

Expanding Opportunities

For Success in

Graduate Education and the Professoriate



**The National Science Foundation
Alliance for Graduate Education and the Professoriate
Magazine**

2000

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A Message from the Program Director Alliances for Graduate Education and the Professoriate (AGEP)

Roosevelt Y. Johnson, Ph.D.

The changing of the name of the Minority Graduate Education (MGE) program to the Alliances for Graduate Education and the Professoriate (AGEP) program signals a dramatic and significant shift in the National Science Foundation's (NSF) approach to significantly increasing the number of underrepresented minorities receiving doctoral degrees in science, math and engineering (SME). The name change also signals an expansion of the target objective to include increasing the number of underrepresented minorities entering the professoriate.

Alliance Strategy...

Funding of individual institutions by NSF over the past decade has not yielded significant increases in the number of minorities enrolling in and successfully completing doctoral programs. This lack of participation represents a tremendous loss of opportunity for minorities at a time when our Nation's desire to remain globally competitive in the SME arena places increased importance on developing a diverse human

resource pool from which to recruit.

The strategy of funding alliances, by contrast, has been very successful in the Louis Stokes Alliances for Minority Participation (LSAMP) program. There have been significant increases in the number of

“AGEP provides an opportunity for individual institutions to create more nurturing graduate environments without sacrificing the standards that have made graduate education in the United States the best in the world by many standards”

minorities earning baccalaureate degrees in SME that can be directly attributed to the LSAMP program. The effectiveness of the LSAMP program can be attributed to a variety of factors, including leveraging of shared resources, thinking creatively to produce more supportive and proactive undergraduate infrastructure, and committing to attain ambitious goals with respect to increasing baccalaureate production.

Similar approaches will be utilized in AGEP. AGEP provides an opportunity for individual institutions to create more nurturing graduate environments without sacrificing the standards that have made graduate education in the United States the best in the world by many standards. Millions of dollars

are now being invested by NSF in this effort to create an unprecedented community of institutions committed to acting cooperatively at the graduate level. AGEP provides an opportunity for participating institutions to leverage their resources with a community of other institutions sharing a commitment to enhance recruitment, retention, advancement and career success of students.

The creation of more effective lines of communication among AGEP institutions can lead to a degree of general synergy that, in turn, can be focused on areas of individual institutional need. The opportunities for programmatic cross fertilization and adaptation and implementation of successful strategies is limited only by the imagination, drive and administrative support among AGEP institutions.

AGEP has the potential for improving graduate education in ways that benefit all graduate students by coordinating previously unlinked academic activities, improving the quality of graduate support systems, expanding graduate education curriculum options, engaging a wider variety of academic partners, and improving the preparation of graduates for a broad-

er array of career options. These are challenging times for those institutions seeking more aggressive ways to increase diversity on their campuses. AGEP provides an invaluable set of tools to build institutional infrastructures to increase diversity at the graduate level and beyond. The best graduate education system in the world can be made better by making it more inclusive.

Attention to the Professoriate...

The lack of minority faculty role models has often been cited as a barrier to interesting more minority students in pursuing advanced degrees, and the career opportunities associated with those degrees.

Additionally, college faculties throughout the nation are facing an increase in the number of faculty retiring and approaching retirement. The replacement of collegiate faculty represents a challenge for college administrators and an opportunity for minority SME professionals prepared to enter the professoriate.

Activities within AGEP institutions directed toward enhancing the preparation of graduate students and postdoctoral professionals for faculty careers are timely, to say the least. As the demand for collegiate faculty increases, the advantages of students having specific preparation for faculty positions will become increasingly apparent. This is an area in which AGEP

institutions can have historical impact, both in the preparation of highly qualified minority faculty candidates and in the hiring of highly qualified minority candidates. Proactively increasing the diversity of AGEP institutions at the faculty level affords a unique opportunity to foster lasting cultural change in academe.

Opportunities to Link Programs...

AGEP is an important component in NSF's efforts to direct resources toward more effectively improving productivity

"AGEP provides an invaluable set of tools to build institutional infrastructures to increase diversity at the graduate level and beyond"

within the educational continuum from undergraduate through doctoral and beyond. Through cooperative efforts among NSF staff, AGEP will be linked to undergraduate efforts such as LSAMP to enhance recruitment strategies of AGEP institutions. The Centers for Research Excellence in Science and Technology (CREST) program, directed at building research infrastructure at minority institutions, is also a valuable source of talent that can be included in AGEP student recruitment and faculty development efforts. There are also other efforts within the NSF that are designed to address the integration of research and education. Linking of the AGEP community with the Integrative Graduate Education and

Research Training (IGERT) program community has exceptional potential for fostering collaborations that positively impact the overall health of the graduate education enterprise. Additional leveraging opportunities will be explored within NSF.

My colleagues at NSF and I will be seeking input from all interested sources in the development of the dynamic graduate education community that I have referred to in this document. I recognize the challenge presented by the lack of participation of minorities in SME at the graduate level. I also recognize the barriers that have contributed to that lack of participation. More importantly, I recognize the tremendous opportunity presented by

AGEP to remove those barriers and to increase minority participation in SME. Finally, I am fully aware of the need for cooperation and commitment on the part of all partners involved in the pursuit of our shared objective of significantly increasing diversity at all levels of SME.

I am reminded of a motivational poster that had the following anonymous message:

To come together is a beginning.

To stay together is progress.

To work together is success.

I look forward to our working together to make AGEP a success.

NSF Begins New Millenium with New People

The new millennium began with new leadership at the National Science Foundation (NSF). Dr. Rita Colwell replaced Dr. Neal Lane as Director in 1998, Dr. Judith Sunley replaced Dr. Luther Williams as Assistant Director for Education and Human Resources (Interim) in 1999, and Dr. Norman Fortenberry replaced Dr. Roosevelt Calbert as Director of the Division of Human Resource Development (Acting) in 2000. These changes are expected to bring new initiatives, new programs, and new directions to the Foundation.



Dr. Rita R. Colwell
Director

On August 4, 1998, Rita Rossi Colwell took office as Director of the National Science Foundation, an independent agency of the Federal Government that provides support for research and education in science, mathematics, engineering,

and technology. Immediately prior to becoming NSF Director, Dr. Colwell was President of the University of Maryland Biotechnology Institute and Professor of Microbiology at the University of Maryland, positions she had held since 1991 and 1972 respectively. While at the University of Maryland, Dr. Colwell also served as Director of the Sea Grant College and Vice President for Academic Affairs.

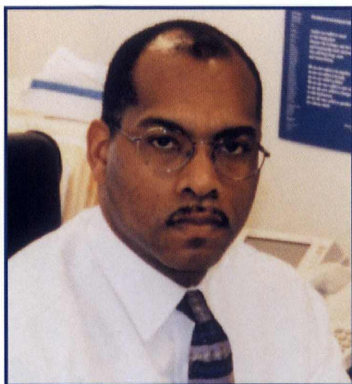
Dr. Colwell began her career as a Research Assistant at the University of Washington, where she also held the position of Predoctoral Associate and as Assistant Research Professor. She served as Guest Scientist at the National Research Council of Canada after earning her Ph.D. From 1963 to 1972, she was a member of the biology faculty at Georgetown University.



Dr. Judith S. Sunley
Assistant Director for the
Directorate of Education
and Human Resources
(Interim)

On August 15, 1999, Judith S. Sunley was appointed Interim Assistant Director for the Directorate for Education and Human Resources at the National Science Foundation.

Immediately prior to becoming NSF Interim Assistant Director, Dr. Sunley served as NSF representative to the National Science and Technology Council in the White House Office of Science and Technology Policy. She also served as Assistant to the Director for Science Policy and Planning. In this capacity, Dr. Sunley played a lead role in NSF's budgeting, planning, and program implementation. Dr. Sunley coordinated final stages in the development of NSF's 1995 strategic plan, *NSF in a Changing World* and Foundation implementation of the 1993 Government Performance and Results Act. Dr. Sunley served as co-chair of an interagency working group with the Department of Education charged with developing an action strategy for using key federal resources to assist states and local school systems in improving student achievement in mathematics and science.

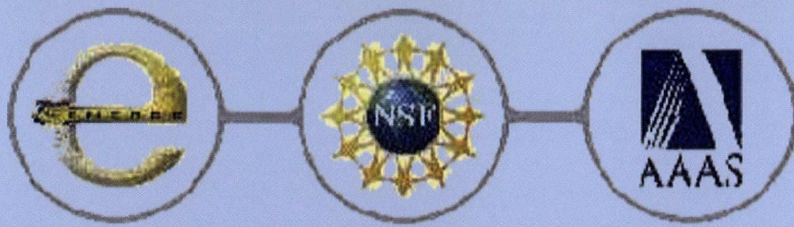


Dr. Norman Fortenberry
Acting Director, Division of
Human Resource Development

Since January 2000, Dr. Norman Fortenberry has served as Acting Division Director of the Division of Human Resource Development (HRD). HRD's mission is to promote efforts to increase the participation and advancement of underrepresented groups and institutions at every level of science, mathematics, engineering and technology (SMET) education and research. In addition, Dr. Fortenberry has been Division Director of the Division of Undergraduate Education (DUE) since November 1996. DUE serves as the focal point of NSF's agency-wide effort in undergraduate education. DUE's programs and leadership efforts seek to strengthen and ensure the vitality of undergraduate education in SMET for all students as they prepare for their futures as SMET professionals, K-12 teachers, technicians, civic leaders, and responsible citizens in an increasingly technological society.

Dr. Fortenberry also serves as NSF's Official Liaison to Community Colleges.

Dr. Fortenberry's previous position was Executive Director of the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (The GEM Consortium) after serving as Associate Program Director, Program Director, and Staff Associate in DUE from 1992 to 1995.



Workshop 2000

A National Dialogue to Increase Minority Participation in SEM

Workshop 2000 was held February 24-26, 2000 in Atlanta, Georgia, attracting more than 140 representatives from academia, government, and industry. The three-day event was organized by the Alliance for Empowering Minority Engineers to Reach for Graduate Education (EMERGE), the American Association for the Advancement of Science (AAAS), and the National Science Foundation (NSF), and addressed the plaguing issues surrounding underrepresented minority student education in technology disciplines.

With only three percent of the doctoral degrees in science, engineering and mathematics (SEM) being awarded to underrepresented minorities, the flow of minority students in the pipeline for SEM graduate degrees is barely a trickle. "The problem begins at the

very earliest stages of the education of young people and continues [through the education system] to produce the trickle of people that we see coming out of the doctoral pipeline and going into the professoriate," said Dr. Shirley Malcom of the AAAS and kick-off speaker at the workshop. "The solution is that everybody in that system has to do a better job of handing off to the next people in the system. Part of the problem is that the pieces are not articulated and there's very little feedback from one part of the system to the others," she said. "Everything is haphazard; there's no structure, no strategy, no overall plan or design that actually holds it all together."

An important goal of the workshop was to help bring about national strategic coordination of efforts toward increasing the numbers of underrepresented



Dr. Daryl Chubin (left), Senior Policy Officer of the NSF National Science Board, and Dr. Shirley Malcom of the AAAS gave plenary presentations during the workshop.

minorities graduating with SEM degrees. Workshop participants shared strategies currently being used with success in different parts of the country, discussed obstacles impeding growth, and identified opportunities for teaming. Student leaders from a number of universities also gathered in small sessions to chart ways in which student campus organizations could reach out collectively to younger minorities and encourage them to enter the SEM fields. Similarly, small group sessions comprised of professors considered ways in which they could more effectively network and encourage minority students to pursue advanced degrees.

The workshop was organized in concurrent sessions focusing on various constituencies of the education pipeline, specifically pre-college, undergraduate, graduate, post-graduate, and student leader groups, each working toward an implementation plan to increase minority students entering SEM fields.

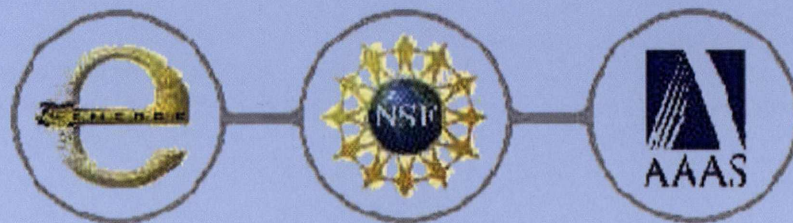
Represented among the participants in addition to university faculty and administrators were the Alliance for Minority Participation (AMP) directors and the NSF Minority Graduate Program (MGE) directors from across the country. The composition of attendees, with their connections to existing SEM alliances, enabled fruitful discussions on enhancing inter-alliance communication and collaboration. Particular emphasis was directed toward Web-based communication and a cyber network for minority SEM. Initially slated to be built around the existing MGE and AMP programs, the cyber network has been formulated (on paper) to help schools identify, recruit, and retain students in their programs. A host of implementation issues were vetted during the discussions, which included assuring confidentiality and privacy, establishing formats for information entry, web-

site organization, and compilation of materials.

Implementation and follow-through are key to realizing the intended results. The EMERGE Alliance is a national coalition of universities, organizations, and corporations committed to increasing minority graduation rates in SEM has agreed to take the lead in implementing the workshop recommendations and cyber network plans developed during the workshop.

The workshop also included presentations on the current minority graduate education research and presentations by foundation representatives on their perspectives of challenges for minority programs. Other noteworthy highlights were several keynote presentations by distinguished leaders from the Capitol. Dr. Daryl Chubin, Senior Policy Officer of the NSF National Science Board, began the first of the workshop keynote presentations with a captivating talk during the Thursday dinner. Dr. Arthur Bienenstock, Associate Director for Science in the White House Office of Science and Technology Policy, addressed the group during lunch with the message that greater minority involvement in SEM is crucial for all America. Congressman Vernon Elhers, Science Committee Vice Chairman, delivered a powerful mid-morning address, highlighting the national importance of SEM and diverse participation in these disciplines. Throughout the workshop the message was consistent and clear: we as a country must do better to involve our minority population in SEM, the economic future of the nation.

A follow-up workshop is being planned for next year, where the results of the implementation tasks undertaken this year will be disseminated to the SEM community on a large scale.

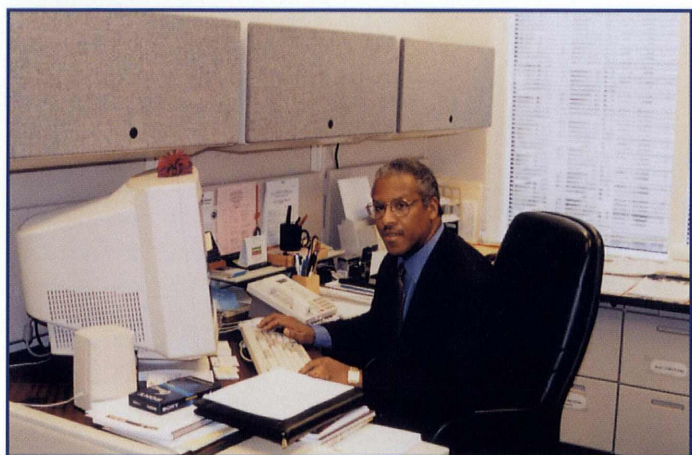


Roosevelt Y. Johnson - New Program Director in HRD

Louis Dale

Dr. Roosevelt Y. Johnson was appointed Program Director for the Alliances for Graduate Education and the Professoriate (AGEP) following Dr. Carolyn Myers, who left NSF to assume a position at North Carolina A&T University.

Dr. Roosevelt Y. Johnson was born in Spartanburg, South Carolina where he attended Carver High School. When he attended the first National Science Foundation Summer Science Institute for High School Students in 1958 at Virginia State College as an 8th grade student, he had no idea that he would have a successful career as a program director at the National Science Foundation.



Dr. Johnson at work in his office

He attended Howard University on a scholarship and majored in zoology with a minor in mathematics. His second brush with NSF was as an NSF trainee at Indiana University at Bloomington, where he earned a Ph.D. degree in microbiology. He held full and adjunct faculty positions at a number of institutions and Los Alamos National Laboratories before coming to NSF in 1989. He left NSF briefly in 1995 to serve as Deputy Director and Acting Executive Director of the National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM). Since 1997, Dr. Johnson has managed administrative operations in the Division of Undergraduate Education. The following interview with Dr. Johnson was held in his office at NSF.

Before coming to NSF, you were a successful minority scientist and faculty member teaching and engaging in research. What circumstances brought you to NSF?

There was a point in my career where I wanted to get more administrative and program management expert-

ise. I had participated on NSF Advisory Panels in biology, and was impressed with the strategic planning discussions that were invariably a part of the meeting agenda. When an opening became available to become a program director at NSF, I enthusiastically pursued the opportunity.

You have served in many capacities at NSF and you were recently appointed to the position of Program Officer for the Alliances for Graduate Education and the Professoriate (AGEP).

a. What have you enjoyed most about this job?

... The most satisfying aspect of this job is the opportunity to have an impact on national SMET policies and programs.... especially as they relate to increasing opportunities for inclusion of underrepresented minorities.

b. What do you see as the greatest challenge facing this program?

... I think the greatest challenge facing this program is the establishment of an effective community among the AGEP (MGE) institutions and collateral programs (inside and outside of NSF). The establishment of such a community is, in my opinion, essential to the implementation of successful and sustainable strategies to significantly increase the numbers of underrepresented minorities entering and excelling in graduate programs.

NSF has been an important force for positive change in science and engineering education at underrepresented minority and minority serving undergraduate institutions. The change in graduate institutions has been slower. The AGEP program is designed to increase the number of minorities earning Ph.D. degrees and entering the professoriate. What is your vision for the AGEP program in the year 2000 and beyond?

... My vision for the AGEP program is to link all AGEP programs with other programs at either end of the educational continuum. I envision AGEP projects interfac-



Dr. Johnson (far right) meeting with LSAMP group

Your formal training in higher education has been at Howard University and Indiana University. Who was your role model or mentor while you were attending these institutions?

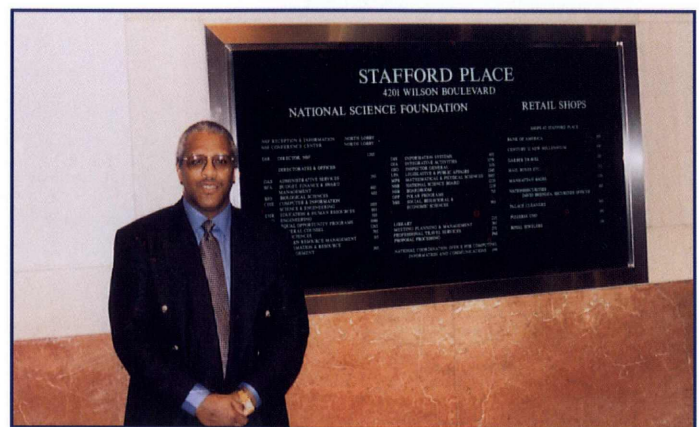
... At Howard University my primary role model was Dr. Harold Finley, former Chair of the Zoology Department and world renowned protozoologist. Dr. Finley saw graduate potential in me and allowed me to enroll in several of his graduate level research classes. This gave me an opportunity, as an undergraduate, to get first rate research experience, and introduced me to some of the significant differences between undergraduate and graduate education.

At Indiana University, Dr. David White, my research advisor, taught me how to move from being a student of science to being a scientist. He was a young, energetic scientist, and we learned the fine art of mentoring together.

During my postdoctoral training at the University of Washington (Seattle) I had the unique opportunity to have two advisors, both excellent mentors: Dr. Eugene Nester and Dr. Milton Gordon. Gene and Milt were outstanding role models with respect to professionalism and personal integrity.

What do you consider to be the greatest accomplishment of your career to date?

... I consider my greatest accomplishment to be the part I have played in the success of my students. It is so gratifying to know that one has played a part in the development of former students who have become successful in their careers and in their personal lives. Furthermore, to know that some of those former students have become mentors to others, because of my positive influence, is very satisfying.



Dr. Johnson in the lobby of NSF headquarters

ing with undergraduate producing programs (e.g., LSAMP, HBCU-UP, REU), other graduate oriented programs (e.g., IGERT, GANN), with each other, and with programs targeting the development of future faculty. I envision a network of SMET professionals drawing from each other's expertise and resources to create nurturing graduate and professional education environments that will become national models for the production of large numbers of outstanding minority professionals, changing the culture of graduate education in the process.

I think the greatest challenge facing this program is the establishment of an effective community among the AGEP (MGE) institutions and collateral programs (inside and outside of NSF)

You have first hand experiences regarding the problems faced by minority students in the quest for the Ph.D. degree. What advice would you give a minority student entering an AGEP institution who is interested in a successful career in science or engineering?

... I would advise any such student to do at least three things right away: 1) Identify one or more mentors who can give honest, knowledgeable information about the challenges that are about to be faced... establish a lifeline before a crisis arises, 2) Learn as much as possible about the graduate school culture as possible... talk to graduate students, postdocs, and faculty... study literature produced by minority-oriented organizations focused on making the transition from undergraduate to graduate school, and 3) Establish a solid relationship with a group of other graduate students... begin networking, organize study groups, and quickly integrate yourself into the graduate community. A student's intellect and aptitude are obviously important to his/her graduate school success, but the importance of quickly and fully acclimating to the graduate environment should not be underestimated in the pursuit of a successful career in science and engineering.

In Search of Structural Reform in Science, Mathematics and Engineering Graduate Education

Ginny Van Horne

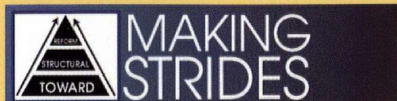
Although the demographics of the United States are becoming increasingly diverse with respect to race and ethnicity, we do not see that same level of diversity among the faculty and graduate students in the science, mathematics and engineering fields. The American Association for the Advancement of Science (AAAS) and the Commission on Professionals in Science and Technology (CPST) received a research award from the National Science Foundation's Alliances for Graduate Education and the Professoriate Program. Our goal is to identify and disseminate the successful strategies that lead to the increased representation and retention of African Americans, Hispanic Americans and Native Americans in science, mathematics, and engineering doctoral programs and careers, in particular, the professoriate. By identifying and disseminating these findings, we seek to stimulate the creation of a structural approach to support graduate education. Our work will build upon the ongoing research studies of AAAS and CPST in the area of SME graduate education, as well as upon the work of other researchers in this area. Our research design will be similar to those we used for Investing in Human Potential: Science and Engineering at the Crossroads (IHP) (AAAS, 1991) and Losing Ground: Science and Engineering Graduate Education of Black and Hispanic Americans (AAAS, 1998). A first-round of 1998-99 first-year graduate student enrollment data have been gathered from 65 Research I universities that had participated in our *Losing Ground* study. Preliminary analysis has been conducted. Findings from these data were shared at various conferences (e.g., NACME, WEPAN, SACNAS, IEEE, NoBCHE). Additionally, in partnership with the EMERGE Alliance, chaired by the Georgia Institute of Technology, and the National Science Foundation, we convened Workshop 2000: A National Dialogue to Increase Minority Participation in SEM in Atlanta February 24-26, 2000.

For more information on our AGEP program, please contact:

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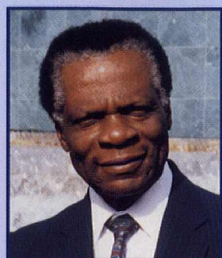
An explanation of our logo:



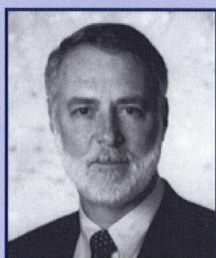
AAAS staff have tried, over the years, to convey symbolically a representation of the idea of structural reform in colleges and universities to better support Science, Math and Engineering (SME) minority students. This triangle was introduced in the 1991 AAAS publication Investing in Human Potential (IHP) as an elaboration of this notion of the evolution of program activity toward structural reform. We envisioned that projects would give way to programs and incorporation of practices that support the achievement of all students in SME. We saw this evolution in the many schools we visited in the IHP study and subsequently revisited as part of our *Losing Ground* study. Two other basic ideas imbedded in this symbol are the movement from the work of the individual faculty or staff member who is inspired by passion and personal commitment to the formation of a community that cares and supports its students – within a college, a department, and ultimately the entire university; and the movement from marginalized soft money efforts to support SME achievement, to the expenditure of regular hard dollars. As we make strides toward the top of this triangle, we learn from each other what works, under what circumstances, and to what end.

AGEP Award History

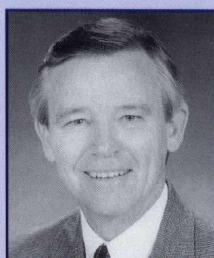
<u>Year</u>	<u>Alliance</u>	<u>Lead Institution</u>	<u>Project Director</u>
1998	Alabama	The University of Alabama at Birmingham	Dr. Louis Dale
	Georgia	Georgia Institute of Technology	Dr. G. Wayne Clough
	Florida	University of Florida	Dr. David R. Colburn
	Michigan	The University of Michigan	Dr. Earl Lewis
	Missouri-Columbia	University of Missouri-Columbia	Dr. Brandy Deaton
	Texas	William Marsh Rice University	Dr. David Auston
	Puerto Rico	University of Puerto Rico	Dr. Manuel Gomez
	Washington	Howard University	Dr. Antoine M. Garibaldi



Dr. Louis Dale



Dr. G. Wayne Clough



Dr. David R. Colburn

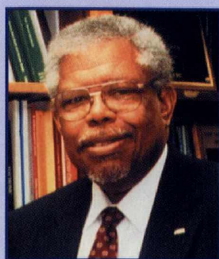


Dr. Earl Lewis



Dr. Manuel Gomez

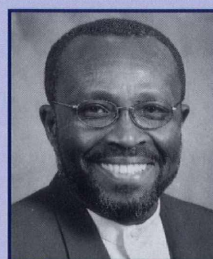
<u>Year</u>	<u>Alliance</u>	<u>Lead Institution</u>	<u>Project Director</u>
1999	Arizona	Arizona State University	Dr. Albert L. McHenry
	California	University of California-Berkeley	Dr. P. Buford Price
		University of California-Irvine	Dr. Ralph J. Cicerone
		University of California-San Diego	Dr. Martha Mecartney
	Massachusetts	University of Massachusetts	Dr. Richard Attiyeh
	Mississippi	University of Mississippi	Dr. Cora B. Marrett
	North Carolina	North Carolina State University	Dr. Maurice R. Eftink
	North Carolina	University of North Carolina at Chapel Hill	Dr. Debra W. Stewart
	New York, City	City University of New York	Dr. Henry T. Frierson, Jr.
	New York	State University of New York at Stony Brook	Dr. Gail Smith
			Dr. Robert McGrath



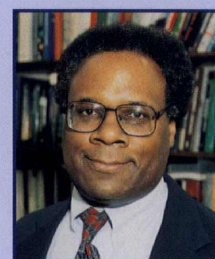
Dr. Albert McHenry



Dr. Gale Smith



Dr. E. Anthony Hurley



Dr. David Ferguson

ACCOMPLISHMENTS

ALABAMA

- Alabama AGEP published and distributed the first Annual AGEP magazine. The magazine provides an opportunity for individual AGEP projects to disseminate information regarding activities and accomplishments to the public.
- Sponsored a graduate school fair that attracted graduate program directors and students from around the country to review graduate school options. Graduate Program Directors displayed and distributed graduate school information as well as discussed financial opportunities for students. The Georgia Institute of Technology, University of Puerto Rico, and The University of Missouri /Columbia AGEP programs participated in the Fair.
- GRE Tutorial Program (Power Prep) was purchased and distributed to all Alabama AGEP institutions for student use.
- A number of undergraduate students traveled to professional meeting with scientist and mathematicians.
- Graduate Bridge Programs held at four Alabama AGEP institutions during the summer of 1999.

President of Morris Brown College; developing tutorial sessions to assist students in preparing for their comprehensive exams; and designing a summer program.

GEORGIA INSTITUTE OF TECHNOLOGY

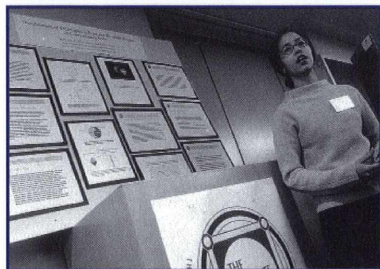
(FACES) is a collaborative effort between the Georgia Institute of Technology, Morehouse College, and Spelman College. The FACES program is comprised of several components, each of which addresses a critical step along the path to an academic career. Undergraduate students who have completed their junior year are provided summer and academic year research experiences as a means of promoting their interest in research and graduate school attendance. This year, 22 students from schools around the country participated in the summer undergraduate research program (see photo). These students, as well as other worthy candidates, will be encouraged to enroll in graduate programs using a series of recruitment efforts. Admitted graduate students are partially supported on doctoral fellowships throughout their matriculation through graduate school. This support is provided by means of a stipend which increases in value as the student meets the critical milestones along the way toward the Ph.D. degree. The first ten FACES Fellows were admitted into various engineering and science programs this fall. Finally, senior doctoral candidates at Georgia Tech can compete for \$20,000 career initiation grants which they may



use as start-up funds to assist them in establishing their research programs in their initial academic appointments. Three such grants were awarded this year. The recipients (and the institutions at which they will be teaching) are Dr. Comas Haynes (Florida A&M University), Dr. Mark Lewis (University of Michigan), and Dr. Joseph Owino (University of Tennessee, Chattanooga).

MAGNET-SEM REGIONAL NETWORK AT THE CITY UNIVERSITY OF NEW YORK

MAGNET-SEM at The City University of New York reports the following outstanding accomplishments: the identification of 35 students, some of whom will comprise the first cohort of NSF scholars (1999- 2000); monthly MAGNET roundtable meetings aimed at providing social, academic and personal support for every student; the creation of a CUNY MAGNET-SEM logo; the sponsorship of



two conferences at which students were able to present their research, the CUNY Pipeline Conference, "Imagining the Future Through Research," held on February 4, and the

CUNY Conference in Science and Engineering, "Challenging the 21st Century Through Science," with Dr. Anthony M. Johnson, Distinguished Professor of Physics at the New Jersey Institute of Technology, as keynote speaker, held on February 25; and a poster presented at the MGE science conference held in Atlanta on February 24-25. Other activities include actively recruiting our second cohort of students for the 2000-2001 academic year; sponsoring a Seminar on Mentoring to be held on March 17, featuring Dr. Howard Adams and Dr. Dolores Cross,

HOWARD UNIVERSITY

✓ MGE 1999 Summer Research Program

- 26 undergraduate students participated from Howard University Minority Graduate Education (MGE) Program Partner Institutions
- 10 of these students have been accepted into Science, Mathematics or Engineering (SME) doctoral programs (Fall 2000) at Howard University and have received a MGE Program Fellowship Award (tuition + \$75,000 stipend for five years)
- 30 faculty from SME departments at Howard Uni-

versity served as mentors

- Two students from Howard University MGE Partner Institutions have written articles for journal submission based on the research they conducted with their Howard University mentor during the MGE Summer Research Program:

Nandedkar, A. K. and Brown, J. D. (1999). The Occurrence of Certain Hemoglobinopathies in Washington D.C. and the Virgin Islands.

Walton, D. and Roman-Nieves, J. (1999). Characterization of an Avalanche-Pumped Upconversion Fiber Laser.

✓ MGE Fellowship Program

- supporting 27 graduate students in SME doctoral programs at Howard University
- 12 faculty serving as MGE Program Mentors
- developed a rigorous retention and mentoring program and begun the first phases of implementation
- established a resource room for MGE Graduate Fellows equipped with computer workstations, scientific & academic software and space for study group meetings

✓ MGE Partner Activities

- visited 12 Howard University MGE Program Partner Institutions
- conducted presentations on the rewards, myths and realities of an SME Ph.D. for over 200 undergraduate students
- developed strategies to strengthen the partnering relationship between Howard University and MGE Program Partner Institutions
- hosted two conferences at Howard University with MGE Program Partner Officials to focus on program outcomes and development



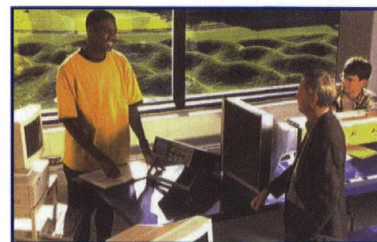
✓ Dissemination

- disseminated findings from the MGE Program at numerous national meetings this academic year
- shared lessons learned and promising practices with the National Science Foundation and other MGE Programs throughout the country
- created a website to promote the components of the MGE Program, provide additional information on the doctoral degree offerings within the Howard University Graduate School and to offer links to other SME related research and general resources

UNIVERSITY OF MICHIGAN

The University of Michigan offered 40 NSF-MGE fellowships during the 1998-99 academic year. Of those 40, 21 NSF fellows enrolled in SEM fields. That translated into a 34% increase in doctoral minorities entering SEM fields. Furthermore, there was a 50% increase in minority

Ph.D. graduates in SEM fields from '98 to '99. On the recruitment front, the Summer Research Opportunities Program (SROP) had 24 successful SEM participants.



We have set a goal of expanding SROP to 50 SEM participants in 2000. We are also excited to report that the Graduate School and College of Engineering have committed funding to expand the MGE efforts and recruit Ph.D. bound students at the Master's level.

THE UNIVERSITY OF CALIFORNIA-BERKELEY

The Berkeley Edge presents a new model for increasing diversity at the graduate level. The Berkeley Edge is a discipline-based model for underrepresented minority student outreach, recruitment, retention and advancement to the professoriate. The Berkeley Edge places a professional diversity officer in each SEM academic field to work directly with the faculty, students and staff at the departmental level, with oversight by the SEM deans.

The Berkeley Edge focuses on improving department and faculty culture to create environments conducive to SEM minority student success

The Berkeley Edge includes early identification and enrichment programs, including summer research opportunities, which enhance students' competitiveness and readiness for admission to Berkeley's SEM graduate programs

The Berkeley Edge intensifies Berkeley's nationally-focused minority graduate student recruitment, prioritizing linkages to HBCUs and minority serving institutions

The Berkeley Edge retains underrepresented minority students by providing funding, faculty mentorship, advising, academic support, professional development opportunities & services. And The Berkeley Edge advances underrepresented minority graduate students into the professoriate by emphasizing faculty mentorship and facilitating social and professional networks of scientists of color.

The Berkeley Edge establishes policies, practices, networks, experiential knowledge, and cultural changes that can be sustained for the long-term.

THE UNIVERSITY OF CALIFORNIA-IRVINE

Competitive Edge Program

- Begins summer prior to entering graduate school
- Research/academic courses for credit
- Pedagogical training seminars
- Faculty mentoring
- Cohort support activities

Mentored TA Training

- Gradual introduction to teaching including observations of master teachers (faculty)

- Small group seminars
- Videotaping and consultative feedback
- Preparation of a teaching portfolio

Five Years of Comprehensive Support

- First two years of teaching assistantship support
- Third and fourth year research fellowships
- Fifth year research or teaching assistantships
- Conference travel support
- Continuous mentoring/preparation for the professoriate

Portable Pedagogical Post-doc

- \$35,000 award for post-doctoral research
- Requirement to teach one course and participate in faculty meetings
- At a college or university with a potential faculty position for the FTP graduate

THE UNIVERSITY OF FLORIDA- FLORIDA A&M UNIVERSITY

The University of Florida-Florida A&M University Alliance for Graduate Education and the Professoriate program has taken significant steps in the first year to initiate institutional and cultural change that will be necessary to address the national need for greater diversity in faculty in the science and engineering fields. It has done so by implementing program elements that are producing changes in how science and engineering departments recruit and train these students. To date Alliance Fellowships have been awarded to students from five different institutions. In order to provide support mechanisms to facilitate the successful transition of these students into graduate school, they were encouraged to participate in the UF Board of Regents Summer Program that has been shown statistically to provide incoming minority graduate students with critical skills that facilitate a successful transition. One result of the successful Alliance recruiting efforts within the Materials Science and Engineering Department is that there is now a cohort of 4 Alliance students within one department to provide support for each other. In addition to Fellowships, the first year of the program has put into place program elements that will produce intangible, but critical results. Alliance scholars attend monthly meetings and mentoring relationships for them have been established. Alliance program managers believe that the key to the institutionalization of this program is the development of stronger person-to-person ties between the faculty at UF and FAMU. It is believed that these connections will ensure a continuation of properly prepared undergraduates seeking to enter the professoriate and research groups at UF prepared to accept them. A valuable expansion to the program underway in year 2 is to engage all of the schools participating in the Florida-Georgia Louis Stokes Alliance for Minority Participation



(FGLSAMP) in the program. The FGLSAMP project represents 13 institutions across Florida and Georgia and is currently preparing a large number of SEM undergraduate students. This expansion will allow the program to have a broader, statewide impact.

PUERTO RICO

MGE has provided 15 special fellowships to students who are PhD candidates in any of the five graduate programs participating in MGE. This year fifteen students were awarded fellowships on a competitive basis (10 from the Río Piedras campus and 5 from the Mayagüez campus). The criteria for selection were: career goals and potential, scholarly productivity, academic standing, and financial need.

The MGE program has created a web page (<http://web.uprr.pr/mge>) with general information, application forms, photos and news of past activities, and future activities announcements. Also, we have developed a logo, brochure, cover page, poster, press kit and other dissemination material.

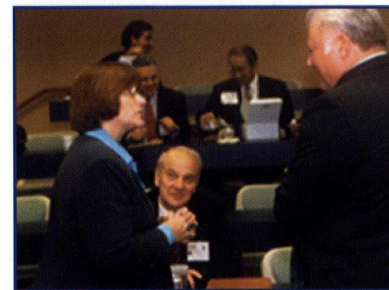


At the end of this academic year the Task Force will be evaluating the outcomes of this past year in order to modify or enhance the strategies.

RICE UNIVERSITY

NSF Summit Meeting on Promoting National Minority Leadership in Science and Engineering

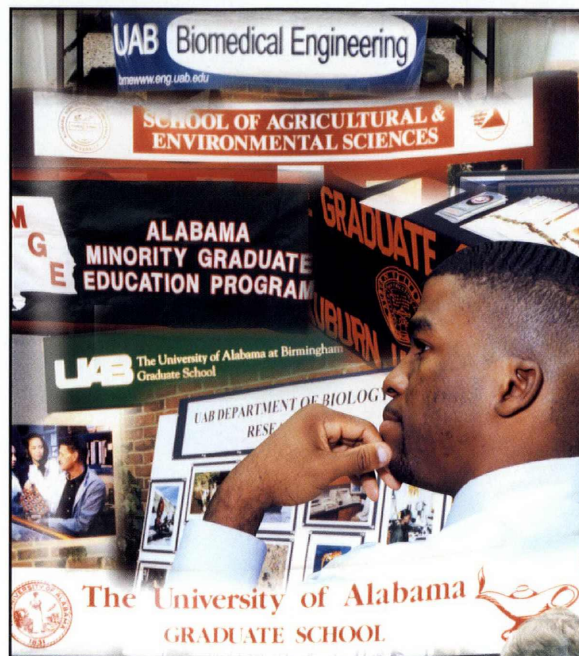
To address the problem of replacing the critically few senior minority national leaders, Rice University's AGEP hosted the NSF-sponsored Summit Meeting on Promoting National Minority Leadership in Science and Engineering, October 18-19, 1999 at Rice University in Houston, Texas. In attendance were national leaders charged with the task of creating and promoting an effective plan that universities, industry, government and funding agencies will embrace and implement. For more information on this conference, please visit <http://www.crpc.rice.edu/CRPC/LEADCON/>.



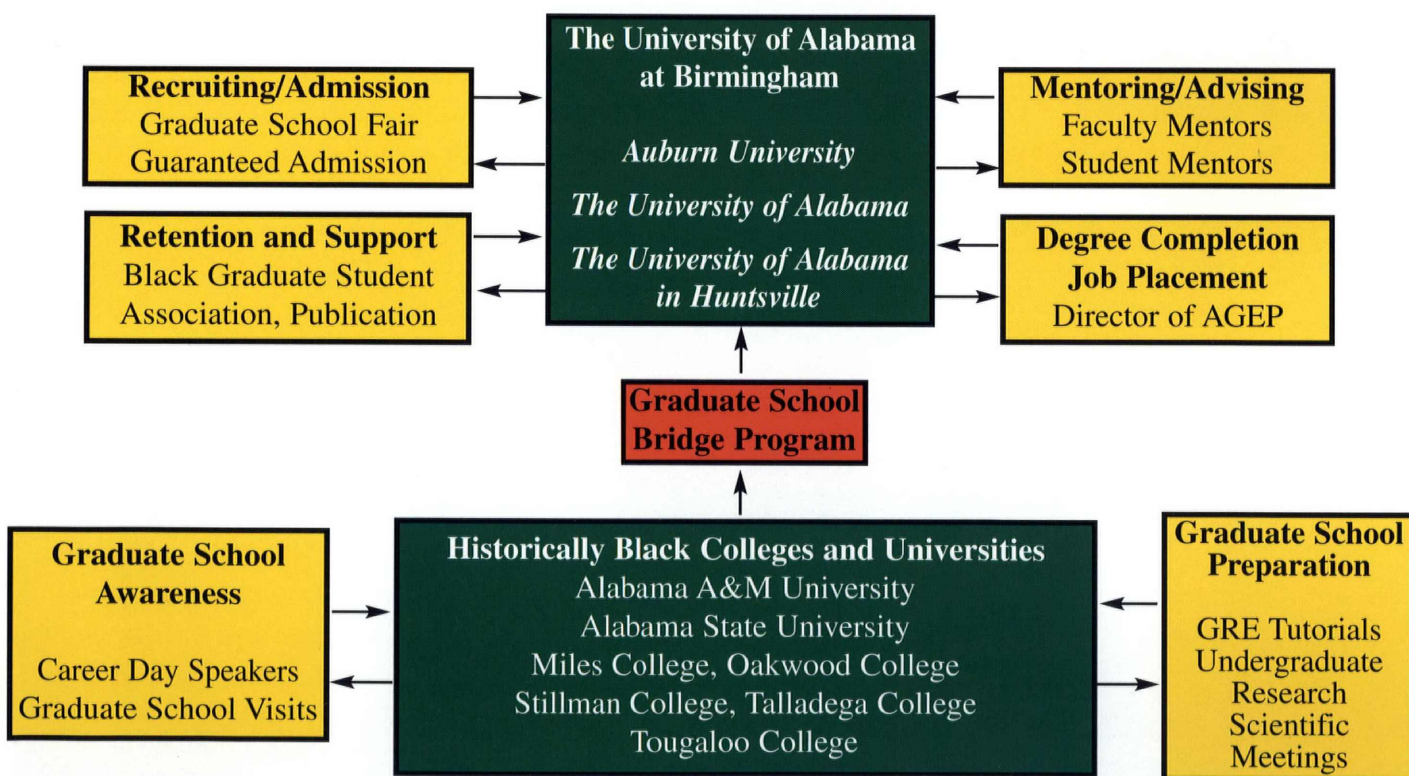
Alabama Alliance for Graduate Education and the Professoriate



The Alabama Alliance for Graduate Education and the Professoriate (AGEP) Program is a statewide project designed to significantly increase the number of underrepresented minority students receiving doctoral degrees in the science, mathematics, and engineering (SME) fields and entering the professorate. The project includes The University of Alabama at Birmingham, Auburn University, The University of Alabama, The University of Alabama in Huntsville, and six Historically Black Colleges and Universities. The AGEP Universities possess high quality educational and research facilities, and an outstanding faculty capable of preparing students for successful SME careers.



The AGEP Program's model for recruiting, mentoring, and retaining minority students in SME doctoral programs is given below:



Project Director
 Dr. Louis Dale
 The University of
 Alabama at Birmingham
 (205) 934-8762
 LDALE@uab.edu

Graduate Institutions Principal Investigators		
Dr. Viola Acoff	The University of Alabama	(205) 348-3761
Dr. Jerry Shipman	Alabama A & M University	(256) 851-5300
Dr. Overtoun Jenda	Auburn University	(334) 844-4663
Dr. Adriel Johnson	The University of Alabama in Huntsville	(256) 890-6235

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 jendaov@carver.auburn.edu
 johnson@email.uah.edu



Minority Access/Graduate Networking in the Sciences, Engineering and Mathematics (MAGNET/SEM)

The City University of New York Graduate Center, New Jersey Institute of Technology,
Polytechnic University, and Stevens Institute of Technology
With Brooklyn College, City College, College of Staten Island, Hunter College,
Lehman College & Queens College, CUNY



MAGNET-SEM REGIONAL NETWORK AT THE CITY UNIVERSITY OF NEW YORK



Stevens Institute of Technology Professor of Chemical Biology with two students in the laboratory.

The Graduate Center, the doctoral degree-granting institution of the City University of New York, is partnering with six CUNY undergraduate colleges - Brooklyn College, The City College, Hunter College, Lehman College, Queens College and the College of Staten Island - and with three other doctoral degree-granting institutions - The New Jersey Institute of Technology, Polytechnic University and the Stevens Institute of Technology - to form a MAGNET-SEM Regional Network, designed to increase the numbers of underrepresented students recruited, retained and graduated in biology, biochemistry, chemistry, engineering, physics, speech and hearing sciences, earth and environmental sciences.

A MAGNET-SEM website, currently under construction, will be the crossroads for all students, mentors and faculty participating in the program. Application information for students who wish to be considered for the program can be printed from the site. Information will be posted for faculty members who wish to refer or nominate students for the program. Examples of student work will be on view. This will serve to inform prospective students and the general public that students who are encouraged academically will produce high-quality, scholarly work.



Polytechnic University Electrical Engineering student David Hernandez.



Facilitating Academic Careers
in Engineering and Science

FACES

"Changing the Face of the Engineering and Science Professoriate"

The Minority Graduate Engineering program entitled Facilitating Academic Careers in Engineering and Science (FACES) represents a significant commitment by Georgia Institute of Technology, Morehouse College, and Spelman College to dramatically increase the national production of doctorates awarded to minorities in engineering and the sciences. This program represents a blending of commitment of the resources of Georgia Tech, Morehouse, Spelman, and the National Science Foundation to focus specifically on increasing the production of underrepresented students who earn engineering and science doctoral degrees. This program was initiated and is managed by African American faculty who are committed to this goal and recognize that success breeds success. At steady state, the FACES program will produce ten additional African American doctoral recipients per year, thereby doubling Georgia Tech's current output.

Recruiting, mentoring and academic support programs initiated by Georgia Tech, Morehouse and Spelman have been quite successful in increasing retention, grades, and overall production of African American degree candidates. Our partnership has created a pipeline of successful minority undergraduates and the FACES program builds on the successful undergraduate efforts. As one of the leading producers of minority engineers and scientists, the Georgia Tech/Morehouse/ Spelman team is ideally positioned to increase the national production of African American students who earn doctorates and promote their representation in academic careers.

The FACES program is comprised of several components, and the aggregate program addresses each critical step along the path to an academic career. Undergraduate students who have completed their junior year are provided summer and academic year research experiences as a means of promoting their interest in research and graduate school attendance. These students, as well as other worthy candidates, are then encouraged to enroll in graduate programs using a series of recruitment efforts at national events such as the National Society of Black Engineers Annual Convention, campus visits and tours, and a lecture/workshop series on the merit of graduate school and careers in academia. Admitted graduate students are partially supported on doctoral fellowships throughout their matriculation through graduate school. This support is provided by means of a stipend which increases in value as the student meets the critical milestones along the way toward the Ph.D. degree. Funds are also used to support travel to technical meetings for research presentations. Finally, senior doctoral students will compete for career initiation grants which they may use as start-up funds to assist them in establishing their research programs in their initial academic appointments.

Institutionalization of the FACES program will be facilitated by the establishment of endowed faculty chair positions at each of the participating institutions. These chairs, which will be filled on a rotating basis with a five-year term, will serve as directors of the FACES management team and be responsible for supervision of FACES activities,



FACES Steering Committee Members (l to r): Mr. S. Gordon Moore, Jr., Drs. Stephen M. Ruffin, Gary S. May (Project Director), Reginald DesRoches, Mark J. T. Smith, and Jeffrey L. Streator.

planning new initiatives, program evaluation, and student tracking. The chair will be assisted in program management activities by the staff of the OMED: Educational Services office at Georgia Tech. The chaired positions will provide the long-term leadership necessary to continue oversight of FACES after the initial five-year period of NSF funding ends.

FACES is managed by a steering committee consisting of Professors Reginald DesRoches (CEE), Augustine Esogbue (ISyE), Gary S. May (ECE), Stephen M. Ruffin (AE), Mark J.T. Smith (ECE), and Jeffrey L. Streator (ME) of Georgia Tech, and Mr. S. Gordon Moore, Jr., Director of the OMED: Educational Services office at Georgia Tech, as well as Professors Teresa Edwards of Spelman and Arthur Jones of Morehouse. This committee reports directly to Georgia Tech President G. Wayne Clough.

For more information:

FACES
c/o OMED: Educational Services
Georgia Institute of Technology
681 Cherry Street
Atlanta, GA 30332-0600
Tel: 404-894-3959 Fax: 404-894-1608
E-mail: faces@omed.gatech.edu
www.omed.gatech.edu/programs/faces





HOWARD UNIVERSITY MINORITY GRADUATE EDUCATION PROGRAM



HOWARD UNIVERSITY

The mission of Howard University as a comprehensive, research-oriented, predominantly African American university is to provide an educational experience of exceptional quality at reasonable cost to students of high academic potential. Particular emphasis is placed upon providing educational opportunities for African American men and women and for other historically disenfranchised groups.

GRADUATE SCHOOL

The Graduate School grants graduate degrees in 31 of the university's academic departments. In addition, there are two interdisciplinary programs: atmospheric science and materials science and engineering. The Graduate School, in collaboration with the College of Medicine, also offers the M.D./Ph.D. degree in nine departments.

The Graduate School is an international, culturally diverse academic and research community. Howard is a Research I Institution, and is the only historically black college or university with this distinction. It has produced more African American doctoral degree recipients than any other college or university in the nation.



FELLOWSHIP AWARD

Each year up to fifteen graduate fellowships are awarded to science, mathematics, and engineering (SME) graduate students pursuing a doctoral degree at Howard University.

Fellows who begin their programs with a baccalaureate degree will receive tuition and a \$75,000 stipend, over a five-year period.

Fellows who begin their programs with a master's degree will receive tuition and a \$45,000 stipend over a three-year period.

ALL FELLOWS MUST PARTICIPATE IN THE FOLLOWING PROGRAM COMPONENTS:

- MGE Mentoring & Retention Program
- Faculty and Student Roundtable Seminars
- Preparing Future Faculty Program

STUDENTS MUST:

- apply for the Ph.D. program in a science, mathematics or engineering department within the Howard University Graduate School
- have a minimum 3.2 cumulative GPA at the bachelor's level or 3.5 at the master's level
- be United States citizens or permanent residents

Preference is given to individuals who have graduated from the MGE Program Partner Institutions.

Science, Mathematics and Engineering Doctorate Departments

Anatomy	Atmospheric Science	Biochemistry	Biology
Chemistry	Electrical Engineering	Genetics & Human Genetics	Materials Science and Engineering
Mathematics	Mechanical Engineering	Microbiology	Nutritional Sciences
Pharmacology	Physics & Astronomy	Physiology & Biophysics	Psychology



INTENSIVE SUMMER RESEARCH PROGRAM

GOAL: The goal of the summer research program is to provide students with an intensive research experience, as well as preparation for graduate school.

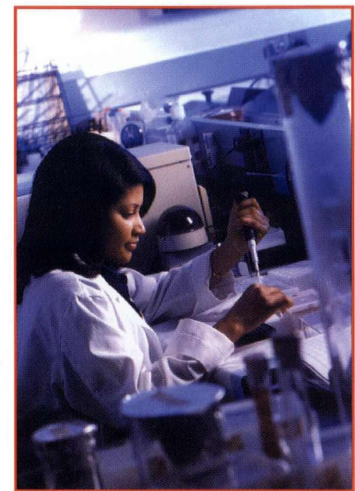
PROGRAM COMPONENTS

- Summer Research Experience
- Graduate Preparation Seminar
- Faculty and Student Roundtable Seminars
- Science Enrichment
- Cultural Enrichment

Students must:

- attend Howard University or an MGE partner institution
- be entering their senior year upon the conclusion of the program
- have a 3.2 or higher cumulative GPA
- be United States citizens or permanent residents
- have a strong interest in pursuing a Ph.D.
- have a major or minor in a science, mathematics, or engineering field

This is an eight-week program in which on-campus housing, meals, and travel will be paid by the MGE program. Students will receive a \$3,000 stipend for participation in the program.



1999 - 2000

NSF Minority Graduate Education Program

Doctoral Fellows

(Educational Backgrounds & Graduate Departments)

Kyndall Barry (Atmospheric Sciences)
B.S., Bethune-Cookman College

Ebony Bookman (Genetics & Human Genetics)
M.S., Howard University; B.S., UNC-Chapel Hill

Angela Darko (Biology)
B.S., Howard University

Jillian Davis (Pharmacology)
B.S., North Carolina A&T State University

Chanda Macias (Biology)
B.S., Howard University

Claudette Mitchell (Nutritional Sciences)
M.S., Howard University;
B.S.-N.S., Howard University

Charles Moore (Mathematics)
M.A., Xavier University of Louisiana;
B.S., Southern University of New Orleans

Johnny Seymore, III (Atmospheric Sciences)
B.S., Bethune-Cookman College

LaTonia Taliaferro-Smith (Biochemistry)
B.S., Dillard University

Tamara Tatum-Broughton (Microbiology)
B.S., Xavier University of Louisiana

Robin Wilson (Mathematics)
B.S., University of California at Berkeley

Howard University MGE Partner Institutions

- Bennett College
- Bowie State University
- Dillard University
- Fisk University
- Grambling State University
- Hampton University
- Howard University
- Morehouse College
- Morgan State University
- St. Augustine's College
- Spelman College
- Talladega College
- Tougaloo College
- University of Puerto Rico at Mayaguez
- Xavier University of Louisiana



PROGRAM PRINCIPALS

- Dr. Antoine M. Garibaldi, Principal Investigator
- Dr. Orlando L. Taylor, Co-Principal Investigator
- Dr. Demetrius D. Venable, Co-Principal Investigator

MANAGEMENT STAFF

- Dr. Cynthia E. Winston, Program Coordination Director
- Ms. Melissa E. Wynn, Program Assistant & Webmaster

HOWARD UNIVERSITY
Minority Graduate Education Program
<http://www.founders.howard.edu/gsas/mge/>



Enhanced Doctoral Training Opportunities in Science, Mathematics, and Engineering

Co-sponsored by the National Science Foundation
Minority Graduate Education Program and the partic-
ipating universities:

- ▶ The University of Mississippi
- ▶ Mississippi State University
- ▶ Jackson State University
- ▶ The University of Southern University

AGEM is designed to enhance entry and successful completion of minority students in doctoral science, math, and engineering fields, to increase the number of those students who pursue academic careers, and to bring about a systemic change in attitudes and practices of faculty, administrators and students with regard to minority pipeline issues.

Components of the program include:

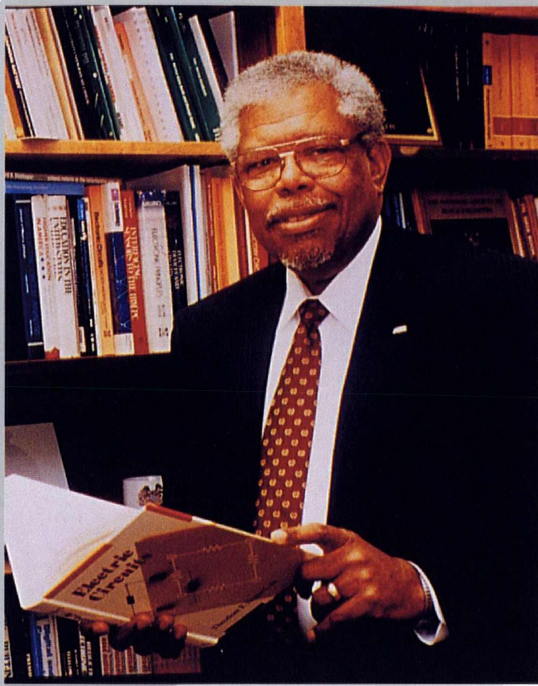
- direct graduate stipends
- remission of tuition
- graduate bridge programs
- skills development seminars
- mentoring programs
- travel and research development funds
- seminar series
- annual statewide AGEM conference to promote networking

For information, visit web site www.olemiss.edu/agem/ or send e-mail to agem@olemiss.edu or write to AGEM Program, Graduate School, University of Mississippi, University, MS 38677.

The AGEM Program is directed by Dr. Maurice Eftink, Interim Graduate Dean, and Dr. Donald Cole, Associate Graduate Dean at the University of Mississippi. Program leaders at the three other institutions are Dr. William Person, Director of Graduate Studies, Mississippi State University, Dr. Dorris Robinson-Gardner, Graduate Dean, Jackson State University, and Dr. Anselm Griffin, Graduate Dean, University of Southern Mississippi.

An graduate student can choose from among all the SMET doctoral degree programs at any of the state's four comprehensive institutions. An abbreviate list is given below:

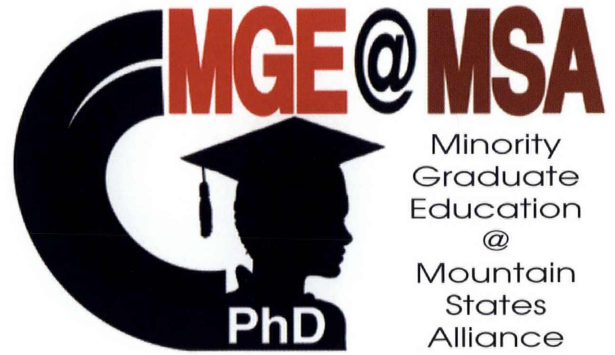
- UM** biology, chemistry and biochemistry, physics, mathematics, various engineering areas, pharmacology, and medicinal and natural products chemistry
- MSU** biological sciences, chemistry, computers science, engineering physics, mathematics, various engineering areas, environmental toxicology, and agricultural sciences
- JSU** chemistry and environmental sciences
- USM** biology, chemistry and biochemistry, polymer science and engineering, scientific computing, and marine sciences



Albert L. McHenry, Ph.D. Project Director
(Dean, College of Technology and Applied Sciences,
Arizona State University, East Campus)

Minority Graduate Education at Mountain States Alliance (MGE@MSA)

The MGE@MSA builds upon our Western Alliance to Expand Student Opportunities (WAESO) which is an eight year alliance within NSF's Louis Stokes Alliance for Minority Participation (LSAMP) aimed at increasing the number of underrepresented minority students obtaining baccalaureate degrees in the sciences, mathematics, and engineering. MGE@MSA establishes a number of new components and activities which, while drawing upon the extensive experience and manifest successes of the WAESO alliance at the undergraduate and transition to graduate school levels, are carefully designed to meet the challenge of retaining graduate students through the timely receipt of the doctoral degree and helping them engage in postdoctoral career paths, particularly as faculty members. The problems of faculty inexperience and the need for faculty information and training; the lack of mentors, role models or family/community experience with graduate school by underrepresented students; and the challenge of establishing a research program as expeditiously as possible are areas tackled by MGE@MSA through carefully designed activities.



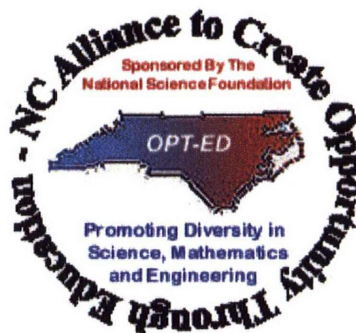
Major new features of the MGE@MSA program (among many others) include the following:

Faculty Mentoring Institutes - The objective of this activity is to provide training/orientation for faculty mentors to help them acquire their resources and skills in their specific disciplines to function as truly effective mentors of minority graduate students.

Faculty Graduate Mentoring Network - The objective of this activity is to continue the strong effort that began with the Faculty Mentoring Institutes by providing a forum to serve as both a reference resource and dynamic tool full of useful information on mentoring and peer networking that faculty can incorporate easily into their daily routine. The network will provide a world wide web site, bulletin board, and active listserv.

Graduate Student Peer Network - To facilitate and encourage peer networking and peer advising between and among beginning, intermediate, and advanced graduate students in order to help the students, especially beginning students, progress effectively and expeditiously towards degree completion.

Faculty-Directed Documentation Of Student Research Achievements - To provide students with guidance on how they should be progressing in order to meet their graduate degree requirements, not in a nominal sense, but genuinely calibrated to the research expectations of the sponsoring department.



The North Carolina Alliance to Create Opportunity Through Education (OPT-ED) is a partnership among North Carolina Agricultural and Technical State University, North Carolina State University, and the University of North Carolina at Chapel Hill, all of which cooperate with each other to implement the programs outlined below. Alliance institutions are committed to diversifying the science, mathematics and engineering workforce through a cooperative effort designed to encourage students to attain the doctorate. Although other programs are planned for 2001, examples of those currently sponsored by OPT-ED include the following:

NC A&T State University: First-year master's and doctoral students at NC A&T State University may apply to participate in the *Student Transition and Retention* (STAR) program. STAR provides research experience to new graduate students by offering hands-on mentored six-week research rotations that provide an opportunity for students to become familiar with academic and research culture, learn about support services, develop a relationship with a faculty mentor and get involved in a research project early. STAR also offers a series of *Transition Survival Skills* workshops designed to improve students' writing, oral presentation, problem-solving and test-taking skills. Workshops also focus on the foundation of scientific writing, and students work in small groups to examine the scientific literature and to critique and discuss their own writing. STAR's *Career Service Program* offers individual advising, a job search guide, electronic distribution of job listings and an on-campus employment fair. **Project Director:** Dr. Thoyd Melton (336) 334-7920 or meltont@ncat.edu.

NC State University: The *Intensive Research and Training Program* at NC State has two components: the *Academic Year Research Experience* (ARE) and the *Summer Research Experience* (SRE). Students gain experience by conducting research under the guidance of an NC State faculty mentor for 15-20 hours per week for two academic years and 40 hours per week during the summers after each academic year. NC State undergraduates are invited to participate in the full two-year program. Additional undergraduates from other colleges and universities are invited to participate in the SRE component of the program. Visit *NC State Day* is another program offered by OPT-ED at NC State to encourage undergraduates to pursue graduate education. Participants have the opportunity to spend a day discussing their interests with science, mathematics and engineering faculty and learning about how to apply for and how to finance graduate school. **Additional OPT-ED programs** include combined graduate student and faculty cluster groups; "Preparing the Professoriate," a high-impact mentored teaching experience for graduate students; professional development workshops and seminars; and mentoring workshops for faculty. **Project Director:** Dr. Pamela Banks-Lee (919) 515-4390 or pbanks@gw.fis.ncsu.edu.

The University of North Carolina at Chapel Hill: The *Research Education Support Program* at UNC-CH has four major components associated with OPT-ED. *Research Assistantships* are available through participating UNC-CH science and math departments to support graduate students' research. Awards carry stipends of at least \$15,000, and tuition and health insurance are covered. Participating UNC-CH departments also have access to *Summer Support for Entering Ph.D. Students*. This funding allows entering Ph.D. students to participate in research at UNC-CH during the summer before their initial fall semester. Each student receives \$5,500 for at least 10 weeks of full-time research. The *Summer Pre-Graduate Research Experience* (SPGRE) provides support for undergraduates to gain research experience from faculty members in science and mathematics disciplines. Students are selected from colleges and universities from across the country to participate in this 10-week program and receive a \$2,500 stipend and a \$1,300 food allowance. Housing, travel, and campus fees are covered as well. In addition, *Undergraduate Student Academic-Year Research Support* is available for UNC-CH undergraduate students' involvement in faculty research projects. Students receive \$1,500 per semester and are expected to spend at least 10 hours per week involved in a research project with or under the direction of a UNC-CH faculty member. Students receive additional funding to present papers and posters at research meetings. **Project Director:** Dr. Henry Frierson (919) 962-7507 or ht_frierson@unc.edu.

For general questions on OPT-ED, please contact David Shafer in the NC State Graduate School at (919) 515-4462 or at david_shafer@ncsu.edu.



MINORITY GRADUATE EDUCATION PROGRAM P U E R T O R I C O

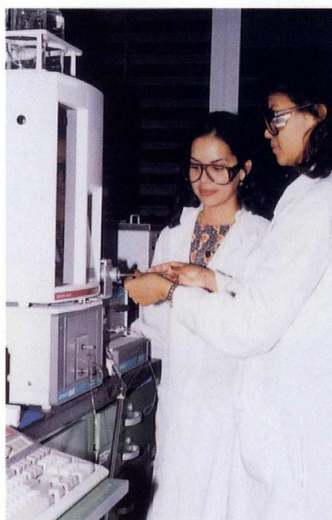
For the past academic year the Puerto Rico Minority Graduate Education (MGE) Program has been able to develop and implement the proposed strategies as an effort to reach its goals of recruiting, facilitating transition and retention, enhancing the Teaching Assistance Training, increasing scholarly productivity, and offering special fellowships in the graduate programs of Biology, Chemical Physics, Marine Sciences, Civil Engineering, and Chemistry. During the period October 1, 1998 to December 1999 MGE has focused on four main activities: 1) TA and Mentor Training; 2) Bridging Seminars; 3) The Peer Mentoring Program and 4) The Fellowship Awards.

Two of the most important basic components of MGE are the Training (TA) and Bridging Seminars. All new graduate students who were planning to participate as TAs during the academic year 1999-2000 were required to participate in the training program and bridging seminars. Other students who were not participating as TAs were invited to attend only the bridging seminars. The TA training included activities such as: laboratory practice to develop specific areas of teaching or academic skills, and workshops focused on institutional policies, academic and non-academic services.

A) Our MGE program has an active Mentor effort, where senior graduate students advise incoming students about the rigors and pitfalls of the doctoral program. Approximately 54 students participated in several Mentor Training sessions offered by personnel of the LSAMP program, several talks regarding institutional regulations and policies, and a



group discussion and work plan preparation together with the first year graduate students. During the academic year, the participants of the Mentor program (both mentors and new students) have been required to submit a monthly report of the activities attended or meetings held.



B) A key objective of our MGE program is to enhance recruitment. In addition, to the traditional faculty efforts, we are using graduate students to help attract new recruits. Recruitment groups consisting of three to six students from each graduate program and supervised by the program coordinators, have been attending the graduate student recruitment efforts by visiting institutions in the island, and participating in conferences and fairs. Involving as many students as possible on different areas of the program motivates them to assist academic coordinators in planning their own activities, designing their work plans, creating innovative strategies to recruit and retain other students, and develop programs and other activities.

MGE has provided 15 special fellowships to students who are PhD candidates in any of the five graduate programs participating in MGE. This year fifteen students were awarded fellowships on a competitive basis (10 from the Río Piedras campus and 5 from the Mayagüez campus). The criteria for selection were: career goals and potential, scholarly productivity, academic standing, and financial need.

The MGE program has created a web page (<http://web.uprr.pr/mge>) with general information, application forms, photos and news of past activities, and future activities announcements. Also, we have developed a logo, brochure, cover page, poster, press kit and other dissemination material.

At the end of this academic year the Task Force will be evaluating the outcomes of this past year in order to modify or enhance the strategies.



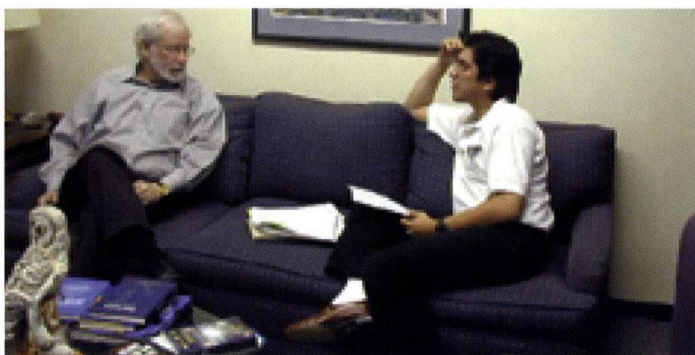


Rice University

ALLIANCES FOR GRADUATE EDUCATION AND THE PROFESSORIATE (AGEP)

Introduction

The nation's increasing diversity provides both an enriching asset and a daunting challenge for science, mathematics, and engineering (SME) graduate education where many segments of our population continue to be underrepresented. Our current course risks losing creative and bright minds that are crucial to the economic health of our country and eliminates many of our population that have significant potential to expand SME horizons, serve as desperately needed role models, and take their rightful place as national leaders.



AGEP CO-PI Sid Burrus mentors Rice student Ricardo Vargas on Ricardo's research.

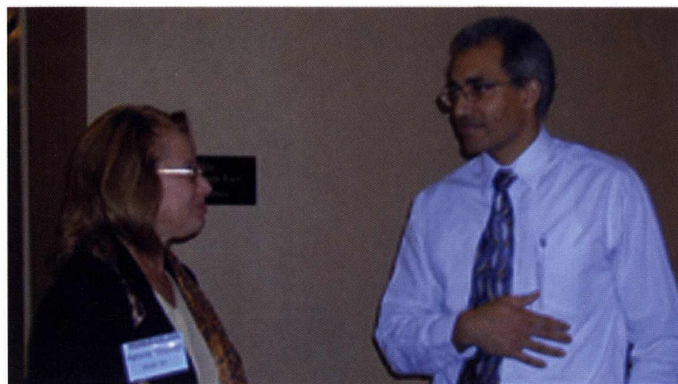
Program Description

Rice's AGEP Program will provide a year-round community experience that encourages SME graduate enrollment, supports Ph.D. degree completion, and exposes students to rigorous academic discipline. Together with strong commitments by Rice University, this program is designed to permanently alter the institution's graduate student diversity. Outreach to the University of Wisconsin-Madison will create a satellite program designed to increase diversity on that campus.

Why Rice?

Rice University, in Houston, Texas, is a small, private university, with approximately 2700 undergraduate enrollment and 1400 graduate students. More than half the graduate students are enrolled in SME disciplines. Notable features of Rice include:

- Consistently ranked among the top 15 or so research universities, and among the top three BEST BUYs for higher education by national magazines;
- Rice students won 28 of the highly coveted National Science Foundation graduate study SME Fellowships in 1998, more than any university in the country; and
- Twenty Rice faculty are members of the National Academy of Sciences and/or the National Academy of Engineering.



Helena Mitchell (Georgia Tech) and Doug Henderson (University of Wisconsin-Madison, Rice's partner institution) attend the AAAS/AGEP Meeting that was held in Atlanta, Georgia in February 2000.

Pursuing the Ph.D.

Rice's Weiss School of Natural Sciences and Brown School of Engineering offer exciting research environments at the frontiers of scientific inquiry. Outstanding faculty, state-of-the-art research facilities, and nationally-recognized research centers create a scholarly academic environment within a dynamic, thriving city synonymous with scientific progress and technological innovation. In addition, Houston offers almost unlimited entertainment opportunities, including museums, theater, sporting events, and dining at a multitude of restaurants in a culturally diverse urban setting.



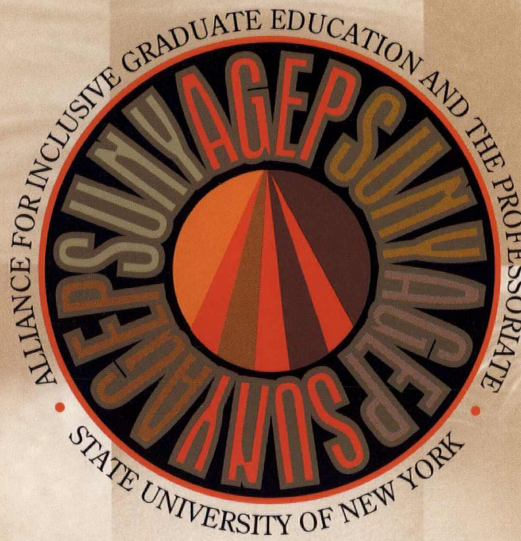
Rice AGEP Students attend a talk on gender and diversity issues given by Dr. Sandra Johnson Baylor of IBM TJ Watson Research Center.

Stipends and Financial Aid

Students accepted to the summer research program receive a stipend for living expenses. Students who are accepted to pursue a Ph.D. through the AGEP Program will also receive a stipend and tuition waiver.

How to Apply

For more information on this program and application materials, contact Theresa Chatman, Outreach Manager, at tlc@rice.edu or (713) 348-5180.



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Building on Our Strengths

The State University of New York Alliance for Inclusive Graduate Education and the Professoriate (SUNY-AGEP) provides an important means of access to qualified underrepresented students throughout the state who are interested in graduate study and careers in the professoriate in science, engineering, and math. The network of services provided by SUNY-AGEP will help these students become successful doctoral candidates. We believe that interactions among underrepre-

sented doctoral students will prove to be a valuable experience, which will aid retention and promote program success.

- The strong alliances with SUNY LS AMP assures an increasing number of minority SEM students ready to enter the graduate pipeline.
- SUNY contributes more than \$6 million for full fellowships for minority students who are pursuing graduate degrees.
- At Stony Brook, Albany, Binghamton,

and Buffalo, there has been an increase in minority students receiving these funds.

- Minority Professoriate Initiatives have been initiated at several SUNY campuses.
- SUNY LS AMP also sponsored the Minority Graduate Student Awareness Day at Buffalo that had over 260 student participants from throughout the state.
- Stony Brook, the lead institution, is the winner of the 1999 CGS Peterson's Award for promoting an inclusive graduate community.

SUNY-AGEP Program Components

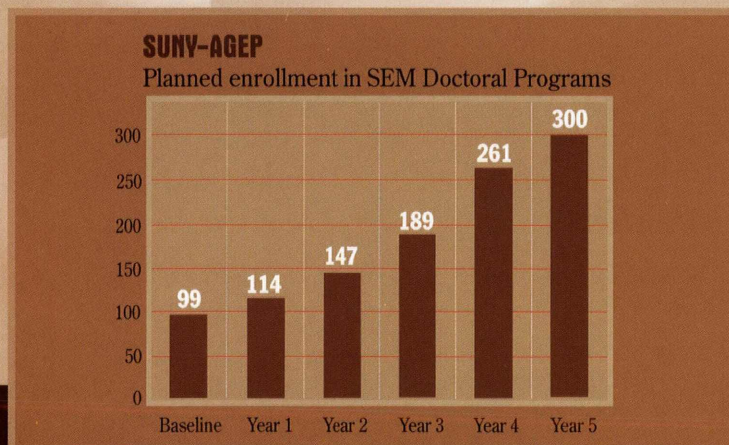
SUNY-AGEP plans to meet program goals by:

- **Increasing interest in graduate study** through SUNY LS AMP activities, summer research institutes at University Centers and Brookhaven National Lab.
- **Improving recruitment of doctoral students** through alumni outreach, departmental incentives, recruitment visits, and identification of barriers to admission.

- **Improving retention of doctoral students** through tracking and intervention by a

retention specialist, increasing faculty awareness of diversity issues and community building among graduate students.

- **Increasing the number of students entering the professoriate** through establishment of mentoring programs, providing teaching experiences and providing opportunities for students to engage in research.



Alliance Partners: University at Stony Brook (Lead Institution) • University at Albany • University at Binghamton
 University at Buffalo • Brookhaven Science Associates at Brookhaven National Lab • SUNY LS AMP



UNIVERSITY OF CALIFORNIA

Berkeley • Davis • Irvine • Los Angeles • Riverside • San Diego • San Francisco • Santa Barbara • Santa Cruz

Alliance for Graduate Education and the Professoriate

The University of California Nine Campus Alliance for Graduate Education and the Professoriate will contribute to NSF's national goal of tripling the number of under-represented minorities receiving doctoral degrees in science, mathematics, engineering and technology (SMET) disciplines over the next five years. UC AGEP includes the nine UC campuses, plus representatives from CAMP and MESA-MEP with system-wide coordination provided by the University of California Office of the President (UCOP).

Riverside UC Riverside will augment outreach efforts by funding additional students in their Mentoring Summer Research Internship Program. UCR will also grant Ph.D. students research and travel awards and alleviate teaching demands with fellowships.

San Diego UC San Diego partners with California State University campuses to prepare underrepresented minority students for doctoral programs. They will also offer financial support packages and specialized training to Ph.D. students.

San Francisco UC San Francisco's plan includes three components: targeted recruitment visits & presentations; summer research programs at UCSF; academic enrichment, career preparation & mentored teaching for Ph.D. students.

Santa Barbara UC Santa Barbara is developing an Academic Research Consortium (ARC) to coordinate previously independent programs that focus on career opportunities, research skill training & graduate preparation.

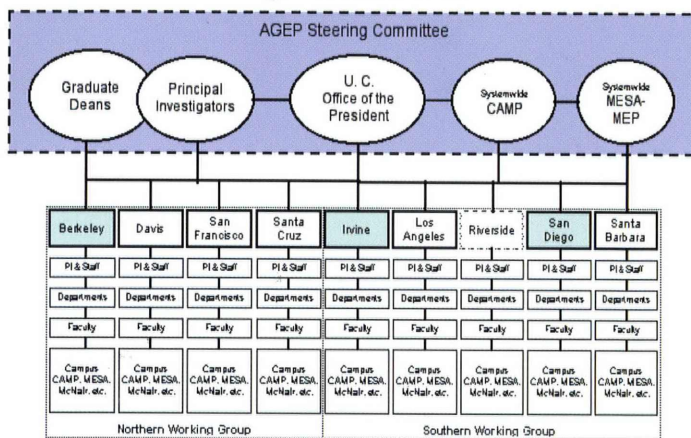
Santa Cruz UC Santa Cruz will augment their visits & faculty presentations at institutions with large numbers of minority students. They will also customize support packages (including mentored teaching fellowships) for Ph.D. students.

While each campus prioritizes direct involvement of faculty in AGEP, faculty roles and responsibilities vary across the system. Collectively, the Consortium engages faculty in AGEP initiatives as advisory board members; instructors; pedagogical, professional, and research mentors; and recruitment representatives.

The UC AGEP Consortium works in partnerships with federal- and state-sponsored diversity-oriented preparation programs for SMET undergraduates including: Louis Stokes CAMP and national AMPs, CREST programs including CEA-CREST, HBCU programs funded by NSF, MESA-MEP, Ronald E. McNair Scholars programs, MARC, MBRS, and UCLEADS. In addition, each UC campus AGEP program collaborates with the local offices of these undergraduate research, enrichment and preparation programs.

Additionally, each UC campus cultivates links to undergraduate institutions that graduate large numbers of minority students with undergraduate degrees in SMET. A number of the UC AGEP programs (e.g. UCI's Fast Track, and UCSD's Minority Access to Science, Engineering & Math programs) will prioritize partnerships with selected campuses of the CSU system, while other campuses will focus on partnerships with HBCUs (e.g. UCB's The Berkeley Edge). Several AGEP efforts will partner with selected California Community Colleges (e.g. The Berkeley Edge and the UC Davis AGEP Program). These exciting initiatives are central to the University of California's efforts to meet a most our most vital challenge: increasing diversity and representation on our campuses.

University of California Alliance for Graduate Education & the Professoriate Organizational Chart



Each campus will implement AGEP program priorities and strategies that best utilize its local resources, contribute to changes in campus culture that are conducive to underrepresented minority student success, and have the potential to diversify the professoriate. The descriptions below highlight campus foci and innovations:

Berkeley UC Berkeley developed a new model for changing academic culture in minority graduate education that includes discipline-based diversity efforts that situate recruitment, support, retention, & advancement in SMET departments.

Davis UC Davis will add 8 SMET McNair Scholars from around the nation to UCD McNair Scholars' 8-week, faculty-mentored, summer research program. In addition, UCD will offer enrollment incentives to the scholars admitted to graduate study.

Irvine UC Irvine's plan includes a "Competitive Edge Summer Program" for their AGEP students. They also offer AGEP students a five-year support package (including mentored TA & research experiences) and pedagogical post-doctoral opportunities.

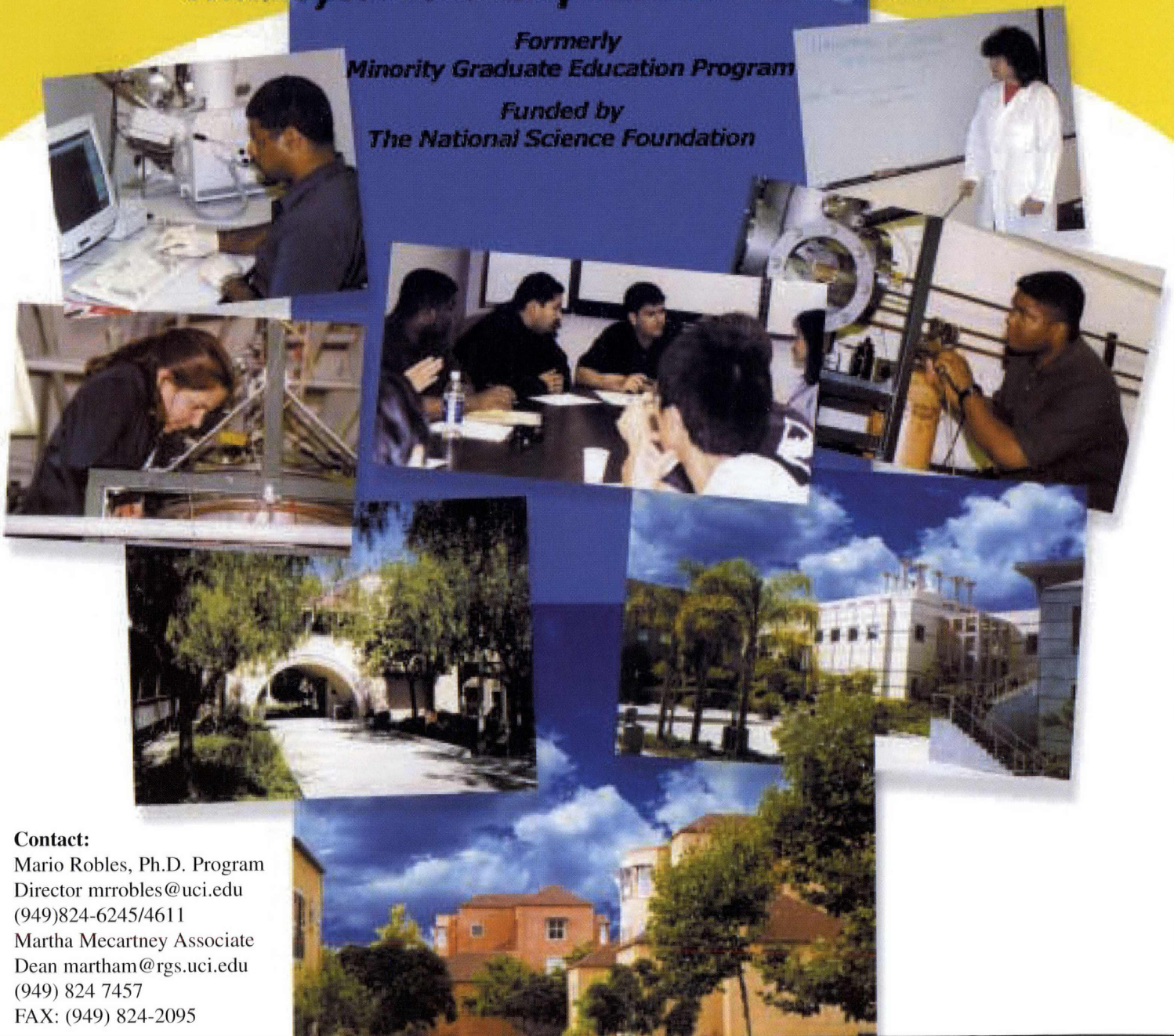
Los Angeles UC Los Angeles plans to enhance recruitment programs for doctoral students in SMET Fields. They will support additional students as both Center of Academic Excellence and Summer Research Program fellows.

Fast Track to the Professoriate

Alliance for Graduate Education and the Professoriate (AGEP)
A Multiyear Fellowship with One Year Postdoc

*Formerly
Minority Graduate Education Program*

*Funded by
The National Science Foundation*



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University of California, San Diego

Minority Graduate Education Program

New in 2000!

The University of California, San Diego received an MGE award from the National Science Foundation in October 1999. The program, Minority Access to Science, Engineering and Math (MASEM) began in January 2000 and is part of the California Alliance for Graduate Education and the Professoriate.

Project Director

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Program Coordinator

Susan Swarts, Student Services Specialist
Office of Graduate Studies and Research
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E-mail: sswarts@ucsd.edu

Apply online! Applications for the summer research program and the graduate fellowship are available on line at:

<http://www-ogsr.ucsd.edu/outreach/masem.htm>

For undergraduates or masters students interested in doctoral programs at UCSD:

- summer research programs to provide hands-on laboratory experience, exposure to UCSD faculty and an opportunity to visit the campus
- partnerships with Southern California minority baccalaureate producers (California State Universities at Dominguez Hills, Northridge, Los Angeles, Fullerton, Long Beach, San Diego) to provide preparation and advising for prospective graduate students
- partnerships with various undergraduate programs: Louis Stokes Alliance for Minority Participation (AMP), Ronald E. McNair program, Minority Biomedical Research Support Programs (MBRS), Minority Access to Research Careers (MARC)

For graduate students at UCSD:

- full financial packages for selected new graduate students
- preferred housing for selected graduate students
- a full curriculum of professional development workshops to help students succeed in graduate school and beyond
- peer mentoring and networking for graduate students to provide support and opportunities for success
- teacher training to prepare students for faculty jobs
- e-mail listserv and web pages to share information and student accomplishments



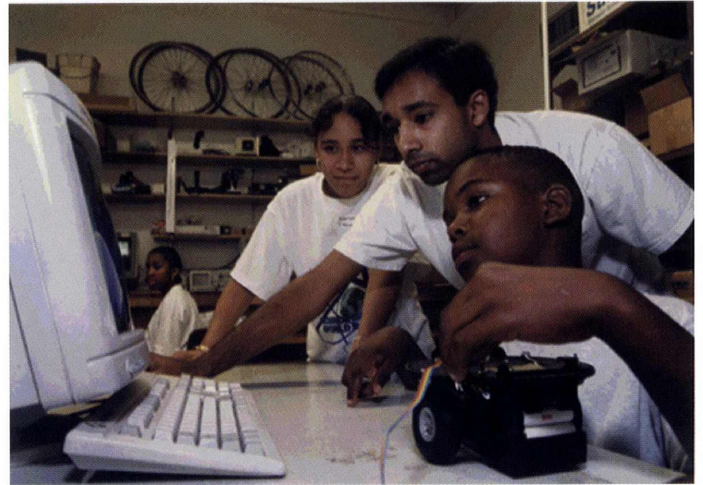
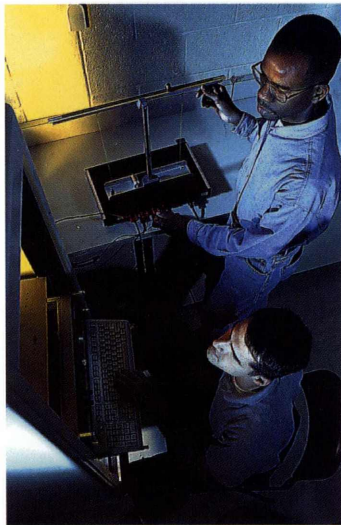
UNIVERSITY OF FLORIDA - FLORIDA A&M UNIVERSITY Alliance for Graduate Education and the Professoriate

Program activities include:

- Professional Development Seminars
 - Industrial Interaction
- Hands-on Research Professional Conferences
 - Teaching Experience
 - Mentoring
- Summer Bridge Program

The University of Florida was recently recognized by the Quality Education for Minorities Network as a leading producer of minority Ph.D.'s in mathematics, computer science, physical science and engineering. This is the result of a long-term commitment at UF to diversity. The University of Florida-Florida A&M University Alliance for Graduate Education and the Professoriate unites two leading institutions in the common goal of producing a diverse pool of minority Ph.D.'s entering an academic career. The University of Florida offers science, mathematics and engineering doctoral students the unique opportunity to work in interdisciplinary research facilities, including the Engineering Research Center for Particle Science and Technology, the National High Magnetic Field Laboratory, the Brain Institute, and the Biotechnology Program.

The number of minority FAMU undergraduates who are ready to pursue graduate education has grown significantly due to the efforts at FAMU, and UF is poised to increase the number of Ph.D. level students who can benefit from the outstanding research facilities UF can offer. The MGE program is an important link at this juncture.



This program is a comprehensive, stepwise process that encourages and prepares exceptional minority students for an academic career by guiding them from the undergraduate through a Ph.D. education.

Fellowships, tuition wavers, mentoring, academic support programs, teaching experience and travel to professional meetings will result in 35 minority Ph.D.'s over the life of the grant, as well as systemic change that will result in the continuation of the program beyond the fifth year.



Principal Investigator

Dr. David Colburn, Interim Provost and Senior Associate Vice President

Co-Principal Investigators

Dr. Winfred Phillips, Vice President for Research and Dean of the Graduate School

Dr. Willard Harrison, UF Dean of College of Liberal Arts and Sciences

FAMU Principal Investigator

Dr. Arthur Washington, FAMU Dean of Liberal Arts and Sciences

For more information visit <http://www.ortge.ufl.edu/ogmp>



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Academic Affairs and
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Dr. Charlena M. Seymour,
Dean of the Graduate
School

PROGRAM DIRECTOR

Dr. Ann Lewis

Funding for the UMass MGE Program is provided by a National Science Foundation grant and the University of Massachusetts Amherst

The goal of the Minority Graduate Education Program at the University of Massachusetts Amherst is to recruit underrepresented minority students into science, mathematics and engineering (SME) doctoral programs. A specific goal of the program is to increase the number of underrepresented minorities in the professoriate.

The program offers five graduate fellowships each year to qualified students applying to SME graduate programs at the University of Massachusetts Amherst. Fellowship recipients receive a stipend of \$18,000 for support in their first year plus a tuition waiver and health insurance. In years two through four they are supported by their graduate program and in their final year are eligible to apply for one of five \$18,000 Dissertation Fellowships awarded each year through this grant.

Minority candidates in the following graduate programs are eligible for these fellowships: Chemical Engineering, Chemistry, Civil Engineering, Computer Science, Electrical and Computer Engineering, Entomology, Food Science, Geosciences, Industrial Engineering, Mathematics, Mechanical Engineering, Microbiology, Molecular & Cell Biology, Natural Resources Conservation, Neuroscience & Behavior, Organismic & Evolutionary Biology, Physics, Plant Biology, Plant & Soil Sciences, Polymer Science & Engineering, Psychology, and Veterinary & Animal Science.

The UMass MGE program actively recruits students from five Partner Institutions to apply to both its SME graduate programs and a summer undergraduate research program supported by this program. Faculty and students from UMass and the Partner Institutions visit each other's campuses through this

grant. The Partner Institutions are: Jackson State University, Lincoln University, Long Island University, Medgar-Evers College and the University of Puerto-Rico Mayaguez.

The MGE-supported summer undergraduate research program for underrepresented minority students brings 25 undergraduates from other institutions as well as UMass to the UMass campus for an 8-week program of research, mentoring, workshops, seminars and preparation for applying to graduate school.

The University of Massachusetts Amherst is the lead institution in the Northeast Alliance to Increase Diversity in Graduate Education in Sciences, Mathematics and Engineering. Other member campuses are Boston University, The Massachusetts Institute of Technology, Pennsylvania State University, and Rutgers, The State University of New Jersey.

Students participating in the MGE programs must be a US citizen or a permanent resident, must express a desire to pursue a doctorate and must satisfy the requirements of the University of Massachusetts Graduate School. For more information about the University of Massachusetts, its graduate programs, and its Graduate School's requirements visit the Graduate School's website at:

<http://www.umass.edu/gradschool>

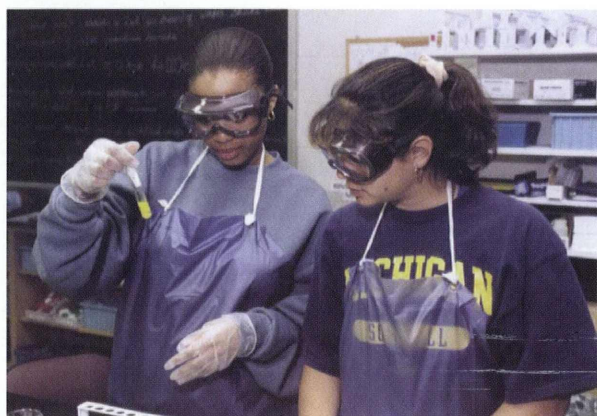
The Minority Education Office
The Graduate School
Goodell Building Rm. 528
The University of Massachusetts Amherst
Amherst, MA 01003



The University of Michigan MGE Program: New Models for SEM Recruiting and Retention

Objective

The Minority Graduate Education Program was created to increase the number of underrepresented students in doctoral programs in the physical and life sciences, engineering and mathematics. The program, with funding from the National Science Foundation, provides fellowship support to promising minority students in science, engineering, and mathematics (SEM).



Program Structure

For over three decades the University of Michigan has worked aggressively to expand the participation of underrepresented groups in all aspects of its intellectual community. The University of Michigan has now joined in a partnership with the National Science Foundation to construct models for recruiting and mentoring SEM doctoral students. This program is made up of the following components:

Summer Research Opportunity Program (SROP) – an 8 week laboratory experience where undergraduates from institutions across the country come to U of M to work with a Michigan faculty member in his/her field of study. This program, primarily a recruiting tool, aims to provide positive research experiences reflective of graduate school life at Michigan;

Faculty-Based Fellowships – first year fellowships are combined with research, teaching, and training grant appointments to provide five-year support packages for entering students;

Summer Institute (SI) - an 8 week program that takes place prior to a student's first graduate semester, and that supports newly admitted doctoral students with a stimulating intellectual, professional, and social transition into graduate school

Faculty Leadership Committee (FLC) – a tenured faculty group committed to recruiting, mentoring, and advising underrepresented minorities in SEM fields. The FLC is not only involved with student affairs, but also focuses on increasing campus-wide faculty involvement in the MGE program.

Project Participants

Earl Lewis
Dean, Rackham Graduate School

Stephen Director
Dean, College of Engineering

Shirley Neuman
Dean, College of Literature Science & Arts

Christophe Pierre
Associate Dean, Rackham Graduate School
Faculty Leadership Committee Co-Chair

Paul Rasmussen
Faculty Leadership Committee Co-Chair

Dwight Channer
Program Coordinator

Further information about the Michigan MGE project and other graduate recruitment activities at the University of Michigan is available at the Rackham Graduate School's Web Site: www.rackham.umich.edu



UNIVERSITY OF MISSOURI MINORITY GRADUATE EDUCATION PROGRAM

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CO-PRINCIPLE INVESTIGATORS

Tom Payne, Dean,
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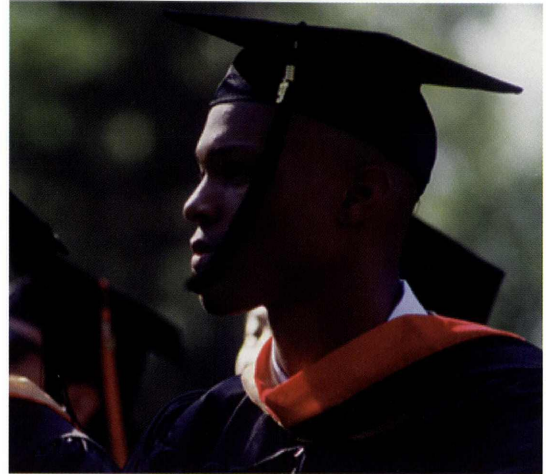
Richard Schwartz,
Dean, College of Arts
and Science

James Thompson,
Dean, College of
Engineering

The Minority Graduate Education Program is designed to recruit and train underrepresented minority graduate students as future faculty members in higher education institutions in science, engineering and mathematics. This program offers five-year fellowships leading to the doctoral degree, with training to prepare fellows to enter the professoriate.

This program will allow for the recruitment and training of 32 doctoral students over the next nine years. A fellowship recipient will receive a \$17,000 stipend plus \$8,000 for tuition, fees and books during the first two years of the fellowship program. The following two years, the recipient will receive \$18,000 in support which will include a teaching/research assistantship plus the fellowship award and a tuition/fee waiver for each year. The final year of support will include an \$18,000 dissertation year stipend and a tuition/fee waiver for the year.

Candidates must be enrolled in one of the following doctoral programs in order to be eligible for this fellowship: Agricultural Economics, Agronomy, Animal Science, Biochemistry, Biological & Agricultural Engineering, Biological Science, Chemical Engineering, Electrical Engineering, Entomology, Fisheries & Wildlife, Food Science & Nutrition, Forestry, Genetics, Geology, Horticulture, Industrial Engineering, Laboratory Animal Medicine, Mathematics, Mechanical & Aerospace Engineering, Microbiology, Nuclear Engineering, Pathobiology, Physics & Astronomy, Physiology, Plant



Pathology, Soil & Atmospheric Sciences, Statistics or Veterinary Biomedical Sciences.

Also, the Minority Graduate Education program provides two 8-week summer-readiness programs for 40 students and includes a visiting faculty development component designed to enhance relationships with faculty from minority-serving institutions.

Individuals interested in applying for the Minority Graduate Education Fellowship Program or other opportunities at the University of Missouri-Columbia should contact the Graduate School at 1-800-877-6312 or visit the Graduate School website at www.missouri.edu/~gradschl for application deadlines and specific details about each program. ❖

ELIGIBILITY CRITERIA

Students should meet the following criteria:

- be a member of an underrepresented minority group (African American, Hispanic American, Native American, Alaskan Native);
- be a United States citizen, national or permanent resident;
- be able to demonstrate a level of financial need;
- have received a baccalaureate degree in one of the relevant fields, as identified above, with a 3.0 GPA (on a 4.0 scale) and satisfactory GRE scores;
- express a desire to earn a doctoral degree and enter the professoriate; and
- be accepted into a doctoral graduate degree program, or enrolled in a graduate degree program with less than 30 accumulated hours towards the doctoral degree at the University of Missouri-Columbia and be majoring in a science, mathematics or engineering field as outlined by the Graduate School at the University.



Funding for the Minority Graduate Education Program is provided by a National Science Foundation grant and the University of Missouri.

Alliances for Graduate Education Program and the Professoriate

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