While the numbers are low, we did note dramatic increases in PhD NS&E degrees awarded to URMs between 1985 and 2000, from approximately 300 in 1985 to 751 in 2002. We found that despite these dramatic increases in NS&E PhDs awarded, URMs still earn less that half as many NS&E bachelor's degrees as whites and the fraction of URMs with NS&E bachelors degrees who earn PhDs is 70% the corresponding number for whites. These differences have changed little over the past 20 years.

This is unacceptable! Although broadening participation in science and engineering is by no means a new objective, circumstances of our times have given it new salience that strengthens year by year. A heightened sense of urgency now accompanies the task of adopting fresh attitudes and behaviors, and identifying and implementing new learning, teaching and institutional strategies that will help us undo the harmful disequilibrium that is our legacy of institutional segregation, racism and apartheid. The portals of science and engineering must be opened to the full diversity that is the face of America.

In our research, we found that common data presentations did not easily inform vigorous, reasonable policy. Our method documents the underrepresentation of

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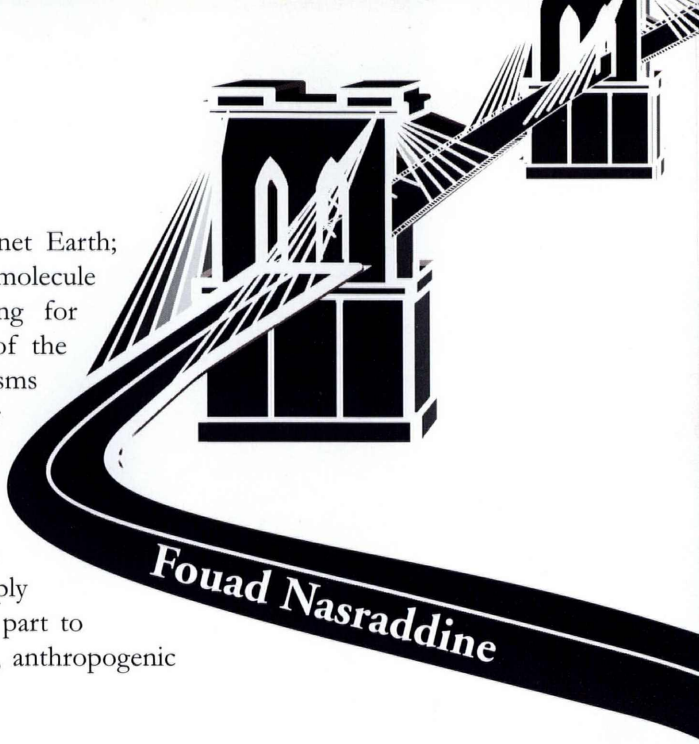
"Water Under the Bridge"

By Rasheen Allen



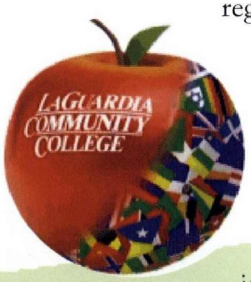
Water is essential to life on planet Earth; moreover, it is the most abundant molecule found in living cells, accounting for approximately 70 to 90 percent of the mass of each cell. All living organisms are dependent upon water for their continued existence, so it remains a vital concern of environmental scientists to preserve and protect the fresh and potable water supply. Maintaining the potable water supply is an arduous task, due in most part to environmental pollution, weathering of geological formations, anthropogenic activities and seawater intrusion.

The necessity for having potable drinking water was recognized by Congress in 1974 when the Safe Drinking Water Act was passed, and that act is regulated by the provisions set by the Environmental Protection Agency. The purpose of the act is to ensure that the public's drinking water supply is safe.

Despite efforts to safeguard the water supply, halide ions such as chloride and bromide, as well as nitrogenous compounds such as ammonia, are becoming more prevalent. These different elements have been found to be ubiquitous in fresh water supplies all throughout the United States and may be mutagenic (causing mutations) as well as carcinogenic (causing cancer).

Fouad Nasraddine, a Bridge to the Doctorate student at City College, under the tutelage of his mentor Dr. Vasil Diyamandoglu, is researching Ammonia photo-oxidation of water, which is a method of reducing the amount of ammonia in drinking water by using Ultraviolet (UV) irradiation from low pressure mercury lamps.

"I receive continuous guidance from my mentor [Professor Diyamandoglu] through continuous consultations regarding experiments to be conducted and results interpretation. We also discuss the short- and long-term goals of the project and our expectations," stated Fouad when asked about the expertise and guidance provided by his mentor.



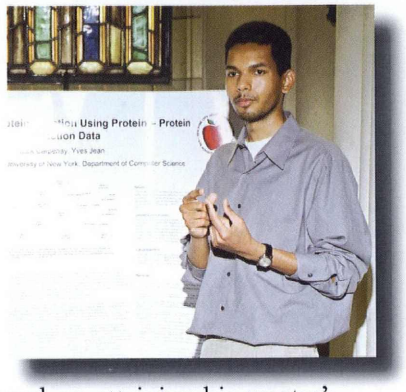
Fouad emigrated from Casablanca, Morocco in 1996, and within the next year, was enrolled at LaGuardia Community College. He received his A.S. degree in Liberal Arts Mathematics and Science and went on to pursue a B.S. in Physics at Stony Brook University. After attaining his four-year degree, he immediately enrolled in the master's program in Civil Engineering, specializing in Environmental Engineering, at City College. To further follow his academic studies he will head to Colorado State University, where he has already been accepted into the Environmental Engineering doctoral program.

Fouad fully understands the importance of his research involved in maintaining potable water and wants to educate the citizenry about safe drinking water. "I am interested in conducting a public service to discuss and explain the water treatment processes to high school and college students at different institutions," he vehemently stated. He also wants to ensure that research measures to protect drinking water and the environment remain at the forefront of science and are not forgotten.

"In Pursuit of a PhD"

By Rasheen Allen

Mark Carpenay



Mark Carpenay began his college academic career at Queensborough Community College; there he earned his A.A.S. degree in Computer Engineering Technology, but he was not content with stopping at that point. He subsequently transferred to Queens College, a four-year senior college, to earn his B.S. degree in Computer Science, with a minor in Biology. As a graduate student at Lehman College, he is focused on attaining his master's degree in Computer Science, but will similarly look to continue his education and advance to the pinnacle of academia — a doctoral degree.

Entering the Bridge to the Doctorate program in the spring of 2004 was a major academic achievement that would serve to foster Mark's continued graduate success. Another academic achievement would follow soon thereafter, in the summer of that year, when Mark participated in the Summer Program in Bioinformatics and Genome Science at the University of Southern California.

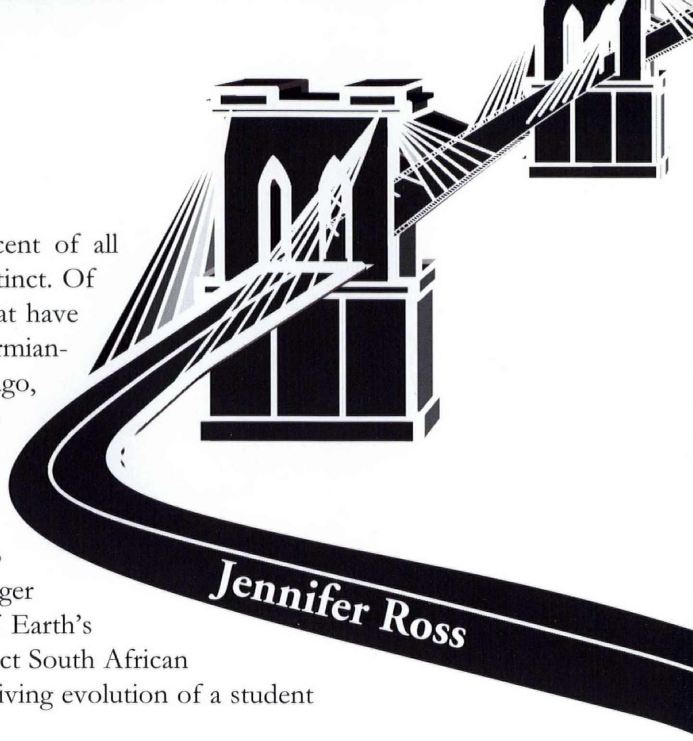
In his research, Mark combines his love of both computers and of science by utilizing protein-protein interaction data to predict protein function. The goal of his research is to replicate Markov's random field approach, which provides a flexible method for modeling spatial dependence. Mathematical algorithms are used to predict the most probable function of a protein based on data from pairs of interacting proteins. This research will aid biologists investigating and analyzing protein function.

Professor Yves Jean of Lehman College, whose expertise is in image processing, mentors Mark in his research. Mark speaks highly of his mentor, stating, "Professor Jean plays a pivotal role in my research by guiding and helping me to interpret new material and concepts." Moreover, he said, "My mentor suggests and explains approaches that I can use to solve many of my research problems."

Recently, Mark gained acceptance into two of the Computer Science doctoral programs that he applied to — the CUNY Graduate Center and the New Jersey Institute of Technology. In the upcoming weeks, he will ruminate upon his options and make the decision on which institution will best foster his pursuit of a PhD.

"Mentoring a Student's Evolution"

By Rasheen Allen



Scientists approximate that 95 percent of all species that ever existed are now extinct. Of the five great extinction episodes that have occurred in Earth's history, the Permian-Triassic Extinction, 250 million years ago, is responsible for decimating close to 90 percent of living species.

Even today, it is conjectured that several species are lost daily to extinction, and many more are in danger of meeting that same fate. This is a grim outlook for many of Earth's species; however, researching the evolutionary lineage of an extinct South African species of baboon — *papio robinsoni* — has contributed to the thriving evolution of a student and her mentor.

Jennifer Ross, a Bridge to the Doctorate scholar at Lehman College, has flourished under the guidance of her research mentor Professor Eric Delson. As a physical anthropology major, Jennifer is specializing in non-human primate morphology, and her mentor has helped to guide her in ongoing research. Professor Delson has several functioning capacities within CUNY. He is the Chairperson of the Anthropology Department at Lehman College, directs the physical anthropology component of the Anthropology doctoral program, and leads the New York Consortium in Evolutionary Primatology (NYCEP). Moreover, he has known Jennifer since she was an undergraduate student at Lehman, and has "several reasons for wanting to see Jenn succeed and for working with her."

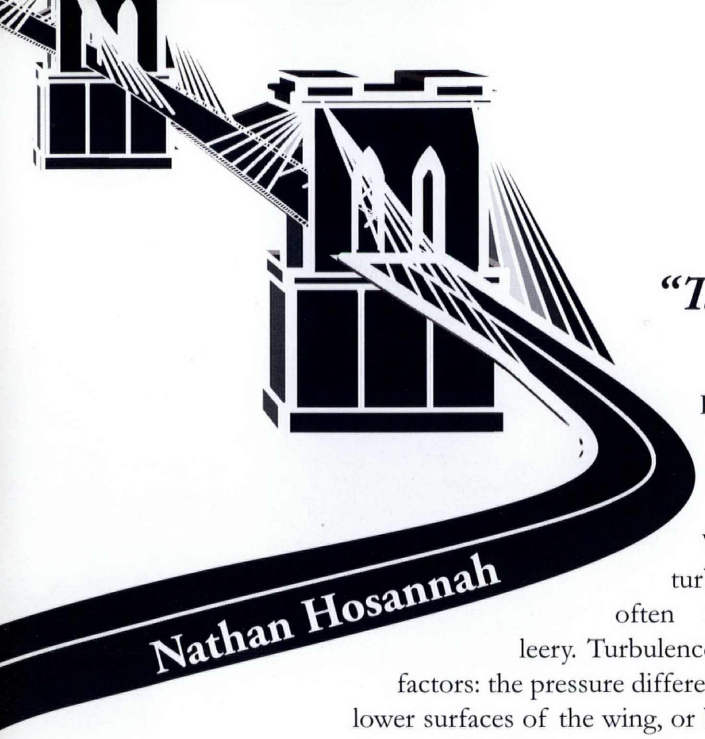
As an undergraduate at Lehman, Professor Delson selected Jennifer as one of eight students to be part of the Undergraduate Biology and Mathematics (UBM) initiative. This NSF funded program allowed four anthropology students and four computer science students to integrate their respective disciplines, by developing phylogenetic trees using computational methodology.

Initially, Jennifer participated in a guided research project studying primate skulls in the American Museum of Natural History's Division of Paleontology — a program with which her mentor is also affiliated. And last summer, Jennifer and several other students, accompanied by Professor Delson, voyaged to central France to work first-hand at a 2-million-year-old mammalian fossil site.

Professor Delson continued to guide Jennifer after she received her bachelor's degree, suggesting that she should further pursue her studies by taking graduate-level classes as a non-matriculated student. Jennifer excelled, was subsequently accepted in the Bridge program and started researching the 2.5 million-year-old *papio robinsoni* baboon, at the behest of her mentor.

"I think that the Bridge program is a wonderful way to aid minority students in their quest for the doctorate," stated Professor Delson. "Giving them financial independence from a regular job, as well as support for course tuition, GRE training and the chance to meet colleagues in other institutions, steps that would be impossible without this program."

Jennifer Ross has evolved as a student by being a dedicated researcher and by employing all of the research skills that she has acquired. Moreover, she has been accepted into two of the best physical anthropology doctoral programs, at Duke University and Stony Brook University.



"Taking the 'Shock' out of Shockwave"

By Rasheen Allen

For many people who travel by airplane, the word "turbulence" can conjure up frightening thoughts. When flights experience turbulence, the bumpiness often makes many passengers leery. Turbulence may be caused by several factors: the pressure differential between the upper and lower surfaces of the wing, or by flying in the vicinity of a thunderstorm. When aircrafts cannot recover from turbulent flow fields, a crash and a loss of life may ensue; however, in the majority of passenger flights, these turbulent events only cause brief periods of minor discomfort.

Nathan Hosannah is investigating and better elucidating shockwave interaction with turbulence, which may assist in designing aircraft better suited to handle the damaging effects of turbulence. The research involves simulating shockwaves as they travel through a shock tube and reflect off a wall. He is majoring in Mechanical Engineering at City College and adhering to the tutelage of his two mentors, Professor Charles Watkins and Professor Yiannis Andreopoulos, whose expertise focuses on the structure of turbulence shockwave interactions.

Both mentors guide his research efforts by setting weekly goals that he must attain, and by imparting instructional knowledge that extends beyond the scope of the research. Nathan intimated that his mentor, Professor Watkins, instructs him to "remain marketable in life…to avoid being restricted to one particular path."

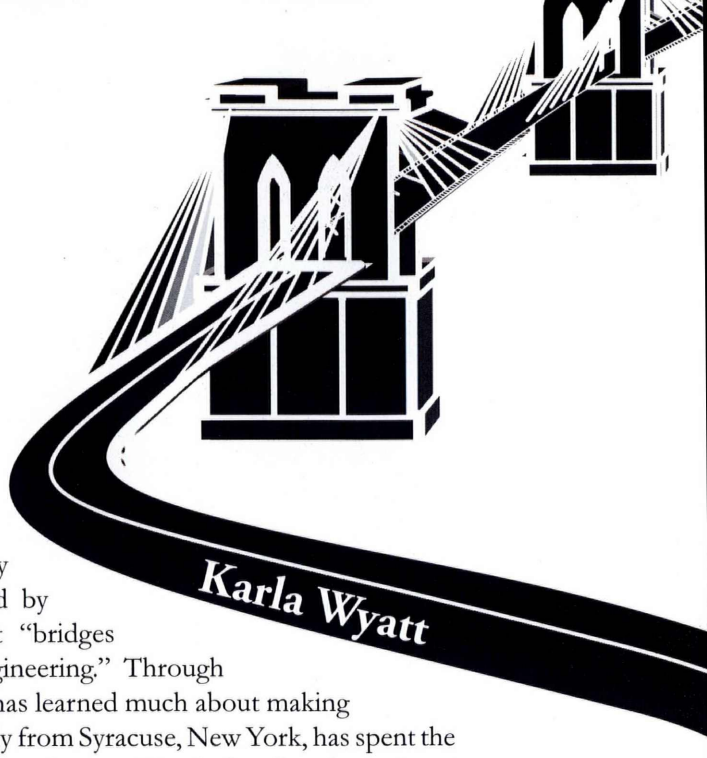
Graduating Cum Laude from City College, with B.E. in Mechanical Engineering, in June of 2004 and subsequently being accepted as a Bridge to the Doctorate scholar are two of Nathan's proudest accomplishments to date. He also knows the value of the "publish or perish" mantra in academia and has assisted in writing a paper, with Professor Latif Jiji, entitled "How Do Elephants Keep Cool?" This paper was submitted to a couple of nature-related journals and is currently under review.

the City College of New York

Nathan is excited about the diversity of topics related to Mechanical Engineering because there are many research avenues that he can travel such as aerodynamics, prosthetics, or energy systems. He is also eager about his research that will help to make "flying the friendly skies" more of a reality.

"Lost and Found"

By Rasheen Allen



Karla Wyatt is a Biomedical Engineering (BME) student working toward her Master of Science degree at City College. She is fascinated by her discipline because it "bridges medical science with engineering." Through her academic travels, she has learned much about making transitions. Karla, originally from Syracuse, New York, has spent the last four years as an undergraduate at North Carolina Agricultural and Technical State University earning her B.S. in Electrical Engineering. Venturing back to New York —New York City — was initially a difficult transition for her.

"It took me a while to figure out the subway system and the different Boroughs," Karla said. "But, being lost was definitely worth it, in the long run."

Research is paramount for Karla Wyatt, and similar to learning one's way around a new milieu, requires adaptive flexibility. Guided by her mentor Dr. Peter A. Torzilli, Karla is delving into arthritis — a disease which afflicts up to 66 million Americans, nearly 1 in every 3 adults, according to the Arthritis Foundation's website.

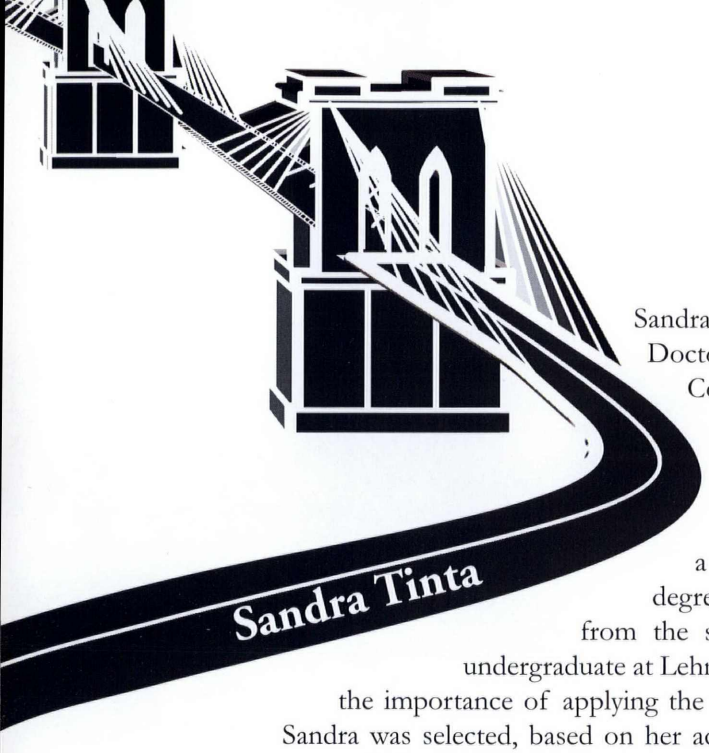
Specifically, Karla and her mentor are researching cleavage of the cartilage (Type I Collagen), found in ligaments and tendons, which is degraded during the onset of arthritis. By studying the effects of tensile strength — the maximum longitudinal stress a substance can bear without tearing — prior to collagen degradation, she hopes to bolster the current knowledge about arthritis and to improve current treatments given to sufferers of the disease.

Dr. Peter A. Torzilli is a mechanical engineer who specializes in soft tissue and cartilage, and is researching bone dynamics. He assists Karla with "correlating the medical and mechanical aspects of the research, and problem analysis."

Although it took her some time to transition, Karla is now well situated in the Bridge to the Doctorate program and poised to further her education by learning different computer competencies, and by applying to Biomedical Engineering MD-PhD joint degree programs. She recently received a recommendation for the Arthritis Foundation Program sponsored through Weill Cornell Medical College.

"Net Works"

By Rasheen Allen



Sandra Tinta, a Bridge to the Doctorate scholar at Lehman College, is working on achieving her master's degree in Computer Science. She graduated Cum Laude in 2002 with a Bachelor of Science degree in computer science from the same institution. As an undergraduate at Lehman College, she realized the importance of applying the skills she garnered in the classroom to the real world. Sandra was selected, based on her academic merit, for an internship at IBM's T. J. Watson Research Center.

While at the T.J. Watson Research Center, Sandra took part in many diverse projects that gave her "great insight about software development." She worked on web-based application development where she was able to make practical use of the skills she acquired as a student.

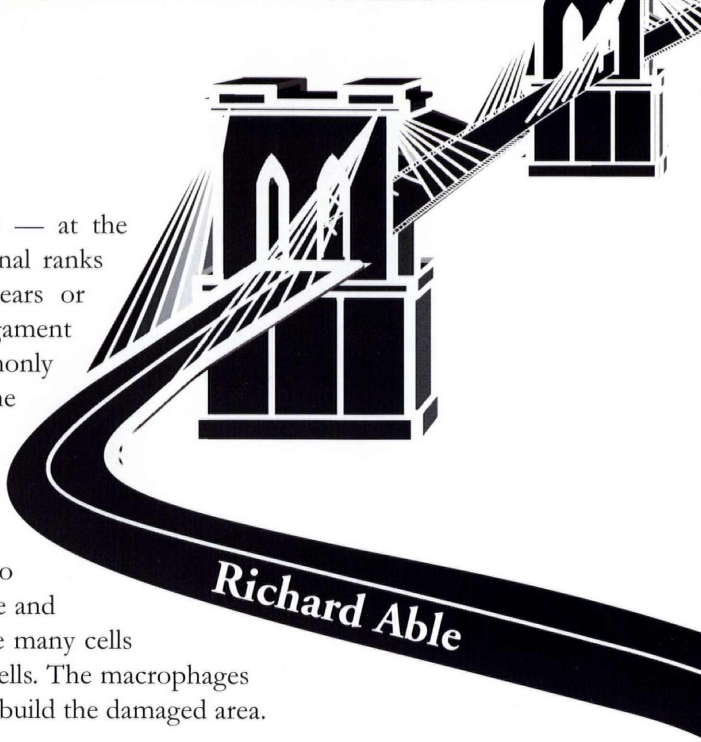
"I learned that some of the most important aspects of a project are the methodologies used for the design [of the project], and the technology used for its development," she stated about her internship experience. "This experience provided an opportunity for me to understand the importance of those issues when planning a project."

Sandra is continuing her research in computer science under the guidance of her mentor Professor Nancy Griffeth, of Lehman College and the Graduate Center of CUNY. Sandra and her mentor meet regularly to discuss problems or employ new procedural initiatives to improve and expand their research involving computer network testing. "Network testing is a crucial step before a computer network system is deployed. Ensuring the proper functionality of a computer network under all circumstances is a hard task to accomplish, because the behavior of a computer network is dynamic and depends on states and interaction of different network components," stated Sandra.

Sandra Tinta is ready to further her education at the doctoral level, and she has already gained acceptance into the Computer Science program at Stony Brook University. Her academic focus is on "becoming a well-rounded and well-grounded researcher" in the field of computer science. She is proud of her many accomplishments and has been awarded the Turner fellowship at Stony Brook, which will fund her education and "make it possible to pursue a Ph.D. without financial worries." Her tireless research efforts on computer networks will ensure that Sandra nets from all of her works.

"Student and Mentor Connect the Dots"

By Rasheen Allen



Most often in the world of sports — at the high school, collegiate, or professional ranks — athletes are sidelined due to tears or injuries of their Anterior Cruciate Ligament or simply ACL, as it is more commonly referred to. The ACL along with the Posterior Cruciate Ligament (PCL) are two short, strong ligaments which criss-cross each other in the middle of the knee joint. Existing research has shown that subsequent to injury such as an ACL tear, the body launches an inflammatory response and chemical stimuli attract or repel certain cells by chemotaxis. Among the many cells that are attracted to the damaged area are macrophages and fibroblast cells. The macrophages engulf bacteria and debris of dead cells, while the fibroblasts begin to rebuild the damaged area.

Scientists employ different biomarkers to visually understand how cells, proteins, and other biomolecules migrate in transportation systems in vivo. Richard Able and his mentor Professor Maribel Vazquez are investigating the use of Quantum dots or "q dots," which are inorganic semiconductor nanocrystals that glow with a distinct hue that is dependent upon their size. For example, quantum dots with diameters of five nanometers (billionths of a meter) glow bright red, while q dots with two nanometers diameters glow bright green.

These "q dots" are a new brand of biolabeling reagents. The induction of quantum dots into the fibroblast cells, prior to migration, via lipid fusion, permits the opportunity to take advantage of the quantum dot's ability to fluorescently label intracellular organelles without fixing the cell. Quantum dots last longer and shine brighter than conventional stains, but as Richard Able's preliminary research suggests, quantum dots may impede and reduce the number of cells that migrate towards chemical attractants.

In May of last year, Richard Able received his bachelor's degree in Biology from Cheney University in Pennsylvania. He is currently a Bridge to the Doctorate scholar in the Biomedical Engineering master's program at City College. "I am interested in this area [Biomedical Engineering] because it gives me the opportunity to use multidiscipline skill sets to solve real world problems," said Able. "I believe that the world is evolving to a point where the line between specific disciplines will fade rapidly, and this evolution will call for a market of individuals that have been trained in various areas and versed in several vocabularies."

Richard was able to successfully transition from Biology to Biomedical Engineering, in large part, because of his mentor Professor Maribel Vazquez who specializes in electrophoretic injection within microdevices. As Richard's mentor, Professor Vazquez not only directs his research initiatives, but she also advises him on what courses will be most beneficial for him to gain a more complete understanding of the research. Professor Vazquez contends that her major role as a mentor is to provide training to her students by helping them "perform meaningful research via lab experiments and proper coursework."

When asked about her approach, Professor Vazquez noted, "I do not treat Richard any differently than my Ph.D. students, other than to give him more time for courses." Since Richard has a degree in Biology, he must now take engineering pre-requisites to satisfy the requirements of the Biomedical Engineering program.

"When he is taking engineering pre-requisites, I give him problems to work on each week and we sit and discuss their solutions as prep for his exams," said Vazquez. "He presents his results at the weekly lab meeting along with all other students, and talks with me more individually each week for an hour, in addition to impromptu meetings each day in the lab."

Professor Vazquez commended the Bridge program for preparing students for doctoral level research and responsibilities, and moreover, for giving students "early exposure to working in groups of different technical and ethnic backgrounds, which helps students learn to communicate more clearly with all types of researchers."

National Science Foundation's J.A.M. 2005

By Rasheen Allen

"I AM THE BEST OF THE BEST!" That recurring mantra by Dr. John Hairston of NASA's Glenn Research Center, who spoke on behalf of the venerable Congressman Louis Stokes, stirred up the crowded ballroom of the Washington DC Grand Hyatt hotel. The 2005 National Science Foundation's Joint Annual Meeting — aptly acronymed as J.A.M. — was a two-day conference jammed packed with interesting speakers and informative activities. Congressman Louis Stokes was not able to attend due to illness; however, he addressed the audience via a prerecorded video message, and his daughter was on hand to accept an award on his behalf.

The conference, held on April 25th and 26th, was the first conference attended by many of the New York City-LSAMP Bridge to the Doctorate scholars. The consensus among the students was overwhelming approval of the event, including the speakers, the role-play session, the hotel accommodations, and especially the cuisine. Simply seeing, meeting and greeting, and talking with other LSAMP students from all over the country was a genuine experience: realizing that many other students are steeped in similar academic struggles, provided additive emotional support for each individual student.

The first day of the conference began with riveting speeches from Dr. Donald E. Thompson, and Dr. Arden L. Bement (Director of NSF), and Congresswoman Eddie Bernice Johnson. Congresswoman Johnson urged all the students, faculty, project administrators, and donors in attendance to "REACH BEYOND REACH!" She also stated that the government must become fully invested in this new paradigm of academic inclusiveness.

Subsequently, all the Bridge to the Doctorate students, from around the country, attended one of the many cross-cutting thematic sessions and workshops provided for students and administrators. The session for the Bridge students assembled students from the different states into small groups, inviting us to get to know and talk with new students and to brainstorm on the broad skill sets that graduates should have at their disposal. Our group, and other groups, came up with myriad skills such as: communication and networking skills, multidisciplinary and interdisciplinary knowledge, teaching and explanatory skills, and self-promotion and marketing skills.

The afternoon ended with speeches from Dr. Thomas Windham the Senior Advisor of Science and Engineering Workforce at NSF and Dr. Lawrence Scadden, who gave a fascinating speech about his struggles as blind person in academia. Dr. Scadden, blind from early childhood, was able to overcome the negative stereotypes against people with disabilities and forge ahead.

On the second day of the conference there were two fantastic talks by Dr. Margaret E.M. Tolbert of the Office of Integrative Activities and Dr. Patricia Clark Kenschaft, a professor of Mathematics at Montclair State University, who provided discourse on "Who Does Math?"

Simply seeing, meeting and greeting, and talking with other LSAMP students from all over the country was a genuine experience: realizing that many other students are steeped in similar academic struggles, provided additive emotional support for each individual student.

The most memorable and most exhilarating activity of the second day — and perhaps the entire conference — was the role play skits performed by the Center for Research on Learning and Teaching (CRLT) of the University of Michigan. The two actresses, Tracy Green and Alex Davidson, performed three scenes in which an unwitting student, played by Alex Davidson, tried to find a professor, played by Tracey Green, to be her faculty advisor. The two women were steeped in the roles and did not break character when fielding questions from the hysterical audience during the interim in between each scene. The synopsis of the skit was that the professor was too busy with her other duties and did not want to or was not able to provide proper mentorship to the student, but because of their lack of communication they ended up getting into awkward scenarios.

After the skit, most of the audience started to file out and make there way back to their rooms to get ready to travel back to their respective states. Each person in attendance, especially the students, left with profound appreciation of the conference and the mission of the National Science Foundation.

Ms. Marcia Williams, the Coordinator of the North Caroline-LSAMP at N.C. State A&T University, stated, "The 2005 Joint Annual Meeting was one of the best I have attended. Our alliance is privileged to have been funded for the first two cohorts of the Bridge to the Doctorate program, so we had student representatives from each cohort in attendance. They gained a greater understanding of the magnitude of the LSAMP program, and more specifically the Bridge to the Doctorate program, by interacting with graduate students from throughout the United States who are

Continued on next page

Broadening Participation (con't) - Doctoral Parity Ratio

Continued from page 2

URMs with whites, the "majority" group, on a per population basis using **bachelor degree** and **doctoral degree parity ratios**.

The **bachelor degree parity ratio** is 100% when URMs receive the same number of S&E bachelor degrees per population of 24 year-olds, as do whites. Age 24 represents the average age of college completion.

The **bachelor degree parity ratio** is increasing in most fields, but is still less than 60% in all fields. In 2001 the ratio was 43% for natural science and engineering fields. In other words, on a per population basis, URMs received 43% as many NS&E bachelor's degrees as did whites in 2001.

Our findings demonstrate that slow increases in the bachelor's parity ratio are influenced by demographic changes among 24 year-olds. The population of 24 year-old whites dropped precipitously in the 1980's and 90's, a decrease of about one million or 31%. During this period, the population of URMs remained relatively stable. Over the next four decades we expect the population of whites to continue its decrease, though less dramatically, and the population of URMs to increase dramatically.

THE BACHELOR'S PARITY RATIO=

$$\frac{\text{Number URM bachelors degrees received/24 yr old URM population}}{\text{Number White bachelors degrees/24 year old white population}}$$

We developed the **doctoral degree parity ratio** to answer the question, "For a particular group, what percentage of bachelor's degree recipients goes on to receive PhD's?" We divided the number of doctoral degrees conferred by the number of bachelor's degrees conferred eight years earlier because eight years best represents the average time from bachelor to PhD degree completion. We recognize that this statistic does not exactly answer the question since some people change fields for their doctorate however, it is a close approximation. When the doctoral parity ratio is 1.0, the percentages of URM and white bachelor degree recipients that go on to receive a PhD is equal.

THE DOCTORAL PARITY RATIO=

$$\frac{\text{Number URM doctoral degrees/Number URM bachelor degrees received 8 years earlier}}{\text{Number White doctoral degrees/Number White bachelor degrees received 8 years earlier}}$$

From 1985 - 2003, the NS&E doctoral parity ratio increased from 50% to 63%. In other words, among bachelor's degree recipients, 63% as many URMs go on to receive PhDs as do their white counterparts. These analyses allow us to recognize a double –filtration system along the path to receiving the PhD. On a per population basis, fewer URMs earn bachelor's degrees, and fewer URM bachelor degree recipients earn PhDs. This is not the case in social science and psychology. There the bachelor's parity ratio is 55-60 per cent and the doctoral parity ratio is near 100 percent. Thus, while we can note some progress, we can see more clearly that promoting equity calls for our continued attention to progress at the undergraduate level, the transition from a bachelor's degree to graduate school, and the graduate school experience.

NSF J.A.M. 2005 (con't)

Continued from last page

pursuing the same goals."

Dr. Antonio A. Garcia, of the WAESO LSAMP at Arizona State University, declared, "The JAM '05 conference reinvigorated my commitment to expand opportunities for underrepresented students in STEM, and it had a profound impact on the twenty graduate students we brought to the conference. It was also an excellent forum to keep in touch with our colleagues from around the country who are making great things happen for their students."

Lastly, Christopher Miller, Program Director of H-LSAMP at the University of Houston, said, "The NSF Joint Annual Meeting is a wonderful opportunity to interact with NSF funded programs nationwide and build stronger collaborations that promote the objective of diversifying the STEM fields. Principal Investigators and Program Directors get the chance to come together to share 'best practices' and learn how to overcome similar problems faced on their respective campuses."

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Dr. Antonio A. Garcia (WAESO LSAMP Arizona State University)

In total, the conference was a complete success, and everyone involved learned a great deal more than what they came into the conference with beforehand.

LSAMP Activity Coordinator Profile: Rasheen Allen

Rasheen is a graduate of the Prep for Prep program (Contingent XIII), which annually accepts one hundred and fifty gifted minority students at the end of fifth grade. Prep for Prep provides fourteen months of enrichment learning in all subject areas. Upon completion of Prep for Prep, he was admitted into the Birch Wathen Lenox School, and on graduation, attended Manhattan College. He earned a Bachelor of Science degree in Biology. At Manhattan College during his freshman year, he interned at the NY Botanical Garden's Herbarium, and became fascinated with plants. Rasheen has served as intern, employee, volunteer and researcher at the NY Botanical Garden over the last five years. He has gained a respect for the Plant Sciences — at all levels — and has initiated curiosity for Plant Science in people of all ages.

His research at the New York Botanical Garden's Herbarium was supervised by Dr. Michael Nee, who is a both a curator at the Botanical Garden and a Professor at Lehman College. Under Dr. Nee's tutelage, he conducted research on the genus Browallia of the Solanaceae plant family, and performed a preliminary taxonomic revision of all the species and synonyms of Browallia.

Ever since I was in middle school, I have had a strong affinity for two areas of study: science and history. History is essential because it is important to study the events that have shaped and influenced the course of human development, and science, because it is innovative and paramount to directing the future of human development.

Rasheen is currently pursuing a Masters degree in Biology at Lehman College of CUNY, and is the LSAMP Activity Coordinator of Bronx Community College. His goal is to pursue a doctorate degree in Plant or Environmental Sciences, focusing on the effectiveness of plants and their chemical components in combating diseases such as cancer and for maintaining health. He also has a great passion for writing, and is a contributing writer for The Meridian newspaper (Lehman College), the Norwood News (a community newspaper in the Bronx) and the NYC Alliance News.

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