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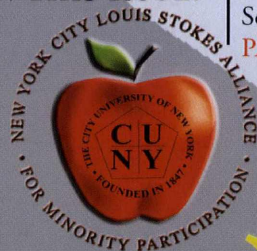
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new york city alliance NEWS

Volume XIII
Issue II
April 2006

Vision of the National Science Foundation



Visioning exercises are a useful set of activities in any enterprise. Companies do it periodically, professional organizations, foundations, non-profits and even nations do it. It allows us to take stock of where we are, look back at the historical pathway, and with input from participants, map out a plan of where we see ourselves ten, twenty or even fifty years in the future. Participants in the visioning exercise are often not alive at the end of the visioning period. It is the progeny who will reap the benefits or feel the pain of the results of the visioning exercise once implemented.

It is gratifying to see the results of the Urban Institute study (see page 3 of this issue) after fifteen years of Louis Stokes Alliance activities across this nation. I applaud the National Science Foundation for their vision of the Louis Stokes Alliance. The visioning exercises that we engage in as LSAMP Project Directors and Managers must also be shared by the LSAMP faculty and student participants, as well as the Colleges and Universities that participate. We must envision these participants as future graduate students, post doctoral research associates, faculty members (our colleagues) and participants throughout the STEM enterprises of this country.

However, I am not convinced that at the graduate level, a majority of faculty members who advise, and educate our undergraduate students see the LSAMP graduates (or any other underrepresented minority student) as a student they will recruit and graduate with a Doctoral degree. I am not convinced that they see them as future colleagues sitting in the office across

Revitalizing the Nation's Talent Pool in STEM

From the Executive Summary

National comparison

In order to examine the difference between LSAMP student outcomes and those of STEM graduates nationally, LSAMP graduates' progress in the STEM pipeline was compared with that of nationally representative samples of underrepresented minorities and white and Asian students (using longitudinal data from NSF's National Survey of Recent College Graduates). Analyses revealed that LSAMP participants pursued post-bachelor's coursework, enrolled in graduate programs, and completed advanced degrees at greater rates than did national comparison groups. The difference in graduate school enrollment and completion is largely due to the significantly higher percentage of LSAMP students pursuing and completing degrees in STEM fields. In terms of the final phase in the STEM pipeline, LSAMP participants were observed joining the STEM workforce in proportions similar to those of national samples.

*A report prepared by the Urban Institute for the National Science Foundation
Directorate for Education and Human Resources.*

continued on page 3

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New York City Alliance News

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The New York City Louis Stokes Alliance for Minority Participation is funded under a cooperative agreement with the National Science Foundation.

the hall, and serving on the P&B committees with them. If this was a part of their visioning exercise, we would not continually hear the refrains- 'we cannot find qualified minority graduate students', 'we do not have financial support available for the minority students', and 'I am waiting for a student from (pick a country)'. I would also not be approached as frequently as I am with requests for support of "the" African American, Native American, Hispanic, Native Pacific Islander or Alaskan Native student.

The vision of broadening participation seems not to extend to the LSAMP and AGEP pools of success. Recruiting and financial support for "the" African American, Native American, Hispanic, Native Pacific Islander or Alaskan Native student appears not to enter into the equation. The vision of whom we recruit for graduate study with the nations resources who does graduate research is firmly fixed overseas (pick a country). The results of the Urban Institute study should move us to create more pools from which we recruit, and provide opportunity and resources.

On My Mind

At Minority Serving Institutions (MSIs) that offer graduate degrees in STEM, specialized programs in STEM, or operate Centers and Institutes funded primarily because of the level of the enrollment of underrepresented students, we must be vigilant in ensuring that the vision remains intact. These funded entities must be held to the same or even higher standard compared to the non-MSIs.

An enterprise at a MSI such as CUNY, (seven colleges of which enjoys Hispanic Serving Institution (HIS) status, and two of which enjoy Historically Black College and University status (HBCU)), must ensure that fifty or more percent of the graduate students recruited are African American, Native American, Hispanic, Native Pacific Islander or Alaskan Native student. Education and Outreach must be synonymous with participation at every level. The existence of these programs do not necessarily mean that African American, Native American, Hispanic, Native Pacific Islander or Alaskan Native, this underrepresented group of students, are actively being recruited and trained at any appreciable rate to have any impact on broadening participation. We must be recruiting and training a 'posse' of these youngsters on a sustained basis. When we here at CUNY recruit international students, we do not do so one student at a time and assume that he/she will have difficulty with completing or will not complete a doctoral degree at our institution. The assumption at the onset is that all of these students will receive a doctoral degree. Perhaps this assumption is instinctively rooted in the notion of an 'investment'.

Competitive packages, similar to those received by NSF Graduate Fellows, must be offered, and recruitment must begin at home at American colleges and universities in our classrooms. That student must be provided with a full package of support, tapping into all resources of the university, rather than primarily the limited number of targeted support programs for minority students. Any strategy short of this is a strategy for failure in satisfying not only the overall national requirements, but also the broad participation in the STEM workforce, so essential for global competitiveness.

Revitalizing the Nation's Talent Pool in STEM

Key Student Outcomes: Graduate School Enrollment and Degree Completion

The figure shown below presents the most critical student-level outcomes measured, and clearly conveys the differences in the “pipeline” progression of LSAMP participants versus participants in comparative URM and white and Asian samples.

The data show that about 80 percent of LSAMP students took further coursework after completing their bachelor's degree, compared with about 60 percent of comparison URM and white and Asian students. Similarly, a larger proportion of LSAMP participants pursued graduate degrees (66%) than is true among the comparison groups (45%). Lastly, about

45 percent of LSAMP students completed graduate degrees, while this was true of about 20 percent of national URM and white and Asian bachelor's degree holders.

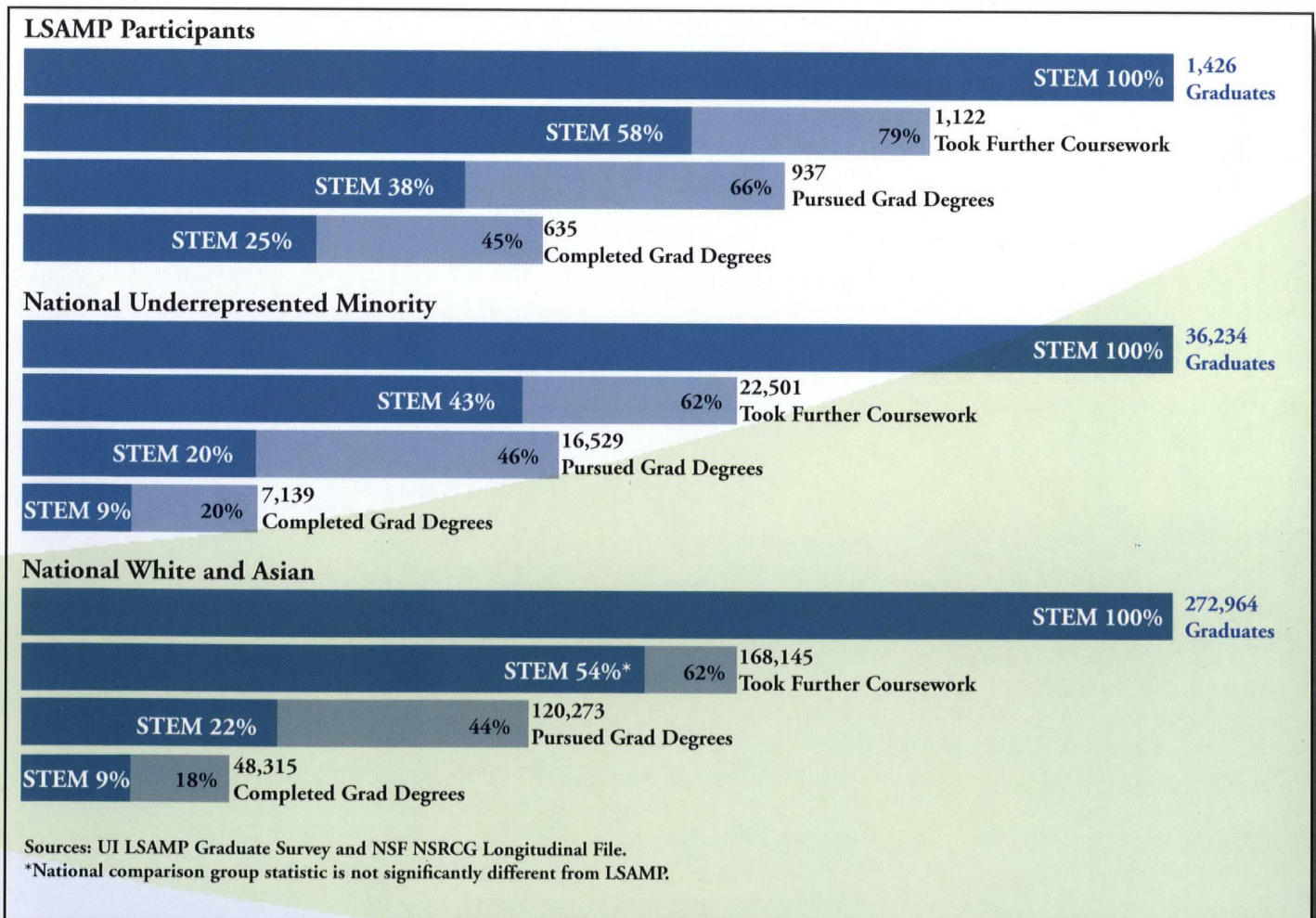
Analyses of these same data by field of studies shows that LSAMP participants, while as likely as whites and Asians to pursue further coursework in STEM, outperform this comparison group as well as URM in terms of graduate degree enrollment and completion in STEM. Thirty-eight percent of LSAMP participants enrolled in STEM graduate degrees, compared to about 20 percent of comparison groups. In addition, 25

percent of former LSAMP students completed graduate degrees in STEM, versus about 9 percent of graduates in comparison groups.

These results reveal a striking difference in the progression of LSAMP participants versus national URM and whites and Asians going through the STEM pipeline. This difference, in favor of LSAMP, is perceived at each step—in pursuit of post-undergraduate coursework, in enrollment in graduate programs, and in completion of graduate degrees, overall and in STEM fields.

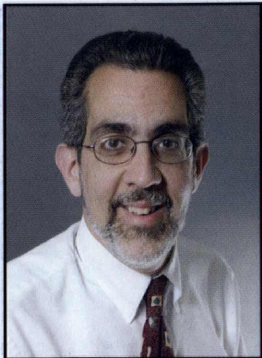
Reprinted with permission of the Urban Institute

Graduate Coursework, Degrees Pursued and Degrees Completed



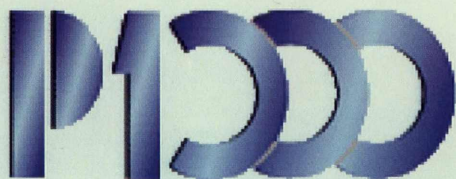
Transitions 2006

Antonio Agustin Garcia



Dr. Antonio (Tony) A. Garcia is Interim Associate Dean for Academic Affairs and Professor of Bioengineering in the Ira A. Fulton School of Engineering at Arizona State University where he has focused on designing and characterizing surfaces and colloids for diagnostic devices and biomolecule separation. He obtained a doctorate in Chemical Engineering from the University of California, Berkeley and a bac-

calaureate in Chemical Engineering from Rutgers University, New Brunswick. His industrial experience includes a position as Project Engineer in the Synthetic Fuels Division of Exxon Research and Engineering and as a Research and Development Engineer at Eastman Kodak Life Sciences Laboratories. His work has been published in a wide variety of chemistry, engineering, and biology journals including *J. of Physical Chemistry*, *I&EC Research*, and *J. of Microbiological Methods*. He co-authored the textbook *Bioseparation Process Science* (Blackwell Science). Dr. Garcia is also actively involved in education and human resource projects aimed at improving math, science, and engineering education as well as meeting the demand for a technological workforce as the nation's demographics changes. He was Associate Editor of the *Journal of Research in Science Teaching* 2003-2005 and co-project director of National Science Foundation programs to enhance opportunities for undergraduate and graduate students in science, math and engineering. His educational efforts in collaboration with faculty in the Colleges of Liberal Arts and Engineering were featured on the cover of *Journal of Chemical Education* (September 2000 issue). Recently, his work with colleagues in engineering and sciences on combining surface chemistry and fractal texturing in order to move water drops using light was featured in *Science News* (August 2004). As a member of the international industry/university research consortium known as the Interdisciplinary Network of Emerging Science and Technology (INEST), he has been working to develop nanoscale, "smart" materials that can control biological fluid motion for detection and deliver genes.



Project 1000

Project 1000/MGE@MSA is a national program with two components. The Project 1000 program assists underrepresented minority students (specifically Native American, Hispanic and African-American) with the application process for graduate school. By completing Project 1000's electronic application,

students can apply to 7 of the 90 participating universities at one time. In addition, Project 1000 offers GRE fee waivers, a toll-free number and academic advisors to assist students with the application process. The MGE@MSA component is geared towards underrepresented doctoral students in the

sciences, engineering and mathematics. MGE@MSA students are provided with faculty mentoring, stipends and travel funds for professional conferences. For more information on either Project 1000 or MGE@MSA, please call our toll-free number at 1-800-327-4893.

NEESinc.

The National Science Foundation created the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) to improve our understanding of earthquakes and their effects.



NEES is a shared national network of 15 experimental facilities, collaborative tools, a centralized data repository, and earthquake simulation software, all linked by the ultra-high-speed Internet2 connections of NEESgrid. Together, these resources provide the means for collaboration and discovery in the form of more advanced research based on experimentation and computational simulations of the ways buildings, bridges, utility systems, coastal regions, and geomaterials perform during seismic events.

NEES will revolutionize earthquake engineering research and education. NEES research will enable engineers to develop better and more cost-effective ways of mitigating earthquake damage through the innovative use of improved designs, materials, construction techniques, and monitoring tools. This research can also help prevent infrastructure damage from other natural disasters and from terrorism. Preparing for and protecting against these threats makes American communities more resilient and enhances their ability to meet the challenges posed by future disasters.



With funding from NSF, NEES will operate for ten years (October 1, 2004 - September 30, 2014). The program is managed by the nonprofit NEES Consortium, Inc. (NEESinc).

NEES opens the field of earthquake engineering research to a broader and more diverse community by:

- Providing access to the world's largest and most advanced experimental facilities for performing earthquake engineering experiments
- Operating an IT infrastructure capable of integrating lab experiments with computer models
- Motivating the research community to collaborate with distant colleagues using a shared, web-based environment
- Fostering the open exchange of data and information among researchers and practicing engineers through shared, web-accessible repositories
- Creating active programs of education and outreach committed to improving seismic safety

The NEES program includes four core components:

- NEES Equipment Sites - large-scale, shared-use facilities for conducting earthquake engineering research
- NEES IT Infrastructure - advanced IT providing facilities for remote access to the Sites, shared access to data, and other features designed to support distributed collaboration
- NEES Consortium, Inc. - community-based consortium representing the interests of the earthquake engineering research, education, and practice communities
- NEES Research Projects- collaborative research efforts that make use of NEES's unique facilities (projects are selected by the National Science Foundation using a competitive, peer reviewed process)

NEESinc Research Experiences for Undergraduates (REU) Summer 2006

The National Science Foundation has approved NEESinc plans for a 10 week undergraduate research program this summer. Research locations include NEESit in San Diego, California and up to three more equipment sites across the country. Students will be involved in NEESR experimentation and will use the cyberinfrastructure for virtual meetings with cohorts. Travel includes participation in the NEES Annual Meeting in Washington, D.C. in June, as well as the Young Researchers' Symposium in Bend, Oregon, in August. Final date for submission of application/materials is April 30, 2006. For more information contact Melanie Brown, Education & Diversity Coordinator at melanie.brown@nees.org, (530) 757-6337 Extension 126, and check here for updates.

Fourth NEES Annual Meeting

You are invited to join NEES in Washington, DC on June 21-23, 2006 for the Fourth NEES Annual Meeting. The meeting will bring together members of the extended NEES community to share ideas and information about activities underway in the research, education, and IT segments of the network. The theme of the meeting is Broadening Participation Throughout NEES. As part of this theme, there will be presentations on topics such as: collaboration with research organizations in the U.S., international collaboration, transfer of research results to practitioners, and outreach aimed at attracting groups that are traditionally underrepresented in earthquake engineering.

9th

Annual CUNY Conference in Science and Engineering

The Magnet-STEM/AGEP Program CUNY Graduate Center

Alliance for Graduate Education and the Professoriate (AGEP) Program, funded by the National Science Foundation, aims to increase the number of domestic students receiving doctoral degrees in the STEM disciplines in preparation for an academic career, with a special emphasis on population groups underrepresented in these fields.



*Gail Smith, Ph.D. Acting Assistant
Provost for the Office of Educational
Opportunity and Diversity Programs
The CUNY Graduate Center*



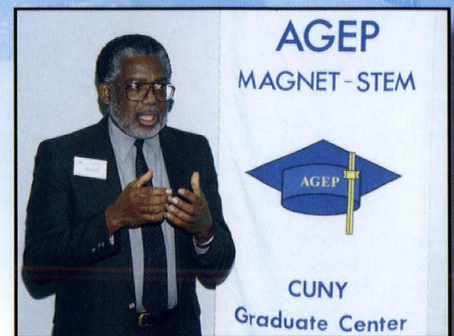
*Roosevelt Y. Johnson, Ph.D., Program Director,
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National Science Foundation*



*David Ferguson, Ph.D.
Distinguished Service Professor of
Technology and Society and Applied
Mathematics and Statistics
Stony Brook University
SUNY AGEP*

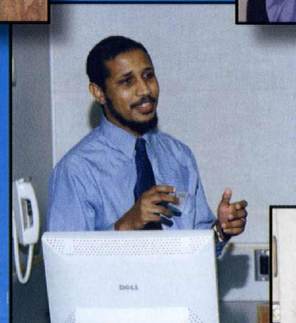
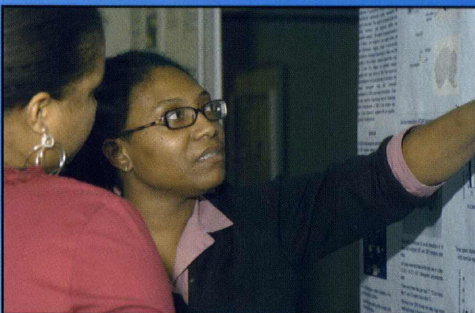
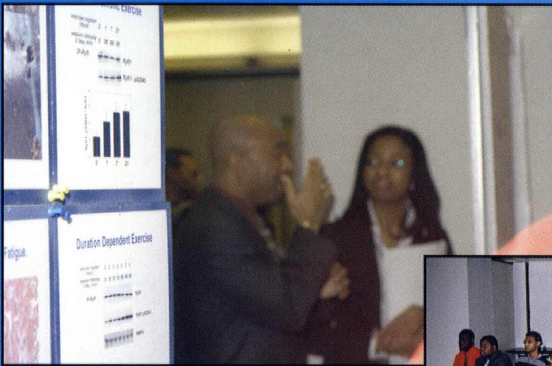
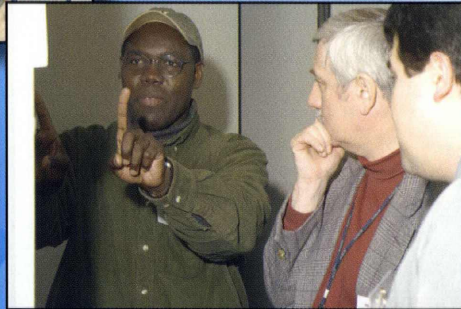
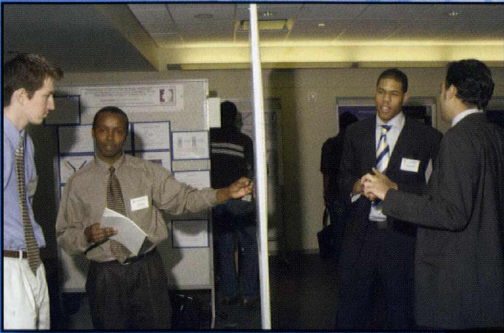


*Patricia Elizabeth White, Ph.D. Program
Director, Sociology and coordinator of the
Social and Political Sciences Cluster
The National Science Foundation (NSF)*



*Neville A. Parker, Ph.D., P.E. Project Director
The New York City Louis Stokes Alliance*





formance. For reservations, call 544-0403.

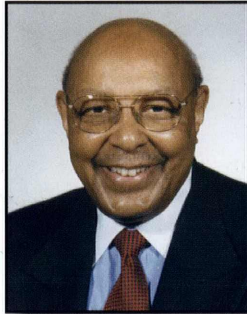
★ UPCOMING — The Palos Verdes Peninsula Unified School District and Friends of School Music host the 15th Palos Verdes Elementary

AMP NEWS

Words from Louis Stokes

occurred when the same families were on leave in the United States. For more information about the band, log on to www.linnisfreemusic.com.

“Science is so important because it’s knowledge that is basic to understanding life. I would say to students at Bronx Community College and across the country to learn everything you can learn and be the best of whatever you set your mind to accomplish,” says Mr. Stokes.



“During the 30 years I served in Congress, I learned of the dearth of minorities and African Americans in particular in science and engineering. Over a number of those years, I prodded officials to do more to increase the numbers and to take measures to recruit them. Addition-

ally, I became the advocate and sponsor of amendments to put money in these programs over and above that sought by NSF and the various Administrations.”

Mr. Stokes represented the 21st District, which later became the 11th, before retiring in 1999. During his career, Congressman Stokes lead pioneering efforts for minority health; the education of minority health professionals at the associate, undergraduate and graduate degree levels, upgrading of science and engineering infrastructure for research and

education at Historically Black Colleges and Universities and K-12 mathematics and science education programs focusing on state, urban and rural school districts with significant minority enrollments. Currently senior counsel for Squires, Sanders and Dempsey, an international law firm, and also on the faculty at the Mandel School of Applied Social Sciences at Case Western Reserve University in Cleveland, Mr. Stokes will be 81-years-old on February 23, 2006. *By Bryant Mason,*

“Science is so important because it’s knowledge that is basic to understanding life.”

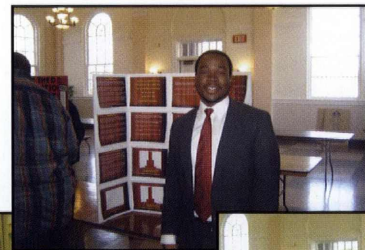
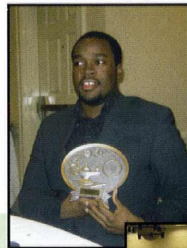
Media Specialist/College Relations, Bronx Community College

FGLSAMP Expo 2006

January 26-29, 2006 at Albany State University in Albany, Georgia



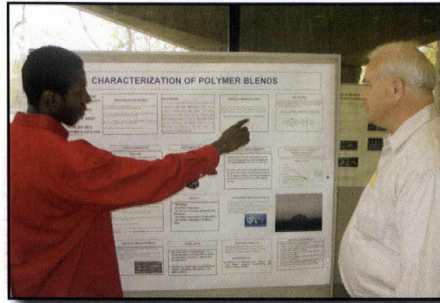
From L-R . Jonathan Blaize(CSI), Rajai Gooden(CCNY), Jose Cortes(CCNY), Thierry Desrosiers(NYCCT), and Adina Boyce(CCNY)



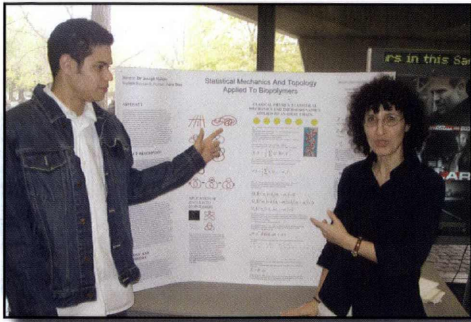
AMP Alumni Profiled

Dr. Sophia Suarez - Ph.D. Life: Surviving the Early Years

To view the article on line visit <http://sciencecareers.sciencemag.org>



Sikiru Lawal and Prof. Thomas Brennan presenting his research at the CTE week Math & Science Fair at Bronx Community College



Julian Diaz with Prof. Maria Psarelli presenting his research at the CTE week Math & Science Fair at Bronx Community College



Staff of the Office of Educational Programs and winter session participants at Brookhaven National Laboratory January 9-13, 2006

Student Responses - In Their Own Words...

In what ways do you think the NYC Alliance Program is important to your school?

"Without the program, many LSAMP students would not be aware of the opportunities available to them."

"The program is important because it helps create one-to-one interaction between student and faculty members at CUNY."

"The program is a great way to experience research before graduate school and make contacts with professors and students."

"The program may encourage students to have more interest in science, math and engineering-areas that are mostly seen by students as difficult."

"If we are not introduced to research experiences in the early stages of our undergraduate degree, our chances of going beyond a Bachelor's degree will be limited."

"It gives minority students a chance to excel and improve our position in society. The fields of science are dominated mostly by whites. The only way we can get minority students out in the field is by giving them the opportunity to take part in science."

"The LSAMP program is important because it puts emphasis on grad schools so that minority students do not see an undergrad degree as the ultimate goal."

“Electric Inspiration”

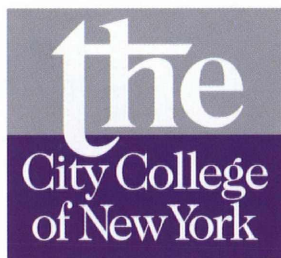
By Rasheen Allen

Most students develop their affinities for learning and academia when they are very young because many things pique their curiosity at an early age — Oluwatosin Ogunwuyi is one such student. While most young girls

her age were playing with dolls, she was rapt in learning how to fiddle with the electronic devices in her household.



Although her current research in satellite remote sensing is more complex, her intrinsic affinity for electrical devices began very simply as a child. “I was always fascinated by electrical devices, and as a child I loved to help my dad set up the appliances, such as the VCR, the stereos, and the computer,” said Oluwatosin. “I always saw the world as an electrical system; even the human body processes signals using veins, blood, neurons, and the brain in a similar way to electrical systems, which use wires, currents, and batteries.”



Oluwatosin has always been engrossed and enthused by the “creative potential that is available through the study of Electrical Engineering.” She attained her Bachelor of Science degree in Electrical Engineering from City College and is now pursuing her master’s degree in Electrical Engineering at the same institution.

She is afforded the luxury of having two mentors, Professors Barry Gross and Fred Moshary, to steer her in her research efforts. Her mentors have expertise in Remote Sensing and Photonics, and they help her to develop her programming skills and systems analyses techniques.

In her research, she is developing cost-effective methods for people to quantify and characterize population and other environmental aspects of their community, such as air pollution. This research is especially useful in poorer neighborhoods that have excessive air pollution and increased incidences of asthma and respiratory diseases, because it will now be feasible to quantify and characterize the ambient air to assess the level and type of pollutants in the air. Community leaders and activists can then take this hard data to Congress, or other legislators, to enact environmental policy changes in their neighborhoods, as opposed to simply speculating that the pollution may be hazardous to health.

Oluwatosin believes that research has helped her to develop many tools and skill sets that will have continued use throughout her career in academia and beyond. She is honored to have received the Bridge to the Doctorate fellowship, because it allows her to allocate her time and effort to developing sound academic and research skills, and provides an opportunity to network with peers and scholars, distinguished professors, and researchers at leading industrial facilities. Most importantly, Oluwatosin hopes to one day inspire the younger generation of scientists to pursue their passion for electronics as she continues to pursue her own.

“Why Buy the C.O.W.?”

By Rasheen Allen



Computers support, sustain, and perform myriad applications, so there is an increasing demand for faster, more powerful, and cost-effective computing technology that can handle all of these functions. Clusters of Workstations (acronymed as COW) are rapidly becoming more prevalent because they are a less expensive,

more practical alternatives to supercomputers and multiprocessor systems. Moreover, cluster computers are being utilized in many areas from “weather research to genome research.” Lori Collins is a Bridge to the Doctorate scholar who is researching this new wave of high-speed, high-performance computing technology.

In the discipline of Computer and Information Science, Lori Collins, a graduate student attending Brooklyn College, is working on her Master of Arts degree and researching in high-performance computing. She graduated from York College with a Bachelor of Science degree in Information Systems Management; and as a Carver Scholar, she assisted in creating and configuring a COW by using OSCAR-(Open Source Cluster Application Resources).

BROOKLYN



COLLEGE

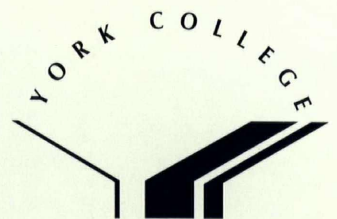
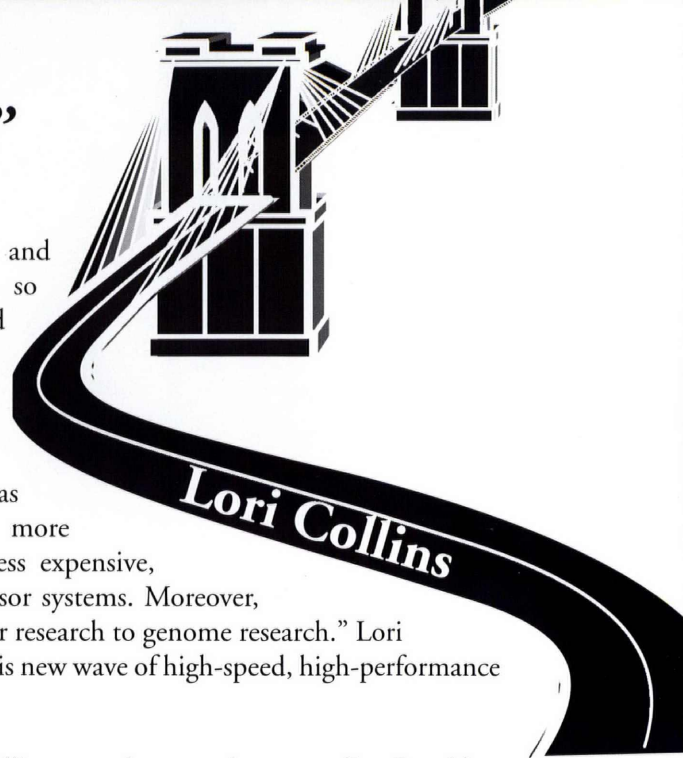
As an undergraduate at York College, Lori began delving into high-performance computers and had the opportunity to research at the Oak Ridge National Laboratory (ORNL), which is a multidisciplinary science and technology laboratory managed for the US Department of Energy in Oak Ridge, Tennessee. Researching at ORNL, she learned more about the fundamentals of cluster computing and parallel programming.

Cluster computing is a computing milieu that contains many workstations connected by a fast Local Area Network (LAN) or other specialized software, the resulting is known as a Network of Workstations (NOW) or better known as a Cluster of Workstations (COW). These computer networks function together in a cluster and can be thought of as single computer, allowing for faster network communication among workstations. Parallel programming is the synchronized execution of one function divided into smaller tasks on multiple processors. The theory behind parallel programming borrows from problem solving methodology, in which one larger computing task is divided into several smaller tasks and thus completed in less time.

At the graduate level, Lori is researching under the guidance of Professor Paula Whitlock of Brooklyn College, whose area of specialization is computer simulations, Monte Carlo methods, and development of random number generators for parallel computing systems. Their work is entitled “Improving Performance of Distributed Haskell in MOSIX Clusters.” MOSIX is a computer managing system that coordinates clusters to function like a single computer with many processors.

“[Professor Whitlock] is readily available to thoroughly discuss and help with my concerns about the research project,” said Lori about the guidance she receives from her mentor. “She provides me with ideas on how I can further my research progress.”

Lori remains exceptionally gratified about her acceptance into the Bridge to the Doctorate program, and she was pleased to have the opportunity to present and share her research at the International Conference on Computational Science in May of 2005 at Emory University in Atlanta, GA.

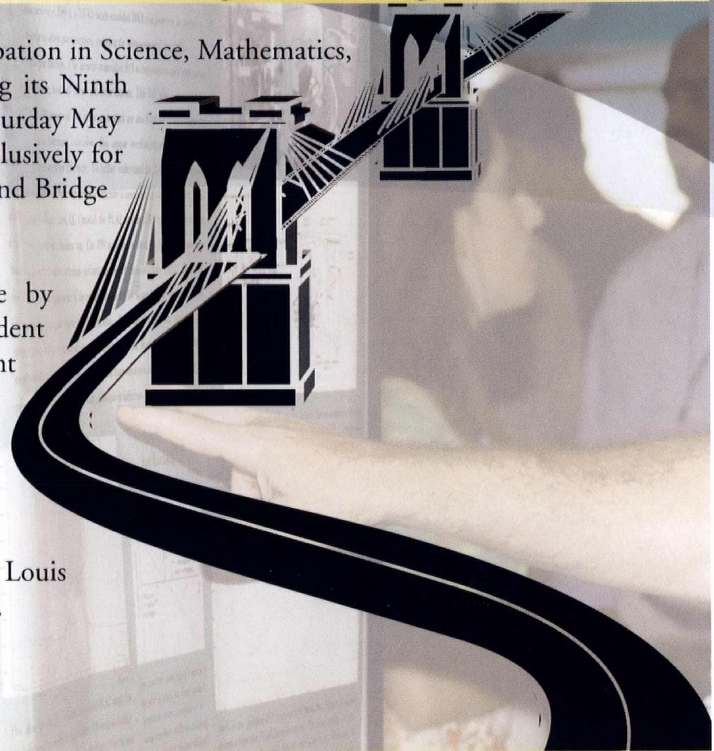


9th Annual Urban University Conference

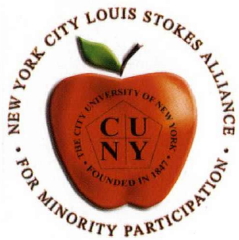
The New York City Louis Stokes Alliance for Minority Participation in Science, Mathematics, Engineering and Technology (NYC LSAMP), will be holding its Ninth Annual Urban University Conference on Friday, May 5 and Saturday May 6, 2006 at the City College. 'Transitions 2006' is an event exclusively for the NSF sponsored Louis Stokes Alliance Graduate Scholars and Bridge to the Doctorate Scholars.

'Transitions 2006' will highlight the research work done by LSAMP Graduate and Bridge to the Doctorate faculty and student teams. 'Transitions 2006' will also serve as a networking event and a forum for Bridge to the Doctorate Scholars to gather information and advice on Doctoral Programs, Graduate Fellowship Programs, and a career in the STEM disciplines on completing the Doctoral Degree.

For more information on 'Transitions 2006' contact the NYC Louis Stokes Alliance at 212-650-8854 or ampcc@cunyvm.cuny.edu.



Transitions 2006



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