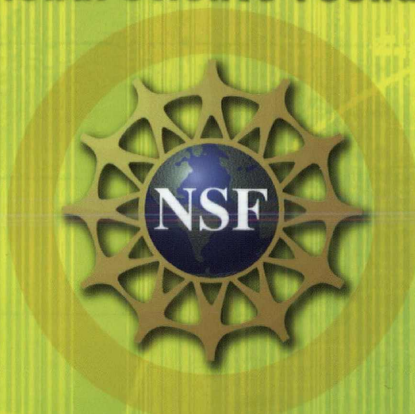


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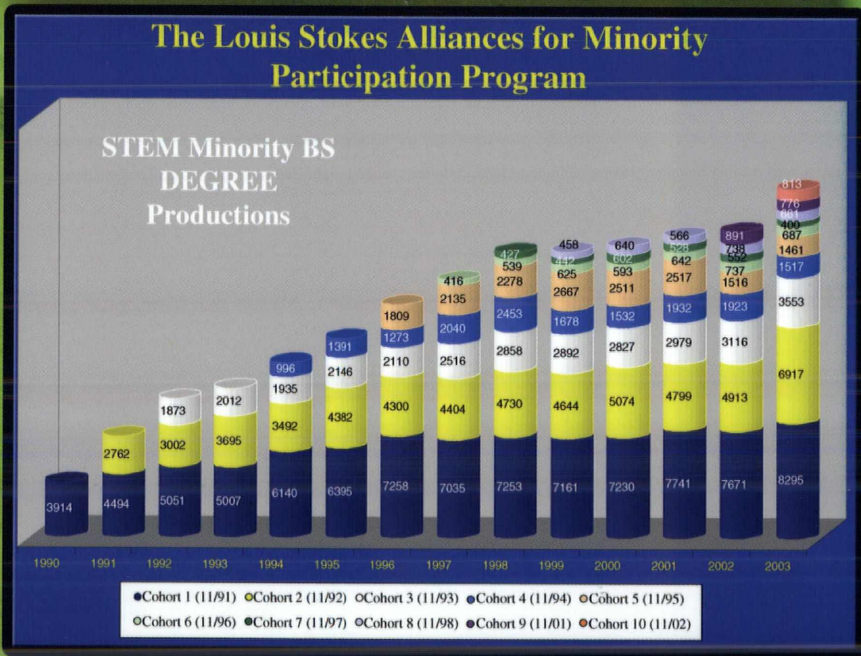


Making a Difference  
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in Science, Technology,  
Engineering and  
Mathematics

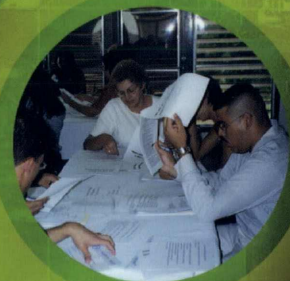
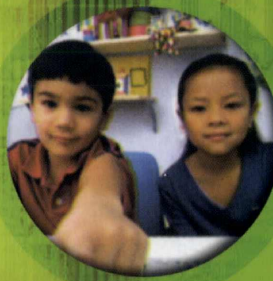
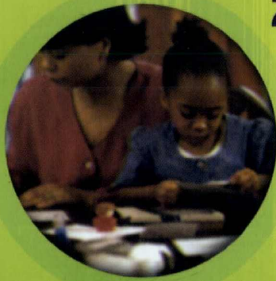
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LSAMP Exceeds 25,000 Baccalaureate Degrees in 2003



2004



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# LSAMP

## *A Program That's Making a Difference*

A. James Hicks, Ph.D.

LSAMP Program Director

Thirteen LSAMP Projects, spread across America, launched NSF's new "**Bridge to the Doctorate (BD)**," activity in the Fall of 2003. The BD activity serves some of the best and brightest beginning graduate students in science, technology, engineering, and mathematics (STEM) disciplines. One hundred and thirty LSAMP scholars, ten each at the 13 sites, were chosen by selected graduate institutions in ten states and Puerto Rico (*University California-Los Angeles, San Francisco State, Arizona State, New Mexico State, Texas El Paso, Texas A&M, Jackson State, North Carolina A&T State, Auburn, University of Delaware, City College of New York, Florida State, and University of Puerto Rico-Rio Piedras*).

The 2004 edition of the LSAMP Magazine chronicles a series of project accomplishments and activities, including the BD, all of which are making important differences for our nation. Also, in this edition, LSAMP welcomes the newly formed Ohio Alliance, led by Ohio State University. This project is composed of 15 Ohio institutions distributed statewide. Other features of the magazine highlight outstanding project mentors, the LSAMP and Smithsonian connection, and the first featured research article. The article by Rosemary Hayes was critiqued by a panel of experts from academia, including individuals with experience in education research and evaluation. Hayes' article provides a snapshot view of selected findings of retention and graduation rates of first-time, full-time STEM majors attending LSAMP and non-LSAMP institutions.

The Urban Institute, Washington, DC is expected to release, in late Spring 2004, results of a three-year evaluation of the LSAMP Program. *Dr. Beatriz Clewell of the Institute, says, "An ongoing evaluation of LSAMP has found that of program cohorts graduating from 1992 to 1997, over half had undergraduate GPAs of between 3.25 and 4.0, and seventy percent had enrolled in a graduate program."*

Creating opportunities through broadening participation continues to be a focal point of LSAMP. All projects continue emphasizing quality performances from college through post-baccalaureate engagement for all participants. Performance evidence shows that LSAMP activities are making important differences for the nation and the larger world.

# **The National Science Foundation**

The National Science Foundation (NSF) is an independent federal agency created by the National Science Foundation Act of 1950 (P.L. 81-507). From its first days, NSF has had a unique place in the federal government: It is responsible for the overall health of science and engineering across all disciplines. In contrast, other federal agencies support research focused on specific missions such as health or defense. NSF is also committed to ensuring the Nation's supply of scientists, engineers, and science and engineering educators. NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements with more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations, and other research institutions throughout the United States. NSF accounts for about one-fourth of all federal support to academic institutions for basic research. The Foundation receives approximately 30,000 proposals each year for research, education, and training projects, of which approximately 10,000 are funded. In addition, NSF receives several thousand applications for graduate and post-doctoral fellowships. It also supports cooperative research between universities and industries, and educational activities at every academic level.

## **The Directorate for Education and Human Resources**

The NSF Directorate for Education and Human Resources (EHR) is responsible for the health and continued vitality of the Nation's science, mathematics, engineering, and technology education and for providing leadership in the effort to improve education in these areas. EHR consists of seven divisions: Educational System Reform; Elementary, Secondary, and Informal Education; Office of Experimental Programs to Stimulate Competitive Research; Graduate Education; Human Resource Development; Research, Evaluation, and Communication; and Undergraduate Education.

## **The Division of Human Resource Development**

The Division of Human Resource Development (HRD), within the Directorate of Education and Human Resources, seeks to increase the participation and advancement of underrepresented groups and institutions at every level of science, mathematics, engineering, and technology (STEM) education and research. In so doing, these programs contribute to the attainment of an outcome goal of the NSF Strategic Plan FY 2001-2006: A diverse, internationally competitive, and globally-engaged workforce of scientists, engineers, and well-prepared citizens. Division programs include: Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring; Alliances for Graduate Education and the Professoriate; Centers of Research Excellence in Science and Technology; Historically Black Colleges and Universities Undergraduate Program; Louis Stokes Alliances for Minority Participation; Programs for Gender Equity; Programs for Persons with Disabilities; and Tribal Colleges and Universities.

## **The Louis Stokes Alliances for Minority Participation (LSAMP) Program**

The Louis Stokes Alliances for Minority Participation (LSAMP) program is designed to develop the comprehensive strategies necessary to strengthen the preparation and increase the number of minority students who successfully complete baccalaureates in STEM fields. This objective facilitates the long-term goal of increasing the production of Ph.D.'s in STEM fields, with an emphasis on entry into faculty positions. The LSAMP program requires each awardee to establish meaningful partnerships among academic institutions, and encourages the inclusion of government agencies and laboratories, industry and professional organizations. It is expected that successful partnerships will enable development of approaches tailored to the institutional setting for achievement of program goals in STEM undergraduate education. Supported activities include, among others: student enrichment, such as collaborative learning, skill development, and mentoring; academic enrichment, such as curricular and instructional improvement; and direct student support, such as summer activities.

## About the **NSF Leadership**



**Dr. Rita R. Colwell** became Director of NSF on August 4, 1998. 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.

She was a member of the National Science Board from 1990 to 1994 and has held numerous advisory positions in government and private foundations. She also served as President of the American Association for the Advancement of Science. Dr. Colwell received a Ph.D. in marine microbiology from the University of Washington.

**Dr. Judith Ramaley** became Assistant Director for Education and Human Resources on August 1, 2001. Prior to assuming this position, she was President of the University of Vermont. Since the 1960s, Dr. Ramaley has been a professor of biology at



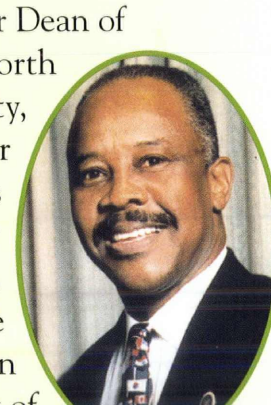
five universities, served as President of the University of Vermont and Portland State University in Oregon, and held senior administrative positions at several universities. Dr. Ramaley has served as Chair of the American Council of Education's Commission on Women in Higher Education and numerous other advisory boards.



**Dr. Bernice Taylor Anderson** became Acting Director of the Division of Human Resource Development in January 2004. She is a former Division Director for Educational System Reform and Program Director in the Division of Research, Evaluation, and Communication in the

Directorate for Education and Human Resources at the National Science Foundation (NSF). She has also served as the Executive Secretary of the Committee on Equal Opportunities in Science and Engineering, facilitating the production of the Committee's 2000 Biennial Report to the United States Congress.

**Dr. A. James Hicks**, former Dean of Arts and Sciences at North Carolina A&T University, became Program Director for the Louis Stokes Alliances for Minority Participation program on September 1, 1997. He received a Ph.D. degree in biology from the University of Illinois at Urbana and additional



training at Harvard University, the National Institutes of Health, and the Missouri Botanical Gardens. He has more than twenty years of successful administrative experience in addition to prior short-term assignments at NSF involving proposal reviews, research evaluation, and Intergovernmental Personal Act (IPA).

## National Underrepresented Minorities STEM Bachelor's Degrees Academic Year 2002-2003/Reporting Year 2003 Discipline by Race/Ethnicity

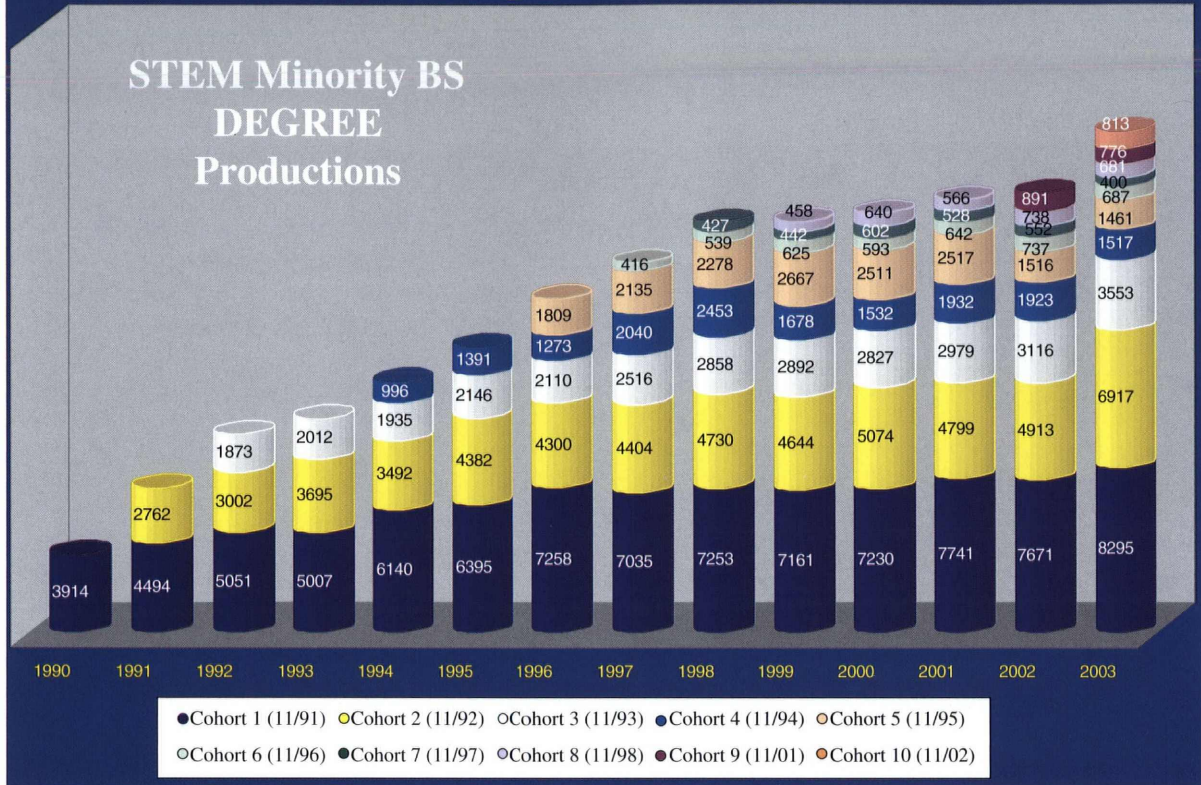
Discipline	African American	Hispanic	Native American <sup>1</sup>	Pacific Islander	Minority <sup>2</sup>	Total
Agricultural Sciences	316	521	102	28	150	1,117
Chemistry	505	560	41	25	51	1,182
Computer Science	2,723	1,812	141	351	97	5,124
Engineering	2,592	3,971	338	313	578	7,792
Environmental Science	102	154	34	9	5	304
Geosciences	33	102	20	3	3	161
Life Sciences	3,141	3,910	316	342	66	7,775
Mathematics	526	531	59	43	68	1,227
Physics/Astronomy	126	254	25	13	0	418
<b>Total</b>	<b>10,064</b>	<b>11,815</b>	<b>1,076</b>	<b>1,127</b>	<b>1,018</b>	<b>25,100</b>

## National Underrepresented Minorities STEM Bachelor's Degrees Academic Year 2002-2003/Reporting Year 2003 Gender by Race/Ethnicity

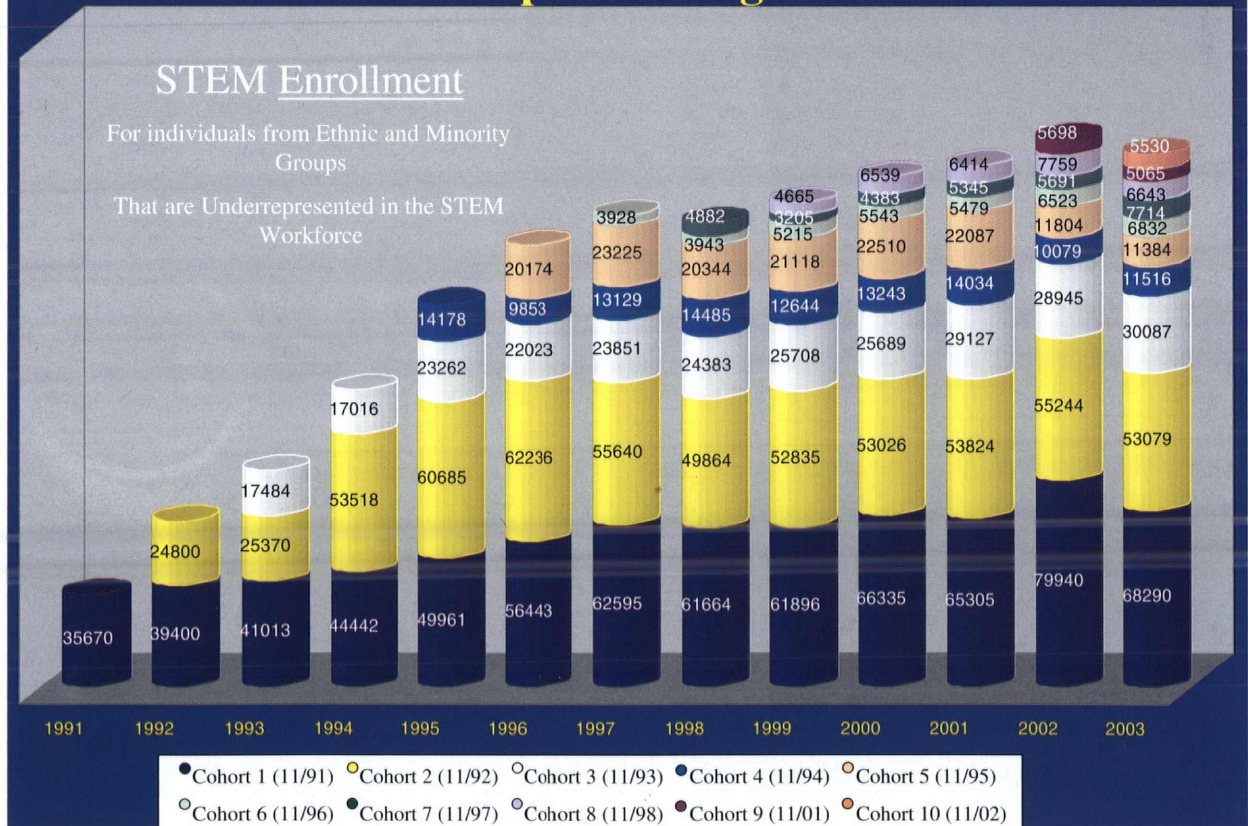
Gender	African American	Hispanic	Native American <sup>1</sup>	Pacific Islander	Minority <sup>2</sup>	Total
Male	4,721	6,729	590	637	640	13,317
Female	5,329	5,074	485	490	378	11,756
Unknown	14	12	1	0	0	27
<b>Total</b>	<b>10,064</b>	<b>11,815</b>	<b>1,076</b>	<b>1,127</b>	<b>1,018</b>	<b>25,100</b>

1. The Native American category includes American Indians and Alaskan Natives.
2. The Minority category comprises individuals reporting
  - a) two or more race/ethnicity categories and
  - b) one or more of the reported categories includes American Indian, Alaskan Native, Black or African American, Hispanic or Latino, Native Hawaiian or Other.

## The Louis Stokes Alliances for Minority Participation Program



## The Louis Stokes Alliances for Minority Participation Program



# Report on LSAMP and Enrollment, Retention and Graduation of Underrepresented Minority Students Majoring in Science, Technology, Engineering and Mathematics (STEM)

Author: Rosemary Hayes, Director  
Consortium for Student Retention Data Exchange (CSRDE) at the University of Oklahoma Outreach  
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## Background

Established in August 1994, the Consortium for Student Retention Data Exchange (CSRDE) at the University of Oklahoma is composed of 473 member institutions from every state in the United States. These 4-year institutions are a diverse group of public and private colleges and universities. The purpose of the CSRDE is to provide a mechanism by which institutions interested in the issues surrounding retention and graduation can share retention data and compare their retention and graduation rates in the context of peer institutions. The comparative study of peers is common practice among institutional researchers in higher education. Information on how peers differ in terms of number of faculty, faculty salaries, enrollment, investment in research facilities and even student retention can provide both a context for issues and an impetus for change. As a data-sharing consortium focused on student retention, CSRDE is able to provide member institutions with retention and graduation benchmarks not available from national sources.

Every year since 1994 member institutions have contributed data on the retention and graduation of first-time full-time freshmen. Since 2000, the CSRDE has also collected retention and graduation data on first-time full-time science, technology, engineering and mathematics (STEM) majors. The results of the most recent STEM survey were published in the 2002-03 CSRDE *STEM Report on the Retention and Graduation Rates of 1995-2001 Freshman Cohorts Entering in Science, Technology, Engineering and Mathematics Majors in 211 Colleges and Universities*.

This paper discusses some of the findings of the STEM report and re-examines them within the context of institutional participation in the Louis Stokes Alliance for Minority Participation (LSAMP). Using the data collected for the STEM report, this paper will review the retention and graduation rates of underrepresented minority (URM) STEM majors attending LSAMP institutions. Although it was not the original intent of the STEM survey to focus on the retention and graduation rates of LSAMP institutions, this initial re-examination of the data suggests that of the CSRDE institutions participating in the STEM survey, LSAMP institutions had higher retention and graduation rates for underrepresented minority STEM majors than did the non-LSAMP institutions.

## STEM Survey Participants

The STEM survey was supported in part by NSF grant #REC9903426. Two hundred and eleven CSRDE member institutions participated in this study of first-time full-time STEM majors. The survey participants were a diverse group of public and private 4-year institutions. The chart below shows the breakdown of these institutions according to their Carnegie classifications and institutional control. In terms of LSAMP participation, 111 were non LSAMP institutions and 100 were identified as LSAMP institutions.

Classification	Number of Institutions		
	Public	Private	Total
Doctoral/Research-Extensive	51	1	52
Doctoral/Research-Intensive	29	7	36
Master's	84	19	103
Baccalaureate	12	4	16
Other	4	0	4
Total	180	31	211

## Methodology

The STEM survey tracked the year-to-year retention and graduation rates of the first-time full-time degree-seeking freshman cohorts entering from 1995 through 2001. In addition to tracking the entire cohort the survey also followed a sub-cohort of these freshmen who indicated intent to major in the STEM fields. Each of these cohorts was followed from the fall of their first year enrollment through the fall of 2002.

The institutional contact at each participating member institution submitted the initial headcount, average ACT/SAT scores, as well as the retention and graduation rates from the second year through the seventh year for each of these seven cohort years. Cohort data were also provided by gender, race and ethnicity, and STEM intent. The data were reported at the cohort level, not unit record level. In addition, the institutional contact submitted select institutional and student characteristics, which facilitate making inter-institution comparisons. Researchers who have studied URM students encourage a more balanced approach, which also looks at institutional factors. For this reason, the survey collected student and institutional characteristics, in addition to



retention and graduation data. The data were submitted in electronic format, and once received were audited and analyzed.

## General Findings on STEM Majors

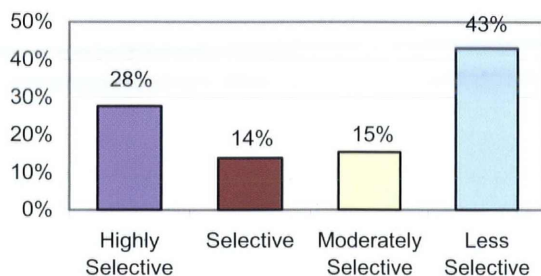
### 1. Enrollment of URM minorities in STEM rising.

From the cohort year 1995 through 2001, the enrollment of underrepresented minorities majoring in STEM increased by 13.7%. In comparing enrollment of LSAMP institutions with non LSAMP institutions it is interesting to see what percentage of the entire freshman STEM cohort is made up of URM students. The total headcount of all freshmen STEM majors during the reporting period was 562,652: 245,666 students were enrolled at non LSAMP institutions and 316,986 were enrolled at the LSAMP institutions. From 1995 through 2001 underrepresented minority students made up 11.8% of freshmen STEM cohorts at non LSAMP institutions, whereas URM students made up about 24% of the headcount of freshman STEM cohorts in LSAMP institutions. This is double the representation in non LSAMP schools.

### 2. Less selective institutions enrolled more freshman URM STEM majors than either highly selective, moderately selective, or selective institutions.

In the research at the Consortium for Student Retention Data Exchange (CSRDE), one of the institutional variables that is important to colleges is the average ACT/SAT scores used for admission purposes. These scores are used to group institutions based on admission selectivity. The higher the average admission score used by the institution, the higher level of "Selectivity". Typically, the higher the selectivity of the institution, the higher the retention and graduation rates are. Although only 15 percent of the all entering freshman STEM majors from 1995-2001 were enrolled at less selective institutions, 43 percent of all URM STEM majors enrolled from 1995-2001 attended a less selective institution.

**Distribution of URM STEM Majors by Institutional Selectivity 1995-2001**



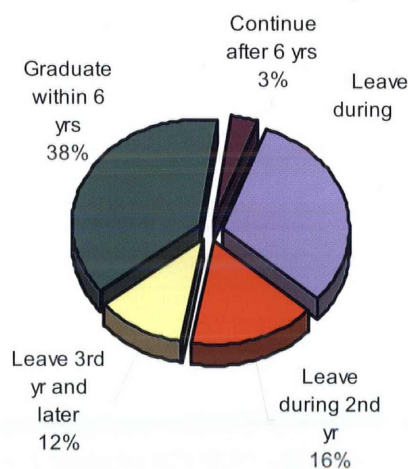
Also during this period, underrepresented minority students were not only enrolled in STEM majors in higher numbers at less selective institutions, they also constituted a higher percentage of the total STEM freshman headcount at the less selective institutions. URM students constituted 11% of the freshman STEM cohorts at highly selective institutions, whereas 53% of all freshman STEM majors at less selective institutions were underrepresented minorities.

### 3. Approximately 38 percent of all first-time full-time freshmen that began as STEM majors completed their degree within a STEM field within 6 years.

Approximately 38 percent of the 1995 and 1996 first-time full-time freshmen that began as STEM majors completed their degree within 6 years, 59 percent left the institution or changed to a non-STEM major, and 3 percent were continuing in STEM majors but had not completed a degree 6 years later. The following chart depicts the within STEM graduation and departure rates by year of college. In this instance, departure rates include students who left the institution or who remained in the institution but changed to a non-STEM major. The departure rates are as follows: 31 percent in the first year, 16 percent in the second year and 12 percent in the third and subsequent years of their college career.

Of the 59 percent who did not complete a STEM degree within 6 years, 38 percent left the institution of origin. An additional 21 percent remained at their institution but changed majors to a non-STEM field.

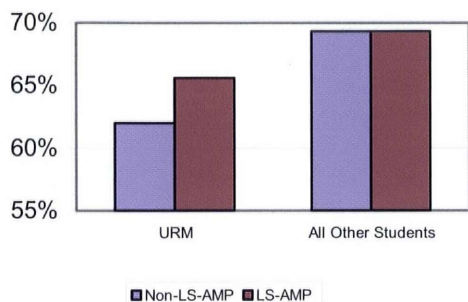
**Within STEM Graduation and Departure Rates of 1995-2001 STEM Majors**



**4. URM students, Retention and LSAMP.** As was discussed earlier, first year retention is a problem for STEM majors. It is also a problem for all students in any major. However, STEM majors not only might leave the college or university, they may decide to switch majors to a non-STEM field. One of the interesting findings of these data when examined with regard to LSAMP is that

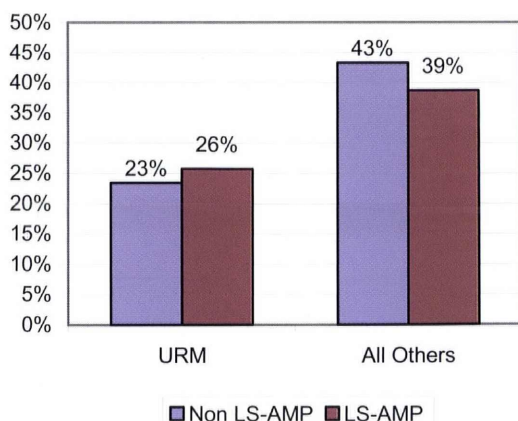
historically from 1995-2001, URM students who begin as STEM majors and attend LSAMP institutions have on average a better first year retention rate than their URM STEM peers at non LSAMP schools. In 2001, 66% of the URM STEM majors returned the second year and continued in STEM at LSAMP institutions as compared with 62% for non LSAMP institutions.

**First-year Retention Rates of Fall 2001 Freshman STEM majors who returned to continue in STEM**



**5. Freshman URM STEM majors graduated within STEM fields and within 6-years at a higher rate in LSAMP institutions.** The class of 1996 is the most recent class for which our survey captured six-year graduation data. Within the 1996 class of URM STEM majors enrolled at LSAMP institutions 26% graduated within six years in STEM, as compared to 23% of the URM STEM students enrolled in non LSAMP schools.

**Percentages of STEM majors who graduate in STEM within 6 years**



Typically graduation rates are related to the admission selectivity of the institutions, the higher the ACT/SAT admission scores used (selectivity), the higher the graduation rates.

However there is something very interesting happening within those LSAMP schools which use less selective admission scores. As shown in the chart below, the graduation rates are higher (26%) for URM STEM students than the graduation rates for their peers at moderately selective (15%) and selective (21%) LSAMP institutions in this study.

The graduation rates for URM STEM majors graduating in STEM at less selective LSAMP are higher than that of their URM peers at moderately selective and selective non-LSAMP institutions as well.

In terms of actual numbers of URM STEM graduates, we found that the less selective LSAMP schools graduated more URM students in STEM fields compared to any other LSAMP institutions. This is due in part to the large number of URM STEM majors enrolled at these institutions

## Discussion and Future Research

This brief report is intended to provide a snapshot view of some of the interesting findings of our most recent study of the retention and graduation rates of first-time full-time STEM majors with a special focus on the retention and graduation rates of STEM majors attending LSAMP and non LSAMP institutions. There are several areas that are worthy of further study:

1. We need to renew our focus on the factors that contribute to the high first-year departure rates (34.6%) for URM STEM majors at LSAMP institutions.
2. More URM STEM students attend less selective institutions. How do the institutional/systemic strategies for support of URM students vary by institutional selectivity? What factors play a role in the departure of STEM students in general and what can be done from an institutional perspective to retain them? With the concentration of research dollars at more selective institutions, we need to look at how to bring more research experience to where the URM students are situated: less selective institutions.
3. URM STEM students who are staying in LSAMP institutions have a slightly better retention and graduation rate in the STEM field than their non LSAMP peers. While we celebrate the achievement of LSAMP there is still much work to do. We would make significant inroads in the supply of STEM graduates if we could retain and graduate the URM students at least at the same rate as the non-URM students.

CSRDE at the University of Oklahoma through the

annual STEM survey has developed an extensive database for benchmarking the retention and graduation of STEM majors. All LSAMP institutions are encouraged to join and contribute retention and graduation data. If

your institution is interested in joining CSRDE so that you may participate in the annual survey and have this type of comprehensive information available to benchmark your efforts, please contact us at [csrde@ou.edu](mailto:csrde@ou.edu).

<b>Retention and Graduation Rates of Freshman STEM majors Within STEM Fields</b>				
<b>Institution and Selectivity Type</b>	<b>2001 STEM Cohort 2nd Year Continuation Rates</b>		<b>1996 STEM Cohort 6 Year Graduation Rate</b>	
	Other Students	URM	Other Students	URM
<b>Non LSAMP</b>				
Highly Selective	76.3%	70.1%	52.4%	34.3%
Selective	69.1%	66.4%	39.0%	22.3%
Moderately Selective	59.0%	55.8%	30.2%	16.7%
Less Selective	56.4%	61.3%	21.1%	17.8%
Total	69.9%	62.6%	43.3%	23.4%
<b>LSAMP</b>				
Highly Selective	77.3%	73.1%	45.2%	31.3%
Selective	64.5%	61.5%	37.5%	21.2%
Moderately Selective	67.8%	59.2%	26.0%	14.6%
Less Selective	60.7%	63.2%	22.5%	25.6%
Total	71.4%	65.4%	38.8%	25.7%

Note: Highly Selective-Act above 24.0 or SAT above 1100; Selective-ACT 22.5 or SAT 1045-1100  
Moderately Selective-ACT 21.0-22.4 or SAT 990-1044; Less Selective-ACT below 21 or SAT below 990.

Ms. Hayes is the Director of the Center for Institutional Data Exchange and Analysis (C-IDEA) at the University of Oklahoma and Director of the Consortium for Student Retention Data Exchange (CSRDE). This consortium is composed of 473 colleges and universities dedicated to data sharing, information exchange, policy analysis and reporting related to retention. She has been the PI on the National Science Foundation project, *Building a National Database on Retention and Graduation Rates of Underrepresented STEM Majors* (REC 9903426). She currently serves as the Program Evaluator for the Louis Stokes Oklahoma Alliance of Minority Participation Program (LS-OKAMP).



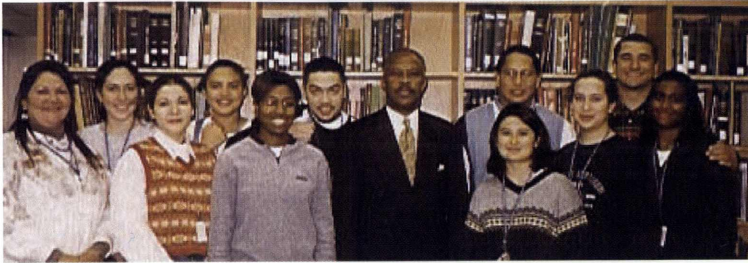
Ms. Hayes stays involved in retention issues in higher education community through her service, publications, and presentations on retention issues. She serves as a member of the National Postsecondary Education Cooperative (NPEC) Working Group on Student Persistence and Completion, sponsored by the U.S. Department of Education. She recently was awarded the distinction of the Joe Saupe Award for Best Paper of Conference at the Mid-America Association for Institutional Research Conference in November of 2002 on the retention of minorities in science, technology, engineering and mathematics majors. This paper was also presented at the annual conference of the Association for Institutional Research in Tampa, May 2003. Through the CSRDE, Ms. Hayes publishes annual retention studies on first-time full time freshmen, first-time full-time freshmen STEM majors and community college transfers.

In addition to her professional responsibilities, Ms. Hayes is completing her Ph.D. in Computer and Information System.

# Creating Colleagues

## LSAMP at the Smithsonian

In 1997 the Smithsonian National Museum of Natural History (NMNH) formed a partnership with National Science Foundation (NSF) LSAMP program. The partnership has grown to include the



Smithsonian Environmental Research Center (SERC) and has evolved into a program that aggressively creates interactions between the Smithsonian Institution (SI) and LSAMP Alliances. We have developed a grass-roots approach that encourages staff to develop programs for their lab or department. Such an

approach has allowed us to successfully engage individuals who may not otherwise be involved in institution-wide diversity initiatives. We have incorporated the ideas and input of SI personnel in developing and instituting programs that meet the needs of the Alliances at all levels of the organization. We are changing the culture to one in which *the creation of diversity programs is a personal as well as intuitional prerogative*. Examples of programs are:

### Field course in Mangrove Ecology

- ❖ 10 day field intensive course on Magueyes Island.
- ❖ Nineteen students and three faculty from the PRLSAMP
- ❖ Team of instructors culled from leading mangrove scientists from around the world
- ❖ One group project resulted in publication with students as co-authors

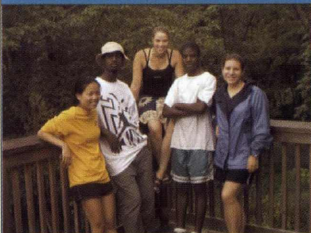
*Course initiated and developed by SERC senior researcher Dr. Ilka Feller*



### The Creating Colleagues program:

- ❖ Enhanced internship that includes dual mentorship, and a component at the student's home institution
- ❖ Continued interactions between the mentors and their interns beyond the span of the traditional summer internship.
- ❖ 40% percent of Creating Colleagues participants were freshmen.

*Three collaborations initiated by researchers from the NMNH Depts. of Botany and Entomology and SERC*



### Summer Bridge Program

- ❖ Series of workshops for LSAMP Summer Bridge participants
- ❖ Brought over 100 LSAMP scholars and staff to the NMNH and SERC.
- ❖ Each workshop presented a tailored experience for LSAMP scholars, including one-on-one interactions; group sessions, and mini workshops with Smithsonian scientists and staff.

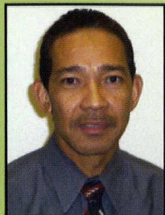
*Technicians, Post-Docs, and interns developed unique experiences based on their labs research.*

Program Manager: Dr. Kelton L. Clark, Smithsonian Institution, PO Box 28, Edgewater, MD 21037. Phone: 443.482.2440 | Fax: 443.482.2375 | Email [clarkk@si.edu](mailto:clarkk@si.edu).

# Outstanding *LSAMP* Mentors and Students

## Alabama

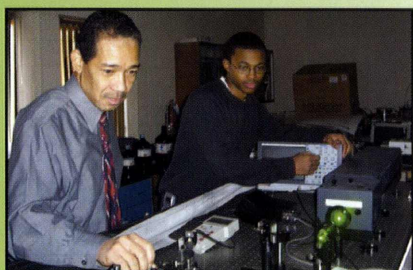
### MENTOR:



**Kenneth Lai Hing, Ph.D.,** Chair, Department of Chemistry, Oakwood College, 7000 Adventist Boulevard, Huntsville, AL 35896, (256) 726-7112, laihing@oakwood.edu

**Research Area:** Non-linear optics, laser induced photochemistry and environmental chemistry

### STUDENT RESEARCHER:



**Theodore Roosevelt Nicholson, III,** Senior, Chemistry, Oakwood College  
**Research Area:** Non-linear optics and photodynamic therapy.

## All Nations

### MENTOR:

**Bill Swaney, M.S.,** Department Head, Engineering and Natural Sciences, Salish Kootenai College, P.O. Box 70, Pablo, MT 59855, (406) 275-4896, william\_swaney@skc.edu

**Research Area:** Wildlife Biology

*"Mark is a well-disciplined, highly motivated student who is a pleasure to mentor and to have in the classroom. Presently, Mark is working on a map generated by a Global Positioning System and then downloaded to a Geographic Information System that shows the extent of cottonwood forests on the Nyack River floodplain."*

### STUDENT RESEARCHER:



**Mark Couture,** Junior, Environmental Science, Salish Kootenai College.  
**Research Area:** Comparison of bio-complexity of two

river flood plains in northwestern Montana.

### 2002-2003 Research Presentations/Awards:

Mark has made one presentation directly relevant to his research. He was awarded the prestigious David and Lucile Packard Scholarship (2 years at \$10,000 per year) beginning in the fall of 2003.

## California State University

### MENTOR:

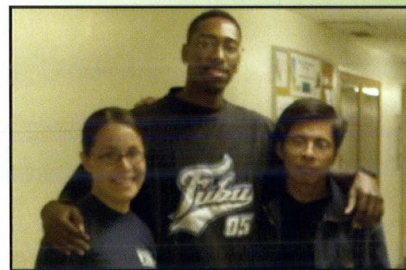


**Margaret Jefferson, Ph.D.,** Professor, CSU, Los Angeles, Department of Biological Sciences, 5151 State University Drive, Los Angeles, CA 90032-8201, (323) 342-2059, mjeffer@exchange.calstatela.edu

**Research Area:** Genetics; Drosophila Behavioral Genetics

*"Students who participate in the LSAMP program at CSU, Los Angeles have the opportunity to take a series of research training courses in their freshmen and sophomore years that expose them to SEM research careers, ongoing research projects and hands-on opportunities to design and conduct their own team research projects. In their junior and senior years they are placed in more advanced research programs. Mentoring is a key component to our LSAMP program that guides students through their research development and onward into graduate school."*

### STUDENT RESEARCHERS:



**Michelle Madrid,** Senior, Biology, CSU, Los Angeles  
**Steven Ames,** Junior, Mechanical Engineering, CSU, Los Angeles  
**Jesus Torres,**

Sophomore, Mathematics & Electrical Engineering, CSU, Los Angeles

**2002-2003 Research Presentations/Awards:**  
Mechanized Firefighting

## Colorado

### MENTOR:

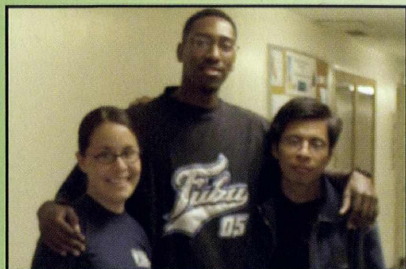
**Patricia Bedinger, Ph.D.,** Professor, Department of Biology, Colorado State University, Fort Collins, CO 80523, (970)-491-2879, bedinger@lamar.co-

state.edu

Research Area: Plant Molecular Biology

"It is always a rewarding experience to see the development of an undergraduate, through research, from someone who passively sits in class, to someone who realizes that science is a dynamic and interactive process to which they can contribute. Mentoring allows my students and I to form a closer relationship, and I often keep in touch with my undergrads as they progress to graduate or medical school."

#### STUDENT RESEARCHER:



**Ruth Arthur-Asmah**, Senior, Biological Science, Colorado State University  
**Research Area:** Plant Molecular Biology

#### 2002-2003 Research Presentations/Awards:

1. *Looking for Partners of the Pex Protein*, Seventh Rocky Mountain Plant Biotechnology and Molecular Biology Symposium, Colorado State University, April 21, 2003.
2. *Identification of a New Pollen Growth Factor*, PEAKS/AGEP & McNair Scholars Eighth Annual Summer Research Symposium, Colorado State University, July 25, 2003.

### Florida-Georgia

#### MENTOR:



**Maurice Edington**, Ph.D., Assistant Professor, Florida A&M University, Department of Chemistry, Jones Hall Room 219, Tallahassee, FL 32307, maurice.edington@famued.edu  
**Research Area:** Biophysical Chemistry

"I have thoroughly enjoyed my time working with Giovanni. He is one of the most hard-working, dedicated and passionate students that I have had the opportunity to work with. Giovanni has made tremendous contributions to my research program and I have the utmost confidence that he is primed for a successful scientific career."

#### STUDENT RESEARCHER:



**Giovanni Lalanne**, Senior, Chemistry, Florida A&M University  
**Research Area:** Biophysical chemistry  
2002-2003

#### Research Presentations/Awards:

1. *A Spectroscopic Investigation of the Excited-State Decay Mechanisms of Common Sunscreen Agents*, FAMU 2002 Student Research Forum, Undergraduate 1st place
2. *A Spectroscopic Investigation of the Excited-State Decay Mechanisms of Common Sunscreen Agents*, 2003 FG-LSAMP Expo, Chemistry 2nd place
3. *A Spectroscopic Investigation of the Excited-State Decay Mechanisms of Common Sunscreen Agents*, Imhotep Interdisciplinary Conference, Undergraduate 3rd place

### Houston

#### MENTOR:



**Willie E. Taylor**, Ph.D., Professor, Texas Southern University, 3100 Cleburne Ave., Houston TX 77004, (713) 313-1046, Taylor\_WE@TSU.edu  
**Research Area:** Mathematics

"Bertrand Russell said that 'mathematics possesses truth, supreme beauty, and a stern perfection that only great art can show.' I think he means that mathematics is the jazz of the sciences. At least, that is how I teach it."

#### STUDENT RESEARCHER:



**William Bryant**, Sophomore, Mathematics, Texas Southern University  
**Research Area:** Differential equations  
2002-2003  
**Research Pre-**

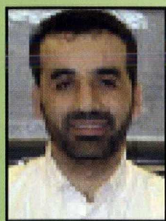
#### sentations/Awards:

Generating Second Order Differential Equations and Some Properties of Their Solutions, Texas Academy of Science, Award: The Amir-Moez Grant

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## Illinois

### MENTOR:



**Said Al-Hallaj**, B.S., Chemical & Environmental Engineering, Coordinator, IIT Renewable Energy Programs, Suite 127, Perlstein Hall, 10 West 33rd St., Chicago, IL 60616, (312)-567-5118, alhallaj@iit.edu

**Research Area:** Electrochemical/Calorimetric Studies of Batteries and Fuel Cells and The Role of Renewable Energy in a Sustainable Energy Future

*"The Illinois LSAMP program provides a unique opportunity for undergraduate students to have access to state-of-the-art energy research projects that is usually accessible by graduate students only. I was impressed with the enthusiasm displayed by the LSAMP scholars that I have worked with. I look forward to mentoring and working with more Illinois LSAMP students in the future."*

### STUDENT RESEARCHER:



**Kortney Ward**, Senior, Chemical Engineering, Illinois Institute of Technology  
**Research Area:** Electrochemical/Calorimetric

Studies of Batteries and Fuel Cells

**2002-2003 Research Presentations/Awards:**

Fabrication and characterization of monodispersed catalytic metal films using electrostatic spray deposition, IIT Interprofessional Project (IPRO) & Undergraduate Research Day

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## Indiana

### MENTOR:

**Eugenia Fernandez**, Ph.D., Assistant Professor, School of Engineering and Technology, Indiana University Purdue University Indianapolis, 723 W Michigan St. (SL 220), Indianapolis IN 46202-5132, (317) 274-6794, efernand@iupui.edu

**Research Area:** Management Information Systems

*"Latonia has been working on a project to develop a multimedia tutorial to help junior high school students understand basic algebra. During her first year, when her technical skills were low, she conducted an analysis and initial design of the tutorial. In the analysis, she devel-*

*oped learning objectives and specified the behavior, criteria, and conditions for each objective. Mentoring Latonia has given me the opportunity to work long term with a student. Our interactions not only centered on discussions about her research project, but included academic advising and some tutoring. I have had the pleasure of watching Latonia develop from a shy, hesitant freshman to a mature, confident senior. Such opportunities are rare on our urban campus, I feel fortunate to be a part of this mentoring program."*

### STUDENT RESEARCHER:



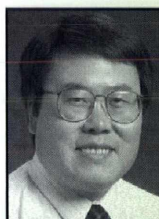
**Latonia Stovall**, Senior, Computer Technology, Purdue School of Engineering and Technology, Indiana University Purdue University Indianapolis (IUPUI)

**Research Area:** Multimedia Software Design  
**2002-2003 Research Presentations/Awards:** Multimedia Software Design, LSAMP Summer Research Presentation

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## Louisiana

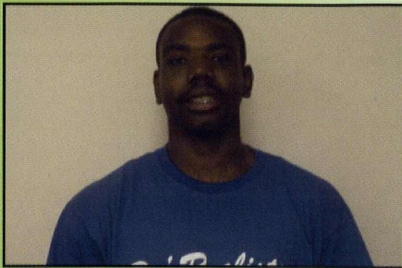
### MENTOR:



**Guoqiang Li**, Ph.D., Assistant Professor, Department of Mechanical Engineering, Louisiana State University, Baton Rouge, LA 70803, (225) 578-5302, lguoqi1@lsu.edu

**Research Area:** Composite materials and structures,

*"I have been very active on promoting minority undergraduate and graduate students and have gained extensive experience in guiding undergraduate students on research through the participation in several LS-LAMP, NSF/REU, NASA/LaSPACE/LURA projects. Twelve undergraduate students, mainly minority students from Southern University (HBCU) and Louisiana State University (LSU) have conducted research under my guidance. Among them, two minority students have published their results in a Journal as leading authors; two minority students have one paper published in a referred journal as co-authors; three students have two papers published in two referred journals as co-authors."*



**STUDENT RESEARCHER:**  
**Carlos Stewart,**  
 Senior, Chemical Engineering,  
 Louisiana State University  
**Research Area:**

Composite Piping System

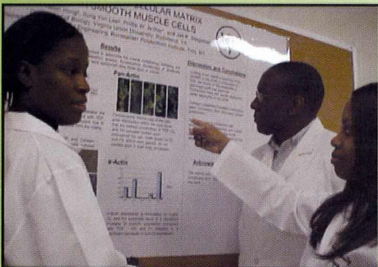
**Referred Journal Paper:** Guoqiang Li, Dishili Davis, Carlos Stewart, Jerry Peck, Su-Seng Pang, "Joining Composite Pipes Using Hybrid Prepreg Welding and Adhesive Bonding," Polymer Composites, Society of Plastic Engineers, Vol. 24, No.6, (2003).

## Mid Eastern

**MENTOR:**



**LeBarron Chambers**



**STUDENT RESEARCHER:**  
**Natasha Cover,**  
 Sophomore, Biology,  
 Institution

**Research Area:** Her research helped to establish baseline

protocols for further studies designed to develop three-dimensional constructs for modeling extra-cellular matrix in vascular smooth muscle cells.

## Mississippi

**MENTOR:**

**Alfred Mikell, Ph.D.** Associate Professor, University of Mississippi

**Research Area:** Biology

**STUDENT RESEARCHER:**



**Trisha Weekley**  
**Research Area:**  
 Characterization of Coliform Bacteria from Influent Wastewater of the University of Mississippi

Wastewater Treatment Plant.

## Missouri

**MENTOR:**



**Susan LaGrassa, Ph.D.** Director and Associate Professor, Division of Mathematics and Computer Science, Truman State University, Kirksville, MO 63501, (660) 785-7496, lagrassa@truman.edu

**Research Area:** Commutative Algebra and Semiring Theory

*"Tiara is one of the brightest students I have ever worked with. She has an excellent work ethic, a strong background in mathematics, and a genuine love for learning. In addition, in contrast to the usual image of a mathematician, she is a warm, caring, outgoing young lady. She enjoys helping others and takes every opportunity to share her interests. Mentoring Tiara usually means trying to keep up with her, a task I willingly undertake. I have no doubt she will find great success in the future".*

**STUDENT RESEARCHER:**



**Tiara Lyn Pettis,**  
 Senior,  
 Mathematics,  
 Truman State University,  
**Research Areas:**  
 Algebra and Geometry

**2002-2003 Research Presentations/Awards:**

1. Exceeding Bounds: Effects of the College Algebra Project on African American High School Students, Truman State University
2. Classifying Groups Up to Quasi- Isometry Using Cayley Graphs, University of Minnesota and University of Illinois at Urbana-Champaign, Best Oral Presentation

## New Mexico

**MENTOR:**

**A. Salim Bawazir, Ph.D.** Assistant Professor, MSC 3CE, New Mexico State University, P.O. Box 30001, Las Cruces, NM 88003-8001, (505) 646-6044, abawazir@nmsu.edu

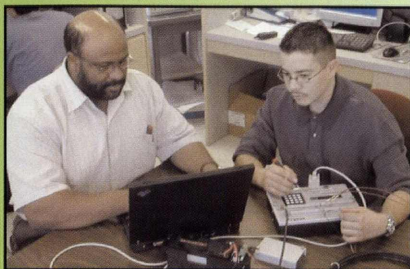
**Research Area:** Water resources engineering in relation to ground and surface water, hydrology and agriculture and Geological Engineering

*"I enjoy working with the students and seeing their professional growth. They learn to work as part of a team,*



improve their writing and communication skills and their ability to present their research in a professional manner. I think I can make a difference in their lives and that's the best feeling."

#### STUDENT RESEARCHER:



**José A. Solis**, Junior, Civil Engineering, New Mexico State University  
**Research Area:** Water resources engineering relating to instrumentation for measuring evaporation

tion for measuring evaporation

#### 2002-2003 Research Presentations/Awards

1. Recipient of New Mexico State Highway and Transportation Department Research Quality Initiative Internship for 2004
2. Automatic Class A Evaporation Pan Using Load Cell Sensors, 2003 New Mexico AMP Student Research Conference, First place oral presentation

### New York City

#### MENTOR:



**Neville Parker**, Ph.D. Principal Investigator, City College of New York, 138th Street and Convent Avenue, Marshak-Building, Room J14, New York, NY 10031, (212) 650-8854, ampcc@cunyvm.cuny.edu  
**Research Area:** Engineering

#### STUDENT RESEARCHER:



**Kurt James**, Senior, Physics, City College  
**Research Area:** Study of a two dimensional layer of electrons within a Silicon MOSFET.  
**2002-2003 Research Presentations:**

1. American Physical Society Conference, Austin Texas, Published review article, Physical Review
2. Urban University Conference, New York, NY

"While working in Dr. Parker's lab performing research in Civil Engineering, I realized that my passion was in Electrical Engineering. I also realized that City College was the ideal place to study because of the interaction with faculty members such as Dr. Parker as well as the support services at CCNY."

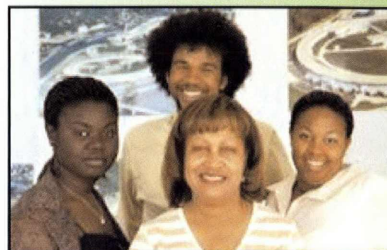
### North Carolina

#### MENTOR:



**Mary A. Smith**, Ph.D., Professor and Director, Genomics and Bioinformatics, 103 Barnes Hall, 1601 E. Market St., Greensboro, NC 2741, (336) 334-7907, smithma@ncat.edu  
**Research Area:** Biotechnology

#### STUDENT RESEARCHERS:



**Daud Cole**, Junior, Biology  
**Research Area:** Bioinformatics  
**Olamide Oliyawola**, Sophomore, Biology  
**Research Area:** Bioinformatics

**Roshanda Ruffin**, Sophomore, Chemistry  
**Research Area:** Bioinformatics

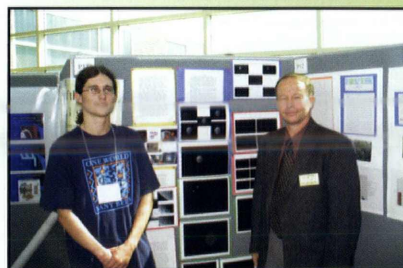
### Oklahoma

#### MENTOR:

**Carl T. Rutledge**, Ph.D., Professor and Chairman, East Central University, Ada, Oklahoma, crutledge@mac.com  
**Research Area:** Physics and Astronomy Education

"I encourage students to apply for REUs and other off campus summer programs as well as the OK-LSAMP sponsored research on campus. One of my 1996 mentees, Jennifer Mann, received the Ph. D. in Mathematics in 2002 and is now Assistant Professor of Mathematics at UT-Tyler. Another program participant, Suzanne Tunnell Estes, also received the Ph.D. (biology) in 2002. I appreciate the mentors at East Central University who donate their time and effort toward helping our students."

#### STUDENT RESEARCHER:



Marshall McCutchen and Dr. Carl T. Rutledge

**Marshall McCutchen**, Senior, Physics, East Central University

"Marshall McCutchen worked with me during the summer at the ECU Observatory. His work involved testing and evaluating several new pieces of equipment which are new accessories to our Celestron 14 telescope,

including the Santa Barbara Instrument Company's STV. He was able to take some good photos of Mars when it was at its closest approach in August and used the STV for Skyglow testing with deep sky photography. He was also a helpful assistant at public telescopic viewing sessions of Mars."

## Philadelphia

### MENTOR:



**Gossett A. Cambell**, Ph.D Candidate, Drexel University, Department of Chemical Engineering, 3141 Chestnut Street, Philadelphia, PA 19104, (215) 895-5826, gac22@drexel.edu

**Research Area:** Biosensors: Detection and Quantification of Whole Cells, Proteins, and DNA Using Glass Piezoelectric Microcantilevers.

"As an LSAMP mentor, I was given the opportunity to advise, lecture, and construct interesting projects for Raul A. Jackson. From this experience, I have developed teaching, communication, and project designing skills. Most importantly, Raul has developed technological, problem solving, writing, and practical skills. The greatest achievement to me as a mentor was to see Raul successfully utilize these skills through my mentorship to complete his project and to make the connection between theory and experiments".

### STUDENT RESEARCHER:



**Raul A. Jackson**, Senior, Chemical Engineering, Drexel University  
**Research Area:** Chemical Engineering

#### 2002-2003 Research Presentations/Awards:

Quantification of E.coli 0157:H7, Liquid Level Monitoring and Viscosity Determination Using the Piezoelectric Microcantilevers, 7th Annual Philadelphia AMP Research Symposium and Mentoring Conference, 1st Place, Engineering

## Puerto Rico

### MENTOR:



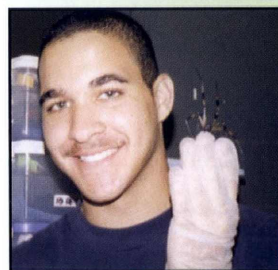
**David Suleiman**, Ph.D., Associate Professor, Department of Chemical Engineering, UPRM, Associate Director, Research & Development Center, UPRM, R&D Center, Highway 108, Km. 108, PO Box 9001, Mayaguez, PR 00681-9001, (787)

831-2065, dsuleiman@uprm.edu

**Research Area:** Polymer & Pharmaceutical Drug Processing & Supercritical Fluids.

"Research has not only proven to be an excellent avenue of growth for undergraduate students, but also an effective mean for professors to become better teachers. It has been very rewarding to guide my students through the process of facing research challenges through hard work, creative thinking, and dedication."

### STUDENT RESEARCHER:



**Misael Avilés**, currently a first year Ph.D. student at the University of South Carolina.

**Research Area:** Removal of Ethylene Glycol from HES with Supercritical Fluids

2002-2003 Research Presentation:

Removal of Ethylene Glycol from HES with Supercritical Fluids, American Institute of Chemical Engineers (AIChE) 2002 National Conference, Indianapolis, Indiana, Second Prize, Separations Division, Student Poster Session

## South Carolina

### MENTOR:



**Jean Guard Bouldin**, D.V.M., Ph.D., Veterinary Medical Officer USDA, ARS, Southeast Poultry Research Laboratory, 950 College Station Road, Athens, Georgia 30605, (706) 546-3446, jpetter@seprl.usda.gov

**Research Area:** Molecular Microbiology

"The SCAMP program enabled our intern, Sharene Patterson, to learn that the progress of any project requires hard work coupled with intelligent approaches. We hope that Sharene's experience in a working laboratory will facilitate her progress from a small college into

the broader world of scientific endeavor. These types of support programs are critical for showing students who come from diverse backgrounds that a career in the sciences is both attainable and desirable”.

#### STUDENT RESEARCHER:



**Sharene Patterson**, Sophomore,  
Biology,  
Voorhees College

**Research Area:** Molecular  
Microbiology

**2002-2003 Research Presentations/  
Award:**

Use of gyrB to identify Salmonella serotypes, LS-SCAMP Annual Science and Engineering Research Conference, Award: Dr. Judith Bostock Award \$3,000 Research Scholarship

### State University of New York

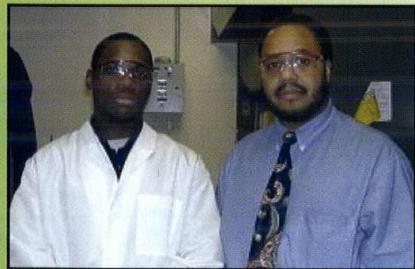
#### MENTOR:

**Duncan Quarless, Jr.**, Ph.D., Assistant Professor of Chemistry, SUNY College at Old Westbury, Natural Science Building, Old Westbury, NY 11568-0210, (516) 876-2734, quarlessd@oldwestbury.edu

**Research Area:** Inorganic/Bioinorganic Chemistry, Preparation and Study of Synthetic Models of Lewis Acid Metalloproteins, with a focus on non-covalent intramolecular forces contributing to structure and reactivity.

*“Mentorship is artful and is like processing diamonds: it takes a bit of heat and pressure, and the outcomes are desirous and invaluable.”*

#### STUDENT RESEARCHER:



**Patrick Hyppolite**,  
Junior, Biology,  
SUNY College at  
Old Westbury

**Research Area:**  
Synthetic models  
(metal complexes  
with mercaptoac-

etamides) for metallothionein and zinc methyl transferases.

#### 2002-2003 Research Presentation:

Heavy Metal Complexation of Phenyl and N-Methyl Phenyl Mercaptoacetamides: Probing of Non-Covalent Forces in Metallocysteinate Proteins, Annual Biomedical Research Conference for Minority Students

## Tennessee LSAMP

#### MENTOR:



**John T. Robinson, Jr.**, Ph.D., Assistant Professor/Biological Sciences, Department of Biological Sciences, Tennessee State University, 3500 John A. Merritt Blvd, Nashville, Tennessee 37209, (615) 963-5762, jrobinson@tnstate.edu

**Research Area:** Molecular Genetics

*“Mentoring is proving to be a more rewarding experience for me than I originally imagined. My major goal through graduate and post-graduate training was to return to an institution similar to my baccalaureate alma mater and provide similar mentoring experiences afforded me. It was through such mentoring experiences that motivated me to consider and pursue a career as a faculty investigator. Surprisingly, serving as a research advisor and mentor to students such as Tiffany, has allowed me to recognize that traditional mentorship roles may often reverse. The “mentor” I have discovered, if an active listener and observer, often becomes the “mentee”. This has allowed me to become a more effective researcher and mentor.”*

#### STUDENT RESEARCHER:



**Tiffany R. Oliver**,  
B.S., Biological  
Sciences,  
Tennessee State  
University, 2003.  
Enrolled in Ph.D.  
program in Genet-  
ics at Emory Uni-  
versity.

**Research Area:** Genetics

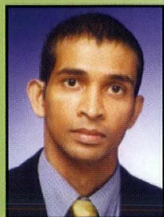
#### 2002-2003 Research Presentation/Awards:

T. Dandy, T. Oliver, A. Johnson, A. Ilvarsonn, T. S. Hays, and J. T. Robinson (2002). Phenotypic modifier screening for regulators of dynactin and dynein function in *Drosophila*, 2nd Biennial RIMI Program Directors and Research Symposium, Morgan State University, Baltimore, MD.

T. Oliver, T. Dandy, A. Johnson, A. Ilvarsonn, T. S. Hays, and J. T. Robinson (2002). Genetic screening for regulators of p150Glued-dynactin and dynein function in *Drosophila*. Annual Tennessee Academy of Science Symposium. Austin Peay State University, Clarksville, TN.

## University of Texas System

### MENTOR:



**Ramesh Yerraballi, Ph.D.** Graduate Advisor, Sr. Lecturer, CSE Department at UT Arlington, 416 Yates, P.O. Box 19015, Arlington, TX-76019; (817) 272-5128; ramesh@cse.uta.edu  
**Research Area:** Multimedia Communications, Operating Systems

*"It was a pleasure directing Jose Gonzalez on his Honors Thesis. I thoroughly enjoy working with students of all backgrounds...Thanks to initiatives like LSAMP for promoting minority numbers in STEM; I look forward to doing more of this in the future."*

### STUDENT RESEARCHER:



**Jose Francisco Gonzalez Castillo,** BS with Honor's in Computer Science and Engineering, UT Arlington  
**Research Area:** Network Management

*"The LSAMP program has given me focus, that is, the ability to concentrate on my research. It has helped me further my educational objectives as well as develop my professional goals."*

## University System of Maryland

### MENTOR:



**Lasse Lindahl, Ph.D.,** Professor and Chair, Department of Biological Sciences University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, Maryland 21250, (410) 455-2996, lindahal@umbc.edu  
**Research Area:** Molecular Biology/

genetics; structure/function of RNA; ribosome synthesis

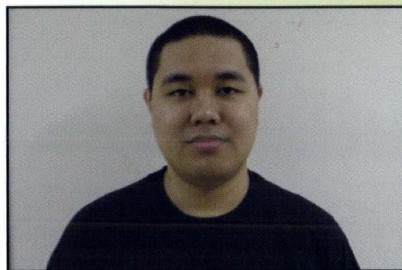
*"Reasons for involvement with minority students:*

1. Very satisfying to work with talented, burgeoning young scientists.
2. The challenges of contemporary life science will only be met if we "mine" all the talent we can find - minority groups clearly have a lot of unde-

veloped talent.

3. Minority groups are under-represented in sciences - we need role models to encourage more participation from these groups."

### STUDENT RESEARCHER:



**Gilbert Jose,** Senior, Biological Sciences Major, University of Maryland, Baltimore County  
**Research Area:** Molecular Biology

Studying the effects of mutation on the function of RNase MRP in Baker's Yeast

## Washington/Baltimore/ Hampton Roads

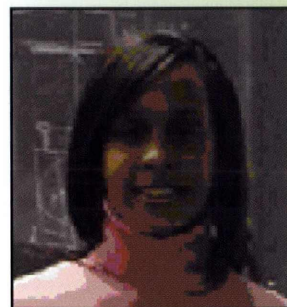
### MENTOR:



**Shawn M. Abernathy, Ph.D.,** Assistant Professor of Chemistry, Howard University  
**Research Area:** Nuclear Magnetic Resonance

*"It is a privilege and honor to be a research advisor/mentor in the LS-AMP Program. I currently have three very bright students performing research in my chemistry laboratories, and they all have various strengths and weakness with respect to conducting research. I focus on helping them fortify their weaknesses and reinforce their strengths. I believe that a weakness in a particular area can be transformed into strength within a year through dedication, perseverance, and plain hard work. The LS-AMP Program has facilitated this process for me. In closing, the LS-AMP Program is great."*

### STUDENT RESEARCHER:



**Joy Speaks,** Senior, Chemistry, Howard University  
**Research Area:** Nuclear Magnetic Resonance

*"In my sophomore year, I was introduced to the exciting and fulfilling world of scientific research through participation in the WBHR-LSAMP program. Since then, the AMP program has continued to inspire, support and enhance my scientific career goals*

As a result of the combined efforts of the AMP program and my research mentor, my future looks brighter every day."

#### 2002 – 2003 Research Presentations:

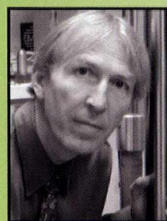
1. Supplemental Instruction: An Innovative Program for General Chemistry Curricula, National Organization of Black Chemists and Chemical Engineers (NOBCCChE), April 2003
2. Investigating Organic Contaminants in Residential Neighborhoods Surrounding the Defense Depot of Memphis, TN, WBHR-LSAMP Annual Board of Governors Meeting, September 2003

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### Western Alliance to Expand Student Opportunities

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#### MENTOR:

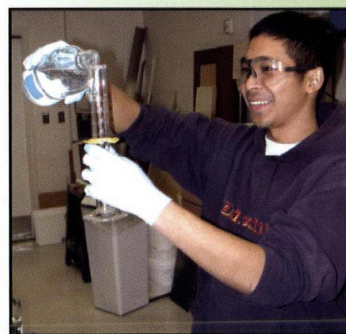


**John A. Szivek, Ph.D.,** Rubin Professor of Orthopaedic Research, Department of Orthopaedic Surgery and Biomedical Engineering Interdisciplinary Program, Orthopaedic Research Lab, Dept. of Orthopaedic Surgery, College of Medicine, PO 245194, University of Arizona, Tucson 85724, (520)-626-6094, szivek@u.arizona.edu

**Research Area:** Orthopaedic Biomaterials and Biomechanics, Implantable Sensors and Telemetry

*"I am gratified by the growth I have seen in the minority students who started out in my lab and have gone on to become scientists and physicians. My first minority student researcher who was funded through an NSF sponsored program, and who spent several years working in my lab before going to Medical school at Stanford is currently completing his Orthopaedic Residency at UCLA. By providing him with support and guidance which enabled him to start a career in science and medicine we have not only provided an underserved community (in this case a Native American community) with a highly skilled professional but we have also provided them with a mentor who can guide younger members of the community into careers in science."*

#### STUDENT RESEARCHER:



**Richard I. Reyes,** Senior, Nursing (University College), University of Arizona  
**Research Area:** Tissue Engineering ñ Studying the effect of Shear Loading on Cartilage Cell Growth

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## Ohio Joins LSAMP

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The Ohio Science and Engineering Alliance is a coalition of fifteen universities working together with federal, state, and community agencies. The primary goal is to double the number of underrepresented minority students who earn bachelor's degrees STEM fields and to significantly increase the number who pursue graduate study in these fields. This goal will be accomplished through the integration of new and existing campus-based and statewide programs; the monitoring of student progress through their undergraduate degrees and beyond; and the promotion of the Alliance to students, their parents, faculty, and the general public.

The Ohio Alliance focuses on a comprehensive series of effective recruitment and retention initiatives that address key transition points from undergraduate recruitment through preparation for graduate school. Funds are being used to support Alliance-wide initiatives (e.g., cooperative recruitment, academic year and summer research internships, Alliance Student Research Forum, faculty and staff professional development workshops) as well as individual campus-based programs (e.g., mentoring, bridge programs, tutoring, supplemental instruction, drop-in centers, student participation in professional conferences). STEM students who receive competitive funding will be referred to as Glenn-Stokes Scholars.

The Alliance members include the following institutions: University of Akron, Bowling Green State University, Case Western Reserve University, Central State University, Cleveland State University, University of Cincinnati, University of Dayton, Kent State University, Miami University, Ohio State University, Ohio University, University of Toledo, Wilberforce University, the Ohio Board of Regents, Wright State University, and Youngstown State University. In addition, Wright-Patterson Air Force Base, the Ohio Board of Regents, Ohio College Access Network, and COSI are partners.

# LSAMP Ph.D. Students

## Alabama LSAMP

**Claude A. Bailey**, Ph.D. - Engineering, Auburn University

**Clare Byeon**, Ph.D. - Physics, University of Alabama at Birmingham

**Claudette Carmichael-Owens**, Ph.D. - Applied Physics, Alabama A&M University

**Crista Carter**, Ph.D. - Applied Statistics, University of Alabama

**Cristina De Guzman**, Ph.D. - Genetics, University of Alabama at Birmingham

**Joseph Grant**, Ph.D. - Applied Physics, Alabama A&M University

**Harvey Hall**, Ph.D. - MSE, Tuskegee University

**Audray Harris**, Ph.D. - Microbiology, University of Alabama at Birmingham

**Marilyn Hughes**, Ph.D. - Nutrition and Food Science, Auburn University

**Saiprasad Iyer**, Ph.D. - Biochemistry, University of Alabama at Birmingham

**Lynetta Johnson Jobe**, Ph.D. - Life Sciences, Auburn University

**Curtis Jordan**, Ph.D. - Applied Physics, Alabama A&M University

**Krishnan Kanny**, Ph.D. - MSE, Tuskegee University

**Leneise Lynn**, Ph.D. - Biomedical Engineering, University of Alabama at Birmingham

**Magaly Martinez**, Ph.D. - Food Science, Alabama A&M University

**Howard Masuoka**, Ph.D. - Biochemistry, University of Alabama at Birmingham

**Roycelynn Mentor-Marcel**, Ph.D. - Pharmacology, University of Alabama at Birmingham

**Valerie Moses**, Ph.D. - MSE, Tuskegee University

**Erik William Perez**, Ph.D. - Chemistry, University of Alabama

**Raynetta Prevo**, Ph.D. - Applied Mathematics, University of Alabama

**Jacques A. Surrency**, Ph.D. - Plant and Soil Science, Alabama A&M University

**To-Ha Thai**, Ph.D. - Microbiology, University of Alabama at Birmingham

**Tonnia Thomas**, Ph.D. - MSE, Tuskegee University

**Horacio Vasquez**, Ph.D. - University of Alabama

**Wilbur Walters**, Ph.D. - Materials Engineering, University of Alabama at Birmingham

**Daisy Wong**, Ph.D. - Computer and Information Sciences, University of Alabama at Birmingham

**Aubrey C. Williams**, Ph.D. - Plant and Soil Science, Alabama A&M University

**Sunny Yung**, Ph.D. - Microbiology, University of Alabama at Birmingham

## California LSAMP

**Gilbert Mosqueda**, Ph.D. - Civil Engineering, UC Berkeley

**Ramiro Perez**, Ph.D. - Pharmacology, UC San Francisco

## California State University LSAMP

**Jorge Rodriguez**, Ph.D. - Chemistry, University of California Los Angeles  
*Current Position:* Post-doc, Cal Tech

## Colorado LSAMP

**Guy Alvarez**, Ph.D. - Physiology, Colorado State University

**Kevin Myles**, Ph.D. - Microbiology, Colorado State University

## Florida-Georgia LSAMP

**Adrian Boloix**, Ph.D. - Electrical Engineering, FIU  
*Current Position:* Research, FIU

**Stellanos Drakatos**, Ph.D. - Civil Engineering, FIU  
*Current Position:* Owner of engineering firm

**Elio R. Espino**, Ph.D. - Civil Engineering, FIU  
*Current Position:* Dept. of Transportation, Miami, FL

**Irinia Fernandez**, Ph.D. - Cell Biology, FIU  
*Current Position:* Teaching and researching, FIU

**Javier Gonzalez**, Ph.D. - Civil Engineering, FIU  
*Current Position:* Research, FIU

**Edward Lule**, Ph.D. - Electrical Engineering, FIU  
*Current Position:* Consultant with engineering Firm

**Michael Sadeghinia**, Ph.D. - Civil Engineering, FIU  
*Current Position:* Civil Eng. Dept., FIU

**Qiong Shen**, Ph.D. - Civil Engineering, FIU  
*Current Position:* Teaching and researching, FIU

**Sydana Rogers**, Ph.D. - Physical Chemistry, Florida State University  
*Current Position:* Research Chemist, Post Doctorate

### Illinois LSAMP

**Luisette Hernansez-Gonzalez**, Ph.D. - Mathematics, University of Illinois at Chicago

**Linda Martinez**, Ph.D. - Mathematics, University of Illinois at Chicago

**Ariel Ramirez**, Ph.D. - Mathematics, University of Illinois at Chicago

### Mississippi LSAMP

**Murrell Godfrey**, Ph.D. - Chemistry, University of Mississippi

**Stacy Jones**, Ph.D. - Chemistry, University of Mississippi

**Nolan McMurray**, Ph.D. - Mathematics, University of Mississippi

**Rukeyser S. Thompson**, Ph.D. - Chemistry, Purdue University

### Missouri LSAMP

**Omaira Collazos**, Ph.D. - Civil Engineering, University of Missouri Columbia

**Othoniel Rodriguez-Jimenez**, Ph.D. - Computer Engineering, University of Missouri Columbia

**ShaDonna Schaefer**, Ph.D. - University of Missouri St. Louis

### New Mexico LSAMP

**Gladys Omayra Ducoudray Acevedo**, Ph.D. - Electrical Engineering, New Mexico State University

*Current Position:* Faculty, Electrical Engineering Department, University of Puerto Rico at Mayaguez

**Joseph (Rudy) Montoya**, Ph.D. - Physics, New Mexico State University

*Current Position:* Research position at the U.S. Army Research Laboratory at White Sands Missile Range, New Mexico

**Robert Zavala**, Ph.D. - Astronomy, New Mexico State University

*Current Position:* Astronomer at the U.S. Naval Observatory (Flagstaff Station)

### Oklahoma LSAMP

**Edward Daniel**, Ph.D. - Electrical Engineering, Oklahoma State University

*Current Position:* Systems Engineer at Northrop Grumman Space Technology, Redondo Beach, CA

### Philadelphia LSAMP

**James Arthur Cooper, Jr.**, Ph.D. - Biomedical Science, Drexel University

*Current Position:* Post-Doctoral Research Associate

### Puerto Rico LSAMP

**Gisila Guzmán Colón**, Ph.D. - Biology, UPR-Rio Piedras

**Jorge Bauzá Ortega**, Ph.D. - Marine Sciences, UPR-Mayaguez

**Juan C. Ortiz Royero**, Ph.D. - Marine Sciences, UPR-Mayaguez

**Drianfel Vázquez Torres**, Ph.D. - Civil Engineering, UPR-Mayaguez

### Tennessee LSAMP

**Mark Anthony Bray**, Ph.D. - Biomedical Engineering, Vanderbilt University

*Current Position:* Post-Doc, Vanderbilt University

**Brandice Green**, Ph.D. - Metallurgical Engineering, University of Tennessee, Knoxville

**Robert Howard**, Ph.D. - Aerospace Engineering, University of Tennessee, Knoxville

**Carlotta Ardell Johnson**, Ph.D. - Electrical Engineering, Vanderbilt University  
*Current Position:* Professor, Tennessee State University

**Tamara Elaine Rogers**, Ph.D. - Electrical Engineering, Vanderbilt University  
*Current Position:* Professor, Tennessee State University

**James Brandon Shaw**, Ph.D. - Biological Sciences, Tennessee State University  
*Current Position:* Law School, Southern University

### Washington/Baltimore/Hampton Roads LSAMP

**Renee Baggot**, Ph.D. - Physics, Hampton University

**Melvin Edmundo Bayne, Jr.**, Doctor of Engineering, Morgan State University

**Althea Bluiett**, Ph.D. - Physics, Hampton University

**Sohail Sharif Chaudhury**, Ph.D. - Microbiology, Howard University

**Benjamin Davis**, Doctor of Engineering, Morgan State University

**Lisa Ann Etienne**, Ph.D. - Genetics and Human Genetics, Howard University

**Tony Eugene Graham**, Doctor of Engineering, Morgan State University

**Alrich Livingston Gray**, Ph.D. - Pharmacology, Howard University, 2003

**Shantá Denise Hinton**, Ph.D. - Biology, Howard University

**Caswell Hlongwane**, Ph.D. - Chemistry, Howard University

**Angela Nichelle Nunley**, Ph.D. - Pharmacology, Howard University

**Katina Hall Patrick**, Ph.D. - Chemistry, Howard University

**Michel Ann Reece**, Doctor of Engineering, Morgan State University

**Kimberlie A. Richardson**, Ph.D. - Pharmacology, Howard University

**Willie Lee Thompson**, Doctor of Engineering, Morgan State University

**Dionne Lattimore Toombs**, Ph.D. - Nutritional Sciences, Howard University

**Wa-Muzemba Tshibangu**, Doctor of Engineering, Morgan State University

**Sandra W. Watson-Hampton**, Ph.D. - Physiology, Howard University

**Juan Cedric White**, Ph.D. - Electrical Engineering, Howard University

### Western Alliance to Expand Student Opportunities (WAESO) LSAMP

**Dr. Gabriel A. Montano**, Ph.D. - Chemistry, Arizona State University  
*Current Position:* Los Alamos National Laboratory

### SUMMARY

Alliance	# Ph.D.'s	# Institutions
Alabama	28	5
California	2	2
California State	1	1
Colorado	2	1
Florida Georgia	9	2
Greater Philadelphia	1	1
Illinois	3	1
Mississippi	4	2
Missouri	3	2
New Mexico	3	1
Oklahoma	1	1
Puerto Rico	4	2
Tennessee	6	3
WBHR	19	3
WAESO	1	1
<b>TOTAL</b>	<b>87</b>	<b>28</b>



# LSAMP

## Accomplishments and Highlights

### Alabama



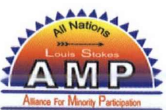
- The Alabama LSAMP program was awarded a 2003 Bridge to the Doctorate Supplement by NSF. Auburn University was chosen as the program site. Ten STEM students began work on doctorate degrees during the fall semester 2003.



*Alabama Bridge to the Doctorate Students*

- ALSAMP received an NSF grant for the Alabama Research Project involving the LSAMP institutions in conducting research on effective practices leading to successful degree attainment.
- ALSAMP hosted the Sixth Annual Graduate School Fair attended by over 300 students on the University of Alabama at Birmingham campus in Birmingham, Alabama.
- The Alabama LSAMP at A&M University campus was visited by two Nobel Prize winners in the field of physics, Dr. Eric A. Cornell and Dr. Douglas Osheroff. The prize winners provided outstanding LSAMP inspiration and motivation for students and faculty.

### All Nations



The All Nations Louis Stokes Alliance for Minority Participation (ANLSAMP) is in its third year of the Phase II award that includes 32 of the accredited Tribal Colleges and Universities (TCUs) in the United States and 20 state and private institutions of higher education. In the 2002-2003 year we included the following new activities that greatly enhance the effectiveness of our program.

- NASA's Johnson Space Center loaned a civil servant senior engineer with undergraduate teaching experi-

ence, for two years to SKC and ANLSAMP to act as the Dean of Engineering. He has three principal duties: 1) Develop a curriculum for SKC that will lead to an accredited degree of Bachelor of Science in engineering, 2) develop a model for a school of engineering that can be implemented at SKC and exported to at least six other TCUs, and 3) act as a role model to attract and motivate potential engineering students. Currently, eleven tribal colleges are actively participating in this activity.

- ANLSAMP received a second year of support from the Lawrence Livermore National Laboratory to offer 15 \$1000 scholarships to tribal college Students in the STEM fields.
- ANLSAMP began work with the Ecological Society of America's (ESA) Strategies for Ecology Education, Development and Sustainability (SEEDS) program in 2000 to provide professional development opportunities, exposure to scientists working in the field, and research experiences to Native American students in STEM fields. At this time our partnership includes the support of SEEDS chapters at eight of the tribal colleges (\$3,000 to each chapter, \$2,500 by the ESA and \$500 by ANLSAMP) and student participation at ESA's annual conference and field trips focused on the science of ecology. This program has the potential to offer grants of \$20,000 per year to these institutions.

### California



- Awarded "Bridge to the Doctorate" supplemental funding, with the graduate program designed and hosted by UCLA. Co-Directors are Dr. Richard Weiss, Professor of Biochemistry, CAMP Director and Dr. Shirley Hune, Associate Dean, Graduate Division. Ten new UCLA graduate students are selected to participate as Bridge Scholars, 2003-2005.
- Successful site-based data entry, whereby each UC campus has responsibility for data entry on their own students, activities, and faculty. Our second year implementing this new decentralized data entry procedure has exceeded expectations.
- Annual statewide undergraduate research symposium, hosted by CAMP Statewide and UC Irvine, with 100 UC students, faculty, staff participating from the eight general UC campuses. Dr. Judith Ramaley gave the keynote address. Chancellor Ralph J. Cicerone, California LSAMP P.I., presided over the awards presentations.
- Publication of the Proceedings & Profiles of the 2003

Statewide Undergraduate Research Symposium, featuring student achievement in research and profiles in graduate education UC systemwide. Student award winners reflect undergraduate excellence and importance of both peer and faculty mentoring.

- UC Office of the President and Edison International provided 20 California community college STEM majors with \$15,000 scholarships, all new transfers to UC. This brings the number of recipients to 80, for a total of \$1,200,000 in support.

## California State University



- Achieved a record high total of minority Baccalaureate degrees in STEM, 1501..
- Maintained our new record enrollment of minority freshmen in STEM, this year: 2,118.
- While not all targeted minority students are directly involved in every aspect of the AMP program, those involved in the lower division Academic Year Workshops have grades that are higher than the class averages, few failures in the related subjects and excellent retention and graduation rates compared to pre-AMP minority students.

## Colorado



- In Phase II, B.S. degrees awarded to underrepresented (UREP) STEM students have increased 73% (from 215 baseline to 372 degrees in year 7).
- Rate of increase from baseline to year 7 in the number of all STEM degrees awarded (from 2,789 to 4,530 degrees) was 62%.
- The rate of increase of UREP STEM degrees awarded from baseline to year 7 was greater (73% vs. 62%) than that of the increase in all STEM degrees awarded.
- The 73% increase in graduating UREP students is accounted for by the 114% increase in African American students (from 36 to 77), 36% increase in Hispanic students (from 181 to 246), 44% increase in Native American students and multi-race (34 to 49) receiving STEM degrees.
- Over half of the participants in the 2003 AGEP (Alliance for Graduate Education and the Professoriate) Undergraduate Summer Research Experience at Colorado State University were LSAMP students.

## Florida-Georgia

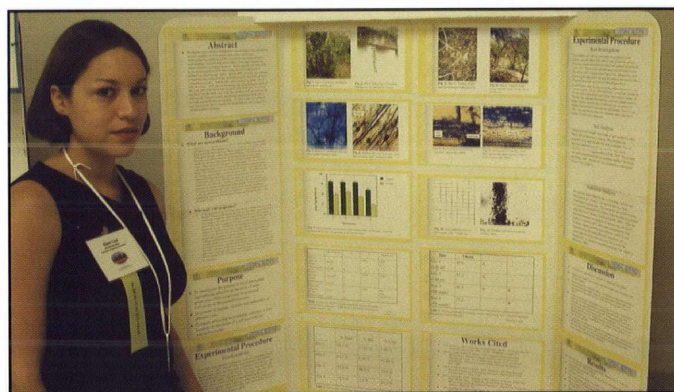


- FGLSAMP has secured an average of \$643,000 annually, for the support of the FGLSAMP institutions within Florida from the Florida Legislature.
- The FGLSAMP Project has received a supplementary award of \$770,000 to support 10 LSAMP B.S. graduates to pursue M.S. and Ph.D. degrees in STEM disciplines. Each Student will receive a stipend of \$27,500 annually plus tuition and fees.
- The number of STEM B.S. graduates at participating institutions has more than quintupled from 416 in 1991 to 3,323 in 2003.

## Houston



- New State-of-the-Arts website has been created to facilitate record keeping and generating reports.
- Provisions were made to allow scholars from all alliance campuses to participate in research at the University of Houston-Central Campus.
- The number of alliance direct participants has increased from the first year of operation by 172%.
- H-LSAMP planned and participated in the first regional conference for the Texas area AMPS.
- The Spring 2003 valedictorians from Texas Southern University and the University of Houston were AMP students.
- Dr. Alo was chosen educator of the year; Dr. Greg Passty received the Distinguished University Teaching of Mathematics Award.



*Diana Leal, University of Houston - Downtown*

## Illinois



- Illinois LSAMP institutions have awarded 2,940 bachelor degrees to minority STEM students participating in the program since its inception in 1993.
- The overall enrollment of underrepresented STEM students has increase by over 75 percent

since the inception of Illinois LSAMP.

- Illinois LSAMP successfully implemented pre-college and community college bridge programs, faculty and peer mentoring, supplemental instruction (study groups, skill training, cooperative learning workshops), academic year and summer undergraduate research opportunities, tutorials for introductory STEM courses and annual student conferences within the Alliance.
- Illinois LSAMP community colleges have developed programs in association with the senior colleges in the Alliance to increase the number of students matriculating, graduating and attending graduate school in STEM areas. Working closely with the senior partners, the community colleges are using the Transfer Centers, math, science, and engineering faculty, Student Services/Counseling departments and data to identify students for the Illinois LSAMP Program.



## Indiana



- Recruited and hired of a LSAMP Indiana Statewide Director
- Student participated in Summer Bridge and undergraduate research programs.



*Student participants in the Summer Bridge program.  
Indiana University, Bloomington, IN*

## Louisiana



- LS-LAMP'S Model program, The Timbuktu Academy at Southern University, has received its second Presidential Award for Excellence in Science and Engineering Mentoring (PAESEM). This award was accepted by LS-LAMP PIs, Dr. Diola Bagayoko and Dr. Robert L. Ford.
- LS-LAMP Annual Student Research Conference hosted 424 scholars and mentors November 21-23, 2003. The Conference, "Intergrating Technology, for a Competitive Edge," was held in New Orleans LA
- LS-LAMP recently published "This is Your Ticket: Lessons for College Success" by L. Harold Stevenson, Ph.D. (ISBN 0-9704609-5-3)  
The book is available by contacting [cjdavis@ls-lamp.org](mailto:cjdavis@ls-lamp.org). Visit the News and publications page of [www.ls-lamp.org](http://www.ls-lamp.org) for more information.

## Mississippi



- Research and Education, over 80 students attended scientific conferences in state and across the country; over 50 students took part in summer internships and over 40 worked with mentors to conduct undergraduate research.
- In Training and Development, all sites emphasized training in time management and personal life skills. Some offered course in *The Seven Habits of Highly Effective People and the Donna O. - 4.0 Grade Point Workshop*. Most sites also offered MAMP study groups and peer tutoring.
- In Outreach, five schools held successful Summer Bridge programs for graduating high school senior interested in STEM majors. These programs ease the transition from high school to college. Many sites conduct tutoring programs for all STEM students in their schools and others extend their tutoring efforts to middle and high school students.

## New Mexico



- New Mexico AMP institutions awarded 516 minority STEM degrees 2002-03, doubling its baseline of 253 in 1992-93.
- A \$1.1Million grant from the William and Flora Hewlett Foundation will fund the NMSU Recruitment and Retention Program as part of the Hewlett Foundation Engineering Schools of the West Initiative to be administered by New Mexico AMP.
- Funding has been received for Phase III of the New Mexico AMP Program and the NSF Bridge to the Doctorate Program.

## New York City



- Graduation and enrollment of underrepresented minorities in the Science, Technology, Engineering and Mathematics (STEM) disciplines have now reached increases of 111% and 82%, respectively.
- CUNY enrolled 18,858 students in NYC LSAMP institutionalized or restructured courses.
- Over 125 CUNY faculty mentors participated in LSAMP activities.

From inception:

- 308 LSAMP Scholars have earned BA or BS degrees.
- Seven LSAMP Scholars received Ph.D. degrees
- Seven LSAMP Scholars received MS degrees
- Eight LSAMP Carver Scholars graduated with BS degrees
- Forty three BS degrees were awarded to LSAMP Scholars
- Pre-collegiate participants of Phase II (1998-2002) are among the 2003 graduates

Summer 2003:

- Fifty LSAMP Scholars participated in the CUNY-based LSAMP Summer 2003 Research Program
- Over twenty-five sites across the country served as hosts for fifty-seven Alliance Scholars in Summer 2003

## North Carolina



- In April 2003, the University of North Carolina at Pembroke hosted the Seventh Annual NC-LSAMP Research Conference. Approximately 300 students, faculty and administrators from the eight Alliance institutions attended this year's conference.
- NC-LSAMP Summer Bridge activities were conducted at six Alliance institutions, serving one hundred six (106) underrepresented minority students. These activities provided intensive course study with college credit being given to students in mathematics and calculus.
- NC-LSAMP students participated in Summer Research activities at Alliance institutions and national laboratories. North Carolina A&T State University, Students participated in faculty-mentored research projects for six or eight weeks on each campus and prepared oral or poster presentations for the end of the program and at the annual NC-LSAMP Undergraduate Research Conference.
- The North Carolina Louis Stokes Alliance was awarded the Bridge to the Doctorate supplemental grant to support graduate students in their pursuit of a Masters

degree in a STEM field. North Carolina A&T State University has been designated as the lead institution for this project. Ten students have been awarded for 2003 through 2005.

## Northeast



- Development of Biology Apprentice Program
- Development of Alliance website
- Leadership in Math and Science Student Conference
- Support of Math, Science and Engineering Days

## Oklahoma



- 593 baccalaureate degrees and 1 Ph.D. awarded
- OK-LSAMP stipends awarded to 226 scholars in fall and spring semesters, with 66 summer interns having received OK-LSAMP as well as external stipends from research institutions, private industry, and national laboratories
- Provided academic support and motivation through tutoring, faculty mentoring, small group cadre meetings, graduate student interaction, graduate school preparation seminars, synergy with programs having similar goals and objectives, and participation in campus-wide and area recruiting activities
- Scholars participated in 16 professional meetings (including the 7th annual OK-LSAMP Research Symposium) at which oral and poster presentations were made
- Successful summer residential bridge program and workshops were held in which 24 high school graduates participated

## Pacific

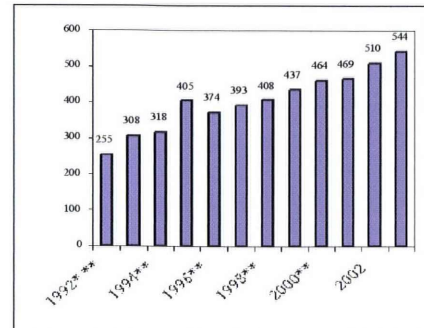
- The Pacific Alliance received a \$1,000,000 donation over 3 years from Siemens Building Technologies for high school outreach, summer bridging, internships, and professional development activities in our retention program.
- Positions that were formerly LSAMP supported have been institutionalized in Alaska and Hawaii.
- Indigenous American STEM enrollments have tripled since inception of our Alliance and graduation rates have doubled
- The University of Alaska Anchorage has received approximately \$4 million dollars in donations to assist with construction of a new building to house Pacific Alliance activities.

## South Carolina



- Partner institutions conferred over 544 STEM minority degrees for the first time in alliance history.

### Minority STEM Bachelor's Degrees 1992-2003



- The State of South Carolina continues to show exceptional support for AMP activities, appropriating \$324K, 2003 and \$5.2 million since 1994.
- The state office established three distinguished awards to honor U.S. Rep. Louis Stokes, civil rights activist and namesakes of the National AMP Program; Dr. A. James Hicks, national AMP director, and the late Dr. Judith Bostock, national scientist and research advocate for minority students.
  - \* The Congressman Louis Stokes Service Award presented to a member of the State Legislature for championing the program interests throughout the state of South Carolina.
  - \* The A. James Hicks Leadership Award presented to a member of the Governing Board, South Carolina Research Advisory Council, or Executive Board, who works with the alliance to enhance program opportunities.
  - \* The Dr. Judith Bostock Memorial Award presented to a dynamic Mentor/Intern team who distinguishes themselves through research collaboration and a substantive professional relationship over the course of the summer internship period.

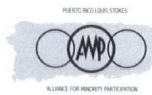


## Philadelphia



- Seven Lincoln University 2002 – 03 STEM graduates enrolled into graduate school in STEM disciplines: John Hopkins University (Microbiology), Massachusetts Institute of Technology (Neuroscience), Temple University (Chemistry), University of Delaware (Chemistry, Physics), Virginia Polytechnic Institute (Environmental Engineering), University of Massachusetts, Amherst (Biology).
- Three students from Cheyney University received nanotechnology certification from Pennsylvania State Nanofabrication Center in Summer of 2003.
- At Community College of Philadelphia, AMP helped in the development of a National Society of Black Engineers branch on campus. This chapter was very active during the academic year and aided in bringing new students into AMP. AMP also funded the initiation of a Society of Manufacturing Engineers group on this campus. This group will focus on outreach to the college community as a whole to increase engineering awareness as a future career. These two groups are run by AMP students and will align efforts.

## Puerto Rico



- In 2002-03 institutions awarded 3,207 BS degrees in STEM fields, an 84% increment from the baseline figure of 1,709.
- From 1991 to 2003, PR-LSAMP institutions have awarded a total of 32,720 BS degrees in STEM fields.
- Undergraduate STEM enrollment has dramatically increased from 12,572 in 1991 to 27,529
- 17% of the Hispanics that obtained a PhD in a science field nationwide from 1996 to 2001, received their BS degree from a PR-LSAMP institutions. In the case of Engineering it was 13%.
- Ten PR-LSAMP graduates received a Bridge to the Doctorate Fellowship and are now enrolled in a science PhD program at UPR-Río Piedras

## State University of New York



- SUNY LSAMP students continue to demonstrate excellence in scholarship and research. This year students won the SUNY Chancellors Award, the Batelle Fellowship, The SHPE Scholar Award, The American Chemical Society Student Award and were National Honor Society, Golden Key and Phi Beta Kappa winners. Students received awards for their research at the EMERGE, SACNAS, ABRCMS and CSTEP/LSAMP conferences.

## Texas



- Substantial increases in URM STEM BS degrees were awarded in Chemistry, Engineering, Life Sciences and Computer Science. TAMU-CC awarded almost 100% (32 to 63) more URM STEM BS degrees; TAMU awarded almost 25% more URM STEM BS degrees; TAMU-PV awarded 21% more; and TAMU awarded 19% more
- There was also an increase in the ratio of Minority STEM to non-Minority STEM BS degrees awarded alliance wide. (0.25 to 0.28)
- Alliance-wide, there was an increase in the ratio of STEM minority to non-STEM Minority BS degrees awarded in the university population overall (0.25 to 0.29). The ratio among Underrepresented Minorities was larger than for the general population.
- An LSAMP III program proposal with TAMU System Executive support was developed, submitted and funded by NSF; as was a Bridge to the Doctorate Program.

## University of Texas System



- The number of underrepresented minority students who completed baccalaureate STEM degrees has more than doubled (113.5%) in the past 11 years (1204 vs. 564). Enrollment of underrepresented minority students in STEM programs at UT-System universities has increased by 65% over the baseline of 6,004 to a total of 9,922 in fall of 2002.
- Development of a common LSAMP application form for all LSAMP partner institutions: This form was designed for adaptation to each institution and is available on the UT-System LSAMP web site, [HTTP://www.utep.edu/amp](http://www.utep.edu/amp).
- Development of an electronic application form for graduate school. The applications are shared by all UT-System institutions: The use of the application form was approved by The University of Texas System Board of Regents in 2000 and initiated in 2001.
- Adoption of reform pre-calculus and calculus at most Alliance partner institutions. This was a result of the discussions initially conducted by the LSAMP Mathematics Task Force. In the past year, Collin County Community College District expanded its calculus reform by adopting Harvard reform in Calculus II and III.

- The program has shown a significant increase in UREP STEM enrollment of 30.4% at four year institutions and an overall increase Alliance-wide of 9.3%
- SUNY LSAMP continues to build and expand its collaborations with other NSF funded programs, other state and federal programs and with other institutions both locally and across the country. These collaborations have increased undergraduate and graduate UREP STEM recruitment, have allowed us to start tapping into additional resources for SUNY LSAMP students, have increased the research and internship placements for students, have increased UREP faculty and department involvement with the program and have established new partnerships for increasing funding efforts. Partners include SUNY AGEF, CSEMS, CSTEP and STEP, CUNY LSAMP and institutions such as University of Maryland Baltimore County, Savannah State University, Medger Evers College, Long Island University and others.
- SUNY LSAMP has successfully nominated the New York State CSTEP and STEP programs for the Presidential Award for Engineering, Science and Mathematics Mentoring (PAESMEM).

## Tennessee



- A major accomplishment has been the high level of organization, enthusiasm and commitment exhibited by the institutions in the Alliance. This Alliance is now beginning to function as a team. Three alliance activities have been planned. They are the Summer Bridge Program, the Summer Research Program, and the Research Symposium.
- Each Alliance institution is now operating efficiently and effectively. Forms and flyers have been developed for distribution to help in identifying students who qualify for the TLSAMP program. Receptions for students and mentors have been held as well as mentoring training sessions. TLSAMP brought the forefront our need to offer additional assistance to our minority students.
- During this past year, TLSAMP implemented several initiatives. These initiatives include:
  - Facilitating mentoring opportunities for TLSAMP students
  - Coordinating summer bridge activities
  - Supporting and enhancing student learning in STEM subjects
  - Offering financial assistance to STEM students
  - Supporting curriculum reform to enhance graduation rates

## University System of Maryland



- During 2002-2003, three program alumni earned Ph.D. degrees in the STEM fields of microbiology, neuroscience, and biomedical engineering from New York University, Case Western Reserve School of Medicine, and the University of Florida respectively.
- USM LSAMP institutions awarded 528 bachelor's degrees to minority STEM students in 2002-2003. This represents a 116 percent increase over the number (244) awarded in 1996.
- USM LSAMP institutions are successfully retaining students in STEM fields. The number of minority STEM students classified as juniors and seniors rose from 1,092 in 1996 to 1,591 in 2003, a 47 percent increase.
- From 1996 to 2003, USM LSAMP institutions awarded 3,513 bachelors degrees to minority students in STEM fields.
- USM LSAMP institutions awarded 499 STEM master's degrees to minority students between 1996 and 2003.
- USM LSAMP institutions awarded 142 STEM Ph.D. degrees to minority students between 1996 and 2003.

## Washington/Baltimore/Hampton Roads



- The Federal Office of Civil Rights (OCR) settled the desegregation lawsuit with the State of Virginia, which resulted in new undergraduate programs in electronics and optical engineering and M.S. degree programs in computer science, electronics engineering and optical engineering at NSU. The optical engineering program at NSU is the only optical engineering program at an HBCU and one of only three in the United States. Partial state support for these new programs will be provided in perpetuity. Furthermore, through the Academic Common Markets (ACM), students from the State of Maryland enrolling in the optical engineering program at NSU can enroll at in-state tuition rates. This makes the optical engineering program accessible and affordable to a more diverse group of students.
- The mathematics and chemistry department at Howard University have been chosen to participate in the critical Carnegie Initiative on the Doctorate. This is a multi-year research and action project to improve doctoral education at American universities. Other participating universities include the

University of Michigan, the University of North Carolina at Chapel Hill, Pennsylvania State, Kent State and Duke University.

- Appointments of new African American and assistant professors designated as "other race" in STEM departments have increased dramatically since the year 2000 or during Phase II. At the assistant professor rank, there are a total of 26 at NSU, 23 at HU, 3 at HAU, 48 at MSU, 6 at BSU, 20 at VSU and 9 at UDC. Other African American faculty members at the ranks of associate and full professor have also increased significantly at all of the WBHR-LSAMP institutions



*Students attending the Beta Kappa Chi Meeting in Melville, Long Island, New York*

## Western Alliance to Expand Student Opportunities

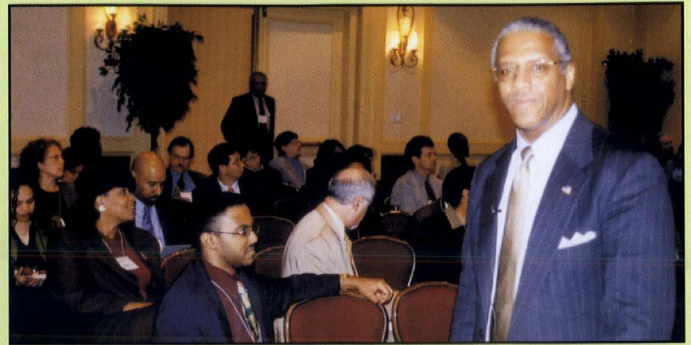


- Our alliance reports an annual rate of 1,430 underrepresented minority STEM baccalaureates at year 2 of Phase III showing that we exceeded our 2nd year goal for Phase III goal of 1,379 and our overall annual rate has increased by 335 underrepresented minority STEM baccalaureates.
- In Years 1 and 2 we served 734 underrepresented minority students in our Phase III activities, on average, about 19% of our underrepresented minority students participate in two or more activities. As an added benefit, our minority-centered programs have, as an economy of scale, also benefited 110 non-underrepresented students.
- We continue to have a great deal of impact due to the tireless effort of over 217 campus coordinators in our LSAMP who are mostly STEM faculty but also include minority program administrators and university administrators. These coordinators in turn collaborate with many STEM faculty creating a multiplier effect which is important to our goal of systemic reform.

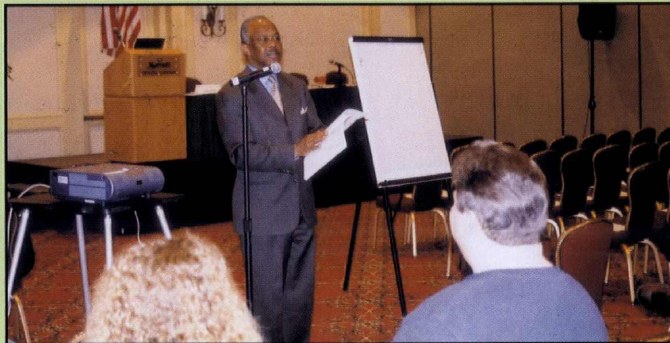
# HRD 2003 Principal Investigators/P



Opening Plenary Session - Dr. Donald Thompson



Alliances for Graduate Education and the Professoriate Program (AGEP) - Dr. Roosevelt Johnson



The Louis Stokes Alliance for Minority Participation Program - Dr. Art Hicks



Historically Black Colleges and Universities-UP (HBCU-UP) - Dr. Victor Santiago



Tribal Colleges and Universities Program (TCUP) - Dr. Jody Chase



Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM) - Marilyn Suiter



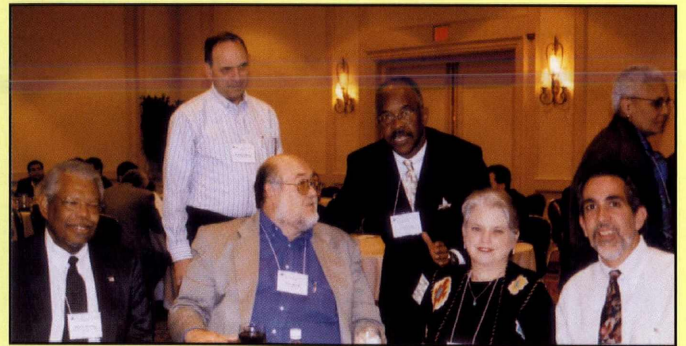
Research on Gender in Science and Engineering (GSE) - Dr. Ruta Sevo



Research in Disabilities Education (RDE)



# Project Directors Joint Annual Meeting



# Announcements in the Workplace

## National Science Foundation

### Psychologist, Educator Thomas Windham to Lead NSF Effort to Broaden Participation in Science and Engineering

The National Science Foundation has named psychologist and veteran educator Thomas Windham to the newly created position of Senior Advisor for Science & Engineering Workforce. Among other duties, Windham will oversee all of NSF's efforts to broaden participation in S&E careers and will serve as NSF's principal liaison to minority-serving institutions.

Windham will take office on Feb. 15. He currently serves as Director and Principal Investigator of an internationally recognized, multi-ethnic learning and mentoring program called Significant Opportunities in Atmospheric Research and Science (SOARS®) through the University Corporation for Atmospheric Research in Boulder, Colo.

NSF Director Rita Colwell announced the creation of the position to Congress earlier this year, and initiated the nationwide competition that resulted in Windham's selection.

"Tom's appointment is critical to our mission," Colwell said. "It gives the NSF front office an experienced, talented, widely respected educator and administrator to strengthen our relationship with institutions and constituencies that are of the utmost importance to America's future."

Windham holds a PhD in psychology from the University of Colorado. In addition to heading the SOARS program, he serves as a visiting professor at Universidad Metropolitana in San Juan, Puerto Rico. He is a recipient of the President's Award for Excellence in Science, Mathematics, and Engineering Mentoring, and served as vice chair of NSF's Committee on Equal Opportunities in Science and Engineering. He has been president of the Boulder Valley School District Board of Education, and president of the Society for Descriptive Psychology.

### Dr. Donald Thompson appointed Deputy Assistant Director of the Directorate for Education and Human Resources.

Dr. Donald E. Thompson has been appointed, effective January 26, 2004, to the position of Deputy Assistant Director for Education and Human Resources. Dr. Thompson has served as Director of the Division of Human Resource Development (HRD) since the fall of 2002. Prior to coming to NSF, he served as Vice President for Research and Dean of the Graduate College at Western Michigan University and, before that, he held the position of Dean of the College of

Education there. He has professional experience at all educational levels, demonstrated community involvement, and knowledge of workforce issues. Dr. Thompson received his Bachelors, Masters and Doctor of Education from Western Michigan University.

"Dr. Thompson brings a deep commitment to the mission of EHR and to our goal of supporting excellence in STEM education for everyone". Dr. Judith Ramaley, Assistant Director for Education and Human Resources.

### Dr Bernice Anderson Appointed Acting Director of the Division of Education and Human Resource Development

Dr. Bernice T. Anderson has been appointed as the Acting Director of the Division of Human Resource Development, effective January 26, 2004. She will serve in this position during the search for a new Division Director. Dr. Anderson holds a Bachelors Degree from the Norfolk State University, Masters Degree from Ohio State University, and a Doctor of Education in Early Childhood / Elementary Education from Rutgers University.

"I am delighted that Dr. Anderson has agreed to take on this role; she has already served admirably as Acting Division Director of ESR. Her experience with programmatic development and evaluation and her strong interest in access and equity make her an especially good person to provide leadership in HRD and to support the work of the dedicated staff in the Division". Dr. Judith Ramaley, Assistant Director for Education and Human Resources.

## Alabama

Dr. Overtoun Jenda, Associate Dean and Professor of Mathematics at Auburn University, was awarded Alabama's Principal Investigator of the Year for the acquisition of the NSF Bridge to the Doctorate Program.



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## All Nations

Salish Kootenai College President, and ANLSAMP Principal Investigator, Dr. Joseph McDonald was elected President of the American Indian Higher Education Consortium (AIHEC) Executive Committee. AIHEC is a non-profit, grassroots organization founded in 1972 by the six original tribal colleges and has become the unified voice for all of the 34 accredited tribal colleges in the U.S. and Canada. AIHEC's purpose is to increase the limited resources of the tribal colleges and to maximize their effectiveness in meeting the needs of their respective communities. These are the same communities served by ANLSAMP.

Dr. McDonald brings more than 25 years of wisdom and experience to the position. He is the founding president of SKC. Among his many honors, Dr. McDonald was named the 1989 Indian Educator of the Year by the National Indian Education Association (NIEA); one of the 100 most influential Montanans of the 20th Century; and the 2000 Humanitarian of the year.

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## California

Professor Martha Mecartney, Professor of Engineering, UC Irvine, won the NSF Presidential Award for Excellence in Mathematics, Science, and Engineering Mentoring.

UC Berkeley's Laura Ochoa-Frongia and Kevin Omar Quinones received the Sandia National Laboratory's Higher Education Award. Both of these students demonstrated exceptional mentoring and leadership in the CAMP community.

UC San Diego's Monica Lozano, B.S. Chemical Engineering, 2003, won 1st place poster presentation at the American Institute of Chemical Engineers, Student Western Regional Conference. Fabiola Navarro, Computer Engineering, Senior, won third place oral presentation at the Universidad Metropolitana MIE conference in San Juan, PR.

UC Riverside Alumna Marisa Garcia, B.S. Mechanical Engineering 2002, completed a master's degree at UC Irvine in June 2003 and is enrolled in UCI's Ph.D. program in Bioengineering. Garcia, a former CAMP tutor, received a Whitaker Foundation Fellowship and is an AGEP participant. Max Vallejos, Biochemistry, Junior, received an award at SACNAS for the second year in a row. This may be an unprecedented achievement for a student. He is also a MARC scholar.

UC Irvine's Qyana Griffith was published in the Proceedings of the National Academy of Sciences. She received the McNair Outstanding Researcher of the Year Award. Steve Ortiz, Biological Sciences, received the Outstanding Undergraduate of the Year Award — the third year a CAMP student has received this award. Jennifer Moore, B.S. Chemistry, has begun a Ph.D. pro-

gram at Colorado State University. She won a GEM Fellowship. Jose Romero-Mariana, Information & Computer Science, won the 2003 MAES Padrino Scholarship. Jennie Beltran, Biological Sciences, was a poster award-winner in marine biology at SACNAS.

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## California State University

We have restructured our AMP for Phase III. Financial Management, Program Management and Data collection and Evaluation will all be performed at the lead campus, CSU Sacramento.

Dr. A.F. (Rick) Ratcliffe is retiring at the end of the Fall of 2003 when the final Phase II report is submitted.

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## Colorado

LS CO-AMP is excited that Colorado State University President and Chancellor of the Colorado State University System, Larry E. Penley, has accepted the position of Chair of the LS CO-AMP Governing Board. Dr. Penley graduated from University of Georgia, with a Ph. D. in Management and has a strong commitment to diversity.

Colorado State University College of Engineering is moving towards institutionalization of LS CO-AMP activities by hiring Dr. Omnia El-Hakim, LS CO-AMP P.I. and Director, as Assistant Dean for Diversity.

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## Houston

The H-LSAMP mourns the passing of their colleague Dr. Stanley C. Israel, Texas State University-San Marcos. Memorial donations may be made to the Stanley C. Israel Memorial Fund, Texas State University Development Foundation, 601 University Dr., San Marcos, TX. 78666.

Mark your calendars for the 4th Annual Houston-LSAMP research conference. The conference should take place in the Fall, 2004, in Houston. Check the website for future announcements. [www.hlsamp.uh.edu](http://www.hlsamp.uh.edu)

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## Illinois

The Seventh Annual Illinois LSAMP Student Research Symposium featuring student research presentations in Mathematics, Engineering, Science Education, and the Biological, Computer & Physical Sciences will be held Friday, April 16th & Saturday, April 17th, 2004 at the Hyatt Lodge on McDonalds Campus in Oakbrook, Illinois.

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## Indiana

The first annual LSAMP Indiana Research and Alliance Enrichment (RAE) Conference was held November 14, 2003 on the Purdue University West Lafayette campus. It served as a forum for LSAMP students to present their research experiences, and for administration and program staff to coordinate activities and to share outcomes and ways to strengthen the Indiana alliance.

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## Louisiana

8th Annual DoE EPSCoR ERD and LS-LAMP Conference. November 5-7, 2004. Visit [www.ls-lamp.org](http://www.ls-lamp.org) for updates.

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## New Mexico

The 2004 New Mexico AMP student research conference is scheduled for September 30-October 2, 2004. Call Karen at (505) 646-1847 for more information.

Program Manager Michele Auzenne received the Sutherland-McManus Award and the Emerson Award for Outstanding Achievement in the Study of English for "Responding to EC 2000: Using Writing as an Assessment Tool in a Civil Engineering Program." The paper was the foundation for two successful grant proposals generating a total of \$1.2 million.

Ricardo Jacquez, Project Director, has been selected by New Mexico State University as a recipient of the Regents Professorship recognizing faculty who have made outstanding contributions to the university's mission as a land-grant, Carnegie Foundation Doctoral/Research University.

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## North Carolina

The 12th annual NCLSAMP Research Conference will be held on the campus of the University of North Carolina at Charlotte on Friday, March 19, 2004.

Johnathan Smith, a Physics major at North Carolina A&T State University placed third in the oral presentations at the New Mexico AMP Undergraduate Research Conference held at the University of New Mexico in Las Cruces, New Mexico on September 24-27, 2003. Dr. Abebe Kebede, physics professor, is his mentor.

Dr. Juliette Bell, Campus Coordinator at Fayetteville State University has been appointed Interim Dean of the College of Basic and Applied Sciences at the University.

Dr. Bertha Miller has been named Dean of the College of Humanities and Social Sciences at Fayetteville State University.

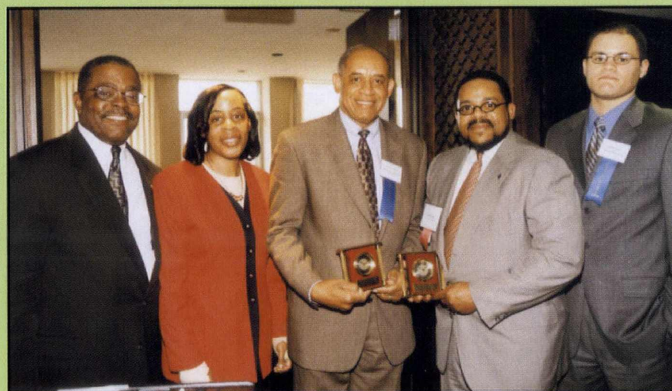
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## Philadelphia

Philadelphia AMP has successfully transitioned to Phase III.

Philadelphia AMP was awarded one of the LSAMP Bridge to the Doctorate Supplemental grants. The University of Delaware was selected to host the students under this project.

Mr. Michael Vaughan, Assistant Dean for Engineering Student Affairs, College of Engineering, University of Delaware, and Mr. Laurence "Tony" Howell, Executive Director, Educational Opportunity Programs, New Jersey Institute of Technology were the recipients of the 2003 Philadelphia AMP Excellence Award in Engineering and Science Education.



*From left to right): Mr. Stephen R. Cox, Project Director, Philadelphia AMP, Ms. Veniece Keene, Project Coordinator, Philadelphia AMP, Laurence "Tony" Howell, Executive Director, Educational Opportunity Programs, New Jersey Institute of Technology, Mr. Michael Vaughan, Assistant Dean for Engineering Student Affairs, College of Engineering, University of Delaware, and Mr. Leonard Bass, AMP Director, Temple University.*

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## Puerto Rico

The Puerto Rico Interdisciplinary Scientific Meeting (PRISM) will take place on March 13, 2004 at UPR-Humacao. The plenary speaker will be Dr. Nicholas Turro from Columbia University, and the topic of the conference will be "Paradigms Lost and Paradigms Found: Examples of Science Revolutionary and Science Pathological (and How to Tell the Difference)".

The manual on "The Use of Metrics to Drive Undergraduate STEM Education Reform" has been published. You may request a copy by e-mail at [a\\_feliciano@prlsamp.org](mailto:a_feliciano@prlsamp.org)

PR-LSAMP webpage has been re-designed to represent the uniqueness of the PR-LSAMP setting, and the areas of thrust of the project. The new page will be available by December 19, 2003 at <http://ciberciencia.cayey.upr.edu/prlsamp>.

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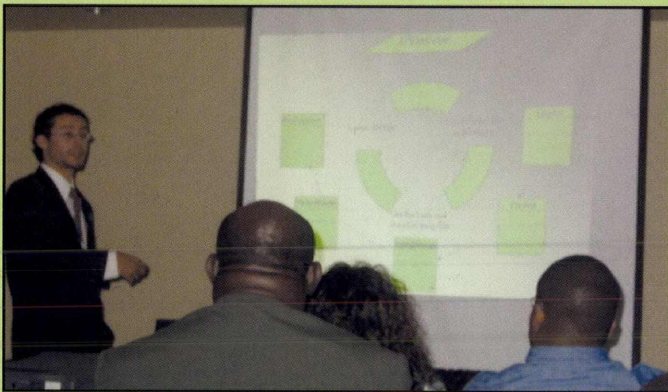
## South Carolina

The LS-SCAMP Annual Science and Engineering Research Conference will be held at South Carolina State University July 2004.

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## University of Texas System

The Southwest Regional Student Research Conference in South Padre Island, TX had approximately 200 participants of which 90 students gave oral and poster presentations. There were 20 representatives for graduate opportunities at the Graduate Fair. The conference was co-sponsored by the Houston LSAMP. There were several winners in the categories of Oral Physical/Life Science & Mathematics, Oral Engineering & Computer Science; Poster Physical/Life Science & Mathematics, Poster Engineering & Computer Science. Winners received a monetary award thanks to a generous grant from Marathon Oil based in Houston, TX.



*Christian Servin, Sophomore, UT El Paso, Computer Science giving an oral presentation at the Southwest Regional Student Research Conference, South Padre Island, TX.*

UT El Paso was awarded the Bridge to the Doctorate grant from NSF, (September '03 – May '05). The grant gives ten Master's students, in STEM, a substantial

research stipend, plus paid tuition & fees. The goal of the program is to encourage Master's students to continue onto the terminal degree.

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## University System of Maryland

The A. James Clark School of Engineering at the University of Maryland, College Park will be the home of the New Mid-Atlantic Regional Combined Heat and Power Application Center. The Center will promote distributed heating and power technologies in the region and will be based at the Center for Environmental Energy Engineering.

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## Washington/Baltimore/ Hampton Roads

The percentage of students in the WBHR-LSAMP program going on to graduate schools has exceeded the expectation of 30 percent for Phase II by 2004. The percentage of students going to graduate schools as of 2003 is closer to 35 percent with HU, HAU and MSU serving as leaders for the production of Ph.D.s in STEM fields for the nation. HAU has been especially productive with Ph.D. production in physics with emphases on the optical sciences and the nuclear science programs with research centers supported by NSF and NASA. In addition, HU has been the largest producer in the nation of African American STEM Ph.D.s over the past ten years.

The WBHR-LSAMP summer symposium continues to flourish with the number of student participants exceeding 200 over the past two years. The students' presentation skills have improved dramatically. Judges are now appointed and awards are given for the best posters and the top oral presentations. Many of the WBHR Alliance members now have institutionalized the STEM symposium with annual forums at their own institutions.

# LSAMP Award History

<u>Year</u>	<u>Alliance</u>	<u>Lead Institution</u>	<u>Principal Investigator</u>
1991	Alabama California Mississippi Puerto Rico	The University of Alabama at Birmingham University of California, Irvine Jackson State University University of Puerto Rico	Dr. Louis Dale Dr. Ralph J. Cicerone Dr. James Perkins Dr. Manuel Gomez
	Western Alliance to Expand Student Opportunities Texas	Arizona State University Texas A&M University	Dr. Antonio Garcia Dr. Karan Watson



Dr. Louis Dale



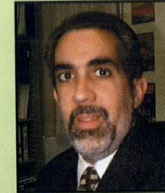
Dr. Ralph J. Cicerone



Dr. James Perkins



Dr. Manuel Gomez

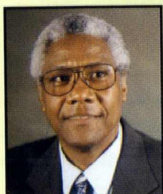


Dr. Antonio Garcia



Dr. Karan Watson

1992	Florida-Georgia New York City North Carolina South Carolina	Florida A&M University City College North Carolina A&T State University South Carolina State University	Dr. Ralph W. Turner Dr. Neville A. Parker Dr. Carolyn W. Meyers Dr. James H. Arrington Dr. Pablo Arenaz
	University of Texas System	The University of Texas at El Paso	



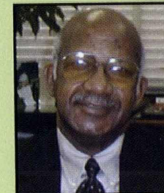
Dr. Ralph W. Turner



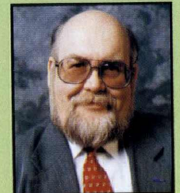
Dr. Neville A. Parker



Dr. Carolyn W. Meyers

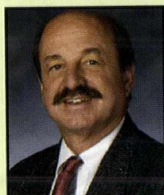


Dr. James H. Arrington



Dr. Pablo Arenaz

1993	California State Illinois New Mexico Washington/Baltimore/ Hampton Roads	California State University, Sacramento Chicago State University New Mexico State University Howard University	Dr. Richard Brown Dr. Marian Wilson-Comer Dr. Ricardo Jacquez Dr. Richard A. English



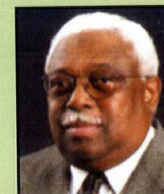
Dr. Richard Brown



Dr. Marian Wilson-Comer



Dr. Ricardo Jacquez

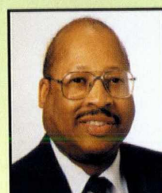


Dr. Richard A. English

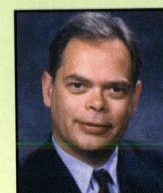
1994	All Nations Oklahoma State Greater Philadelphia Region	Salish Kootenai College Oklahoma State University Drexel University	Dr. Joseph F. McDonald Dr. Earl D. Mitchell Dr. Harvill Eaton



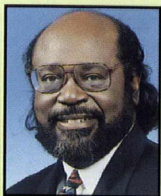




Dr. Joseph F. McDonald



Dr. Earl Mitchell



Dr. Harvill Eaton

<u>Year</u>	<u>Alliance</u>	<u>Lead Institution</u>	<u>Principal Investigator</u>		
1995	Louisiana Missouri University System of Maryland Tennessee	Southern University and A&M College	Dr. Diola Bagayoko		
		University of Missouri-Baltimore	Dr. Charles L. Sampson		
		University of Maryland Baltimore County Tennessee State University	Dr. Freeman Hrabowski Dr. James A. Hefner		
					
		Dr. Diola Bagayoko	Dr. Charles Sampson	Dr. Freeman Hrabowski	Dr. James A. Hefner
1996	Colorado SUNY	Colorado State University	Dr. Omnia El-Hakim		
		State University of New York-Stony Brook	Dr. David Ferguson		
					
		Dr. Omnia El-Hakim	Dr. David Ferguson		
1997	Georgia	Clark Atlanta University	Dr. Walter D. Broadnax		
1998	Houston	University of Houston	Dr. John Bear		
					
		Dr. Walter D. Broadnax	Dr. John Bear		
2001	Mid-Eastern Northeast Pacific	Virginia Union University	Dr. Belinda Anderson		
		Northeastern University	Dr. John Cunningham		
		University of Alaska Anchorage	Dr. Herb Schroeder		
					
		Dr. Belinda Anderson	Dr. John Cunningham	Dr. Herb Schroeder	
2002	Indiana	Purdue University	Dr. Sally K. Mason		
2003	Ohio	Ohio State University	Dr. Karen Halbrook		
					
		Dr. Sally K. Mason	Dr. Karen Halbrook		



# ALSAMP

## Alabama Louis Stokes Alliance for Minority Participation

### LEAD INSTITUTION

**The University of Alabama at Birmingham**  
Dr. Louis Dale, Project Director  
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Dr. Carolyn Braswell, Co-Project Director  
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**Stillman College**  
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**Talladega College**  
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**The University of Alabama in Huntsville**  
Dr. Adriel D. Johnson, Sr.  
(256) 824-6235  
johnsona@email.uah.edu

The Alabama Louis Stokes Alliance for Minority Participation (ALSAMP) strives through its twelve member institutions to increase the quality and quantity of underrepresented minority students completing baccalaureate degrees in science, technology, engineering, and mathematics (STEM) fields. Seven of the institutions have doctoral programs in STEM fields. The interaction of ALSAMP students and faculty, and the facilities on these twelve campuses are advantageous for all. The undergraduate institutions benefit from having their students participate in research experiences with research faculty while the research institutions have the opportunity to work with, identify, and recruit highly qualified minority students seeking to attend graduate school. The diversity of the Alliance: Historically Black Colleges/Universities and majority institutions, public and private institutions, and research and teaching institutions, boast a new era of cooperation as the Alliance seeks to maximize learning opportunities and heighten achievement for all ALSAMP students in the fulfillment of LSAMP goals.

### ALSAMP ACTIVITIES

- Academic and Financial Support
- Bridge to the Doctorate Program
- Graduate Bridge Program
- LSAMP Research Project
- National, State, and Alliance-Wide LSAMP Publications
- Peer and Faculty Mentoring
- Student Internships
- Student Resource Center
- Summer Bridge Program

**Notice: Alabama LSAMP awarded "Bridge to the Doctorate Program" supplement. Auburn University selected as program site**



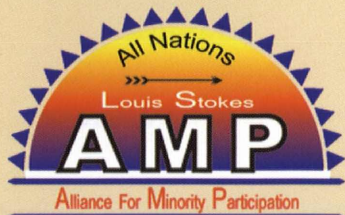
ALSAMP Bridge to the Doctorate Students



ALSAMP Project Award Recipients

[www.uab.edu/aamp](http://www.uab.edu/aamp)





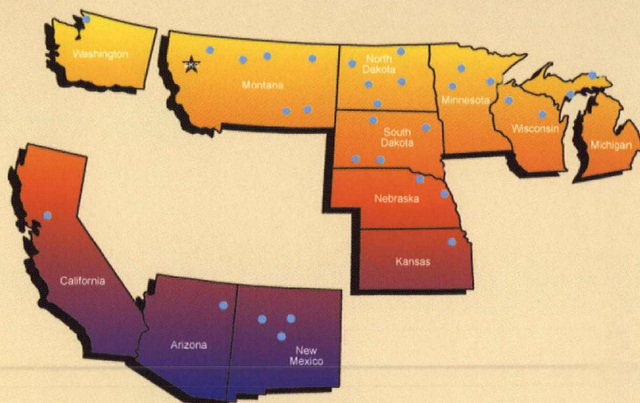
# All Nations

Louis Stokes Alliance for Minority Participation



Dr. Joseph F. McDonald  
Principal Investigator  
All Nations LSAMP  
Salish Kootenai College  
PO Box 70  
52000 Highway 93  
Pablo, Montana 59855  
Phone: (406) 275-4959  
Fax: (406) 275-4801  
<http://www.anamp.org>

*Mission Mountains*



The All Nations Louis Stokes Alliance for Minority Participation (ANLSAMP) is working to achieve parity with other minority groups to meet the needs of the tribal communities we serve. ANLSAMP has 52 alliance partners. Our partners consist of 25 universities and four-year colleges and 27 tribal colleges offering two-year degrees.

## Four Year Alliance Partners

- Central Michigan University
- Haskel Indian Nations College
- Heritage College
- Institute of American Indian Arts
- Lake Superior State College
- Montana State University - Bozeman
- Montana State University - Northern
- North Dakota State University
- Oglala Lakota College
- Rocky Mountain College
- Salish Kootenai College
- Sinte Gleska University
- South Dakota School of Mines & Technology
- South Dakota State University
- The Evergreen State College
- University of Kansas
- University of Minnesota - Duluth
- University of Minnesota - Twin Cities
- University of Montana
- University of North Dakota
- University of South Dakota
- University of Washington
- University of Wisconsin
- Washington State University
- Western Washington University



*AISES 2003*

The ANLSAMP Phase II is building the capacity of the Tribal Colleges and Universities (TCUs) to address the disparity of Native Americans. Native Americans are the least represented minority group in the Science, Technology, Engineering, and Mathematics (STEM) fields. Student focused activities play an integral part in increasing student successes and are incorporated into the overall program activities.

## California Louis Stokes Alliance for Minority Participation – “CAMP”

Increasing the quantity and quality of minority students who receive the B.S. degree and who continue on to graduate education. Faculty mentored laboratory research is valued as the platform for graduate school preparation and a prominent feature of CAMP.

We are proud to add the Bridge to the Doctorate to CAMP opportunities. Designed and hosted by UCLA, the “Bridge” supports ten new graduate students.

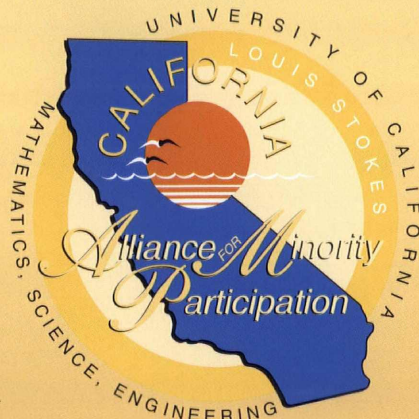
### Kudos!

Congratulations to all our undergraduate researchers who have presented at national conferences and who so well represent the University of California.

### Well done!

CAMP: Building the capacity of UC to reverse the disparity of underrepresented minority students in the sciences and engineering.

### Commitment!



### Dedication!

Thank you, UC science and engineering deans and faculty for your invaluable contributions to student development.

### Success!

Thank you, National Science Foundation, for your demonstrated commitment to underrepresented students.

### Continuity!

*Below, UC deans, faculty, and scientists who served as judges at the 2003 CAMP statewide undergraduate research symposium at the Beckman Center of the National Academies of Sciences and Engineering.*



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Ralph J. Cicerone, Chancellor, P.I.; Debra Richardson, Interim Dean, School of Information and Computer Science, Co- P.I.; Nicholas Alexopoulos, Dean, Henry Samueli School of Engineering, Co-P.I.

**CALIFORNIA LSAMP PARTNERS—EIGHT UNIVERSITY OF CALIFORNIA CAMPUSES:  
UC BERKELEY • UC DAVIS • UC IRVINE (LEAD CAMPUS) • UC LOS ANGELES  
UC RIVERSIDE • UC SAN DIEGO • UC SANTA BARBARA • UC SANTA CRUZ**



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The CSU Alliance is composed of 22 of its state campuses and 25 of the 107 California Community (2 year) Colleges. We are now ending the fifth year of our Phase II contract with the NSF.

The Phase II proposal retained the freshman summer bridge for all of its campuses, but deleted the second summer program for most of them in order to fund more Academic Year Workshops with a renewed emphasis on Community College participation and to increase support for research opportunities and mentoring.

Some of the redirected funds were used as “incentives” for students who succeed in “gateway” courses as a consequence of their participation in Academic Excellence workshops in pre-calculus, calculus, physics, chemistry and/or biology, the introductory courses for most SMET majors. These incentives were made available to students in our partner community colleges as well as to lower division students in the CSU. This is so since, historically, Community College students constitute 50% of our SMET students who ultimately earn baccalaureates.

Students who complete the introductory courses are eligible to compete for internships, research assistantships or positions as “facilitators” for the lower level workshops, especially if they have demonstrated potential for graduate study while still being juniors or seniors. All of our workshops stress collaborative study and academic excellence. The Academic Excellence Workshops are distributed uniformly over 30-40 weeks and offer a greater opportunity for students to build a sense of community and to improve their academic performance and retention.

Unfortunately, we cannot provide internships or research opportunities for all of our students, but we make sure that they are aware of the opportunity to compete for openings all over the U.S. and for some positions outside of the 49 continental states. We publicize all internship opportunities immediately and repetitively.



**Chair, Governing Board**

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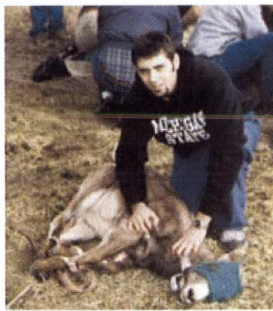
## LS CO-AMP SERVES STUDENTS IN---

Colorado and the Four Corners Region. Our goal is to substantially increase the quantity and the quality of education for African American Hispanic, Native American, and Pacific Islander students receiving baccalaureate degrees in Science, Technology, Engineering, and Mathematics (STEM). LS CO-AMP Phase II undertakes comprehensive efforts to place emphasis in the following areas:

- Recruitment
- Leadership/Retention
- Undergraduate Research
- K-12 Outreach
- Tracking
- Graduate School Placement

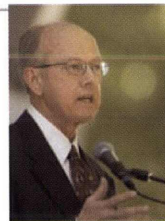
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Tagging Bighorn Sheep

Louis Stokes Colorado Alliance for Minority Participation  
Serving Colorado and the Four Corners Region



Dr. Larry E. Penley  
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Walking Machine Demo to K-12



Students as Leaders in Science (SLS)



Dr. Omnia El-Hakim  
Principal Investigator & Director

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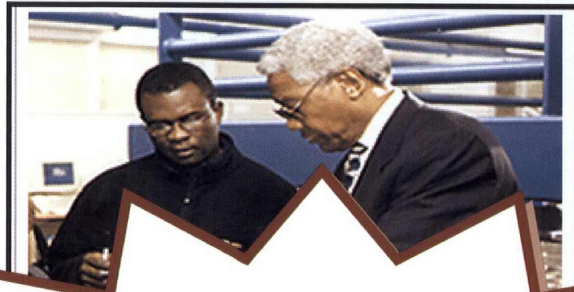
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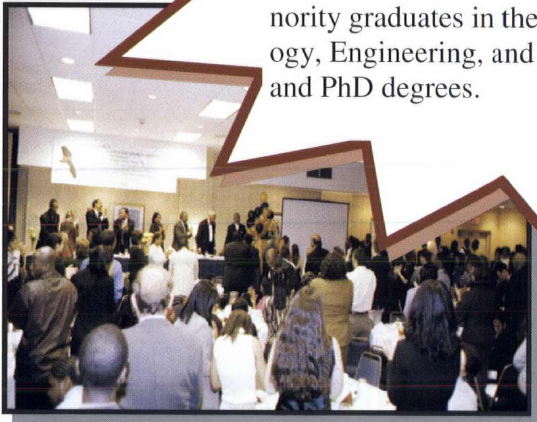
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Southern Ute Tribe – LaTitia Taylor  
Ute Mtn. Ute Tribe – Yolanda Rossi





## FGLSAMP OVERVIEW

The Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP) project is a coalition of twelve academic institutions in Florida and one in Georgia. The ultimate goal of FGLSAMP is to increase production of underrepresented minority graduates in the areas of Science, Technology, Engineering, and Mathematics with BS, MS, and PhD degrees.



**FOR MORE INFORMATION ABOUT FGLSAMP, VISIT OUR WEBSITE: [WWW.FGLSAMP.COM](http://WWW.FGLSAMP.COM) OR CONTACT ANY OF OUR INSTITUTIONS:**



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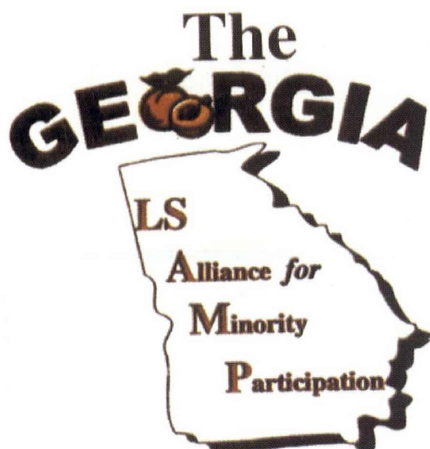


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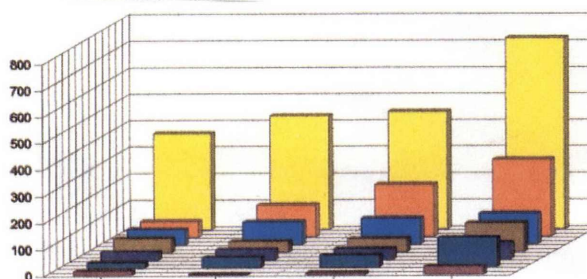
# The Georgia Louis Stokes Alliance for Minority Participation



## The GA LSAMP Activities

- Pre-freshmen Summer Bridge Programs
- Systemic Reform of Entry Level STEM Courses
- Faculty workshops on Teaching & Learning
- Financial support through scholarships and research stipends
- Office of Research Careers
- Tutorials and Peer Mentoring
- Undergraduate Research Participation

## Undergraduate Degrees Awarded in STEM



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## Impact and Systemic Change

- Enrollment has grown 172 percent since the AMP inception
- Degrees have increased more than 150 percent
- The rate of growth and degrees granted exceeded those of the National LSAMP Program
- Four of the partner institutions are listed as best institutions for African Americans
- Three of the partners are listed among the top 20 institutions serving as the baccalaureate origin of recent STEM doctorate recipients.

# Houston Louis Stokes Alliance for Minority Participation

www.hlsamp.uh.edu

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Dr. Bobby L. Wilson- Texas Southern University

## Executive Director

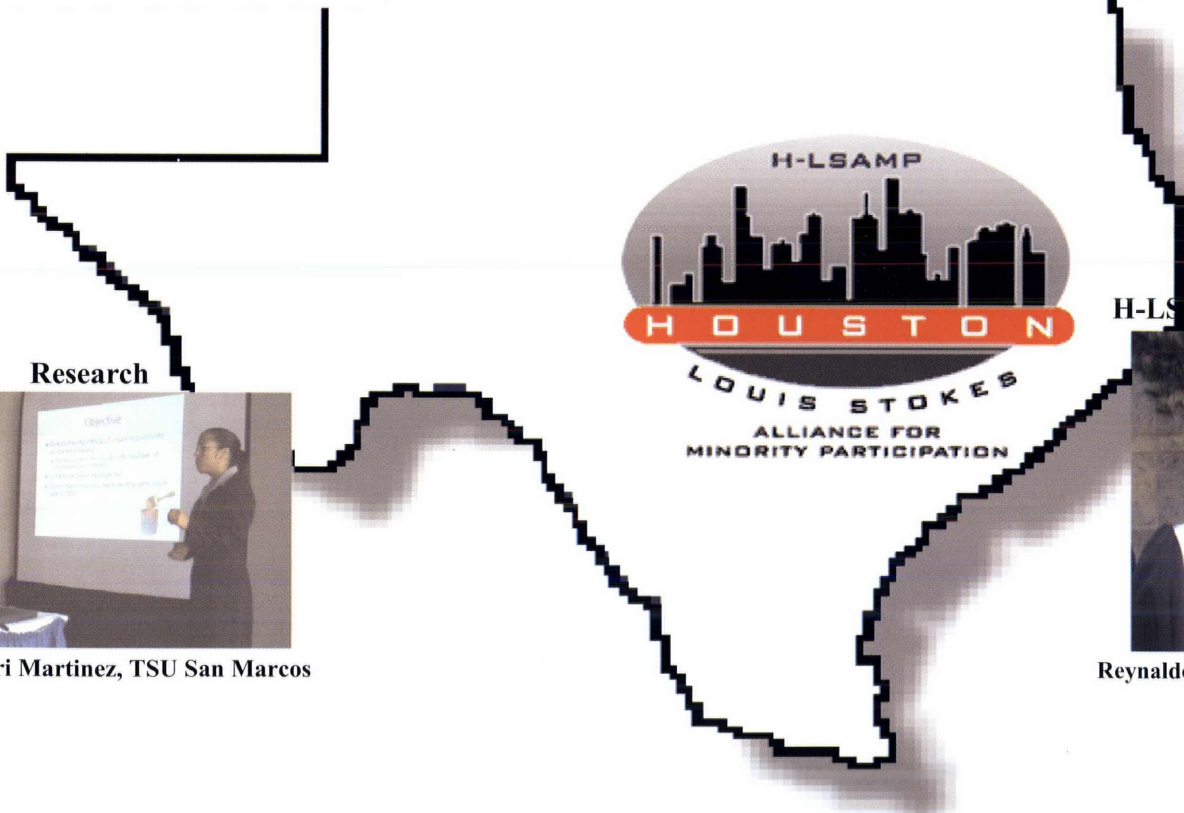
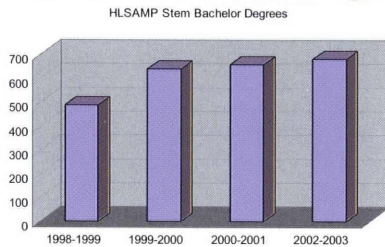
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H-LSAMP Conference



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Kennedy-King College  
Malcolm X College  
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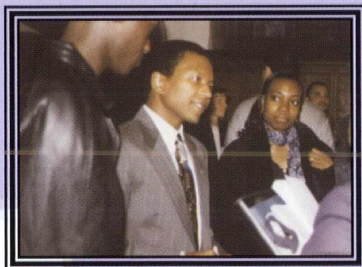
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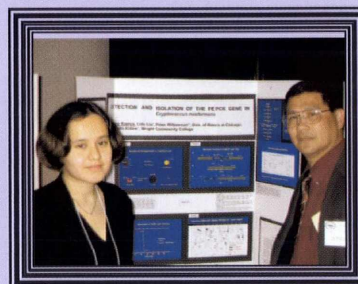
## OVERVIEW

The Illinois Louis Stokes Alliance for Minority Participation (ILSAMP) formerly the Chicago Alliance for Minority Participation (ChAMP) was formed in 1993 in response to the National Science Foundation's (NSF) mandate to significantly increase the number of underrepresented minority scholars earning degrees in science, technology, engineering and mathematics (STEM) disciplines. In support of this goal, ILSAMP has 1) provided programs to improve STEM students academic preparation, 2) modified or reinvented gateway courses to better educate more students and, 3) provided under-represented students with more educational options to increase opportunity and enhance performance. With continued support, this program can and will serve as a model and solid foundation for students achievement in the state of Illinois.



## PROGRAMS

Illinois LSAMP provides activities that are comprehensive, multi-disciplinary, and focused on enhancing the scholarship of minority students. Considerable effort is expended to address transition points in a student's academic career. The transition points include high school to college, 2-year college to 4-year college, undergraduate study to graduate study, and academic study to careers in STEM. Other activities include: hands-on research apprenticeships, scholarship programs, science conferences, facilitated study groups, faculty mentoring, professional development activities, peer mentoring, summer bridge programs and internships.





# LSAMP Indiana

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## The Louis Stokes Alliance for Minority Participation (LSAMP) Indiana

project is a collaboration among Ball State University; Indiana University, Bloomington; Indiana University - Purdue University Indianapolis; Purdue University Calumet; and Purdue University, West Lafayette. The goal of

the project is to double the number of minority graduates in the Science, Mathematics, Engineering and Technology (SMET) disciplines by the end of the five-year grant period. The over-arching goal is to increase the learning and success of the minorities in the SMET fields. Each member of the alliance is committed to increasing the number of SMET minority graduates by 100 percent by the end of the five-year period. ■ Each university surveyed existing student retention

and minority programs and found that few programs were offered to help first-year students identify with their SMET discipline and that few programs helped them sustain that initial identification through research and mentoring experiences over the next two years of college. In response to this finding, these institutions formed an alliance to increase the number of minorities receiving baccalaureate degrees in SMET disciplines.

**Programs:** LSAMP Indiana will implement programs that will: 1) provide early research and enrichment experiences; 2) sustain teaching and mentoring opportunities on gatekeeper, as well as upper-level courses; 3) provide personalized interactions with graduate students and faculty mentors beginning in the students' first year; and 4) provide professional and personal development opportunities. ■ These early experiences with research and teaching are designed to encourage students to forge and sustain an academic and social identification within their SMET discipline and serve as a solid foundation for student achievement.



Made possible with the generous support of the National Science Foundation

EA/EOU

# Louis Stokes Louisiana Alliance for Minority Participation (LS-LAMP)

## MENTORING MINDS GRADUATING SCHOLARS

The hallmark of the Louis Stokes Louisiana Alliance for Minority Participation 2002-2003 academic year has been the impact of the LS-LAMP on minority undergraduate degree production in scientific and engineering fields. On LS-LAMP campuses, there are on-going changes in the cultures, value systems, and incentive structures to ones that recognize mentoring as the coupling between quality instruction and learning on the one hand and quality instruction and research on the other. We established a rigorous scientific foundation for systemic mentoring. We have adopted the 10-strand Systemic Mentoring Model of the Timbuktu Academy. Student retention has increased as a result of the enhancement of the scholastic achievements of minority STEM students as enabled partly by systemic mentoring and the on-going and growing undergraduate curriculum reforms.

*LS-LAMP has launched many successful efforts in Phase II.  
A few of them follow:*

- On-going changes in campus cultures, value systems, and incentive structures.
- More than 2,000 scholarships awarded to minority STEM scholars



- Increasing the number of minority STEM students conducting research.
- Hosting more than 400 students and leading researchers from universities, business, industry, and government programs during the LS-LAMP annual student research conference.
- Dissemination of new knowledge through publications.
- Expansion of effective collaborations with the National IGERT office, Baton Rouge Education Alliance, Howard University and Mississippi alliances for graduate education, University of Kentucky, Wake Forest University, University of Arkansas, and Apple Computers.

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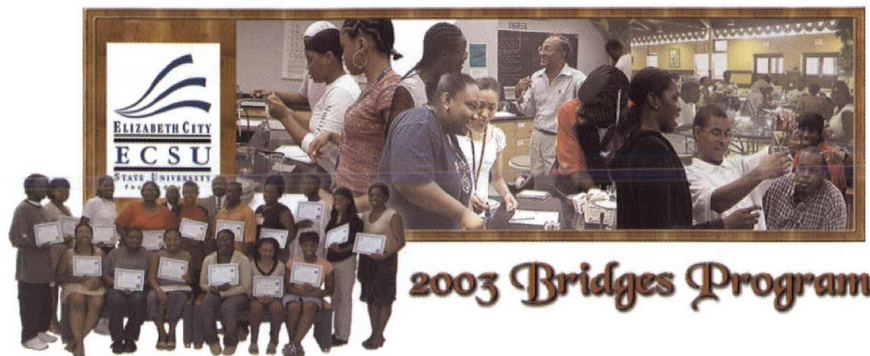
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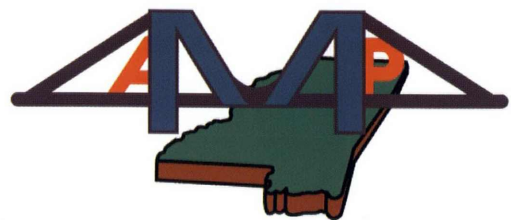
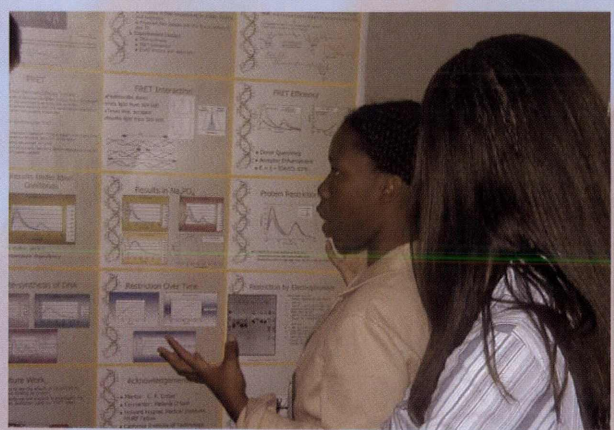
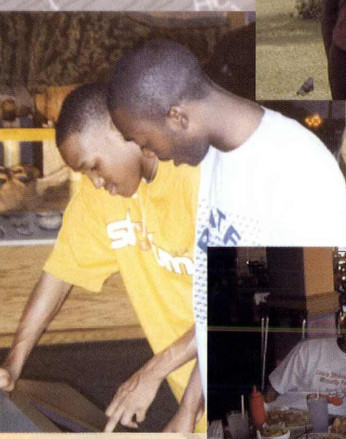
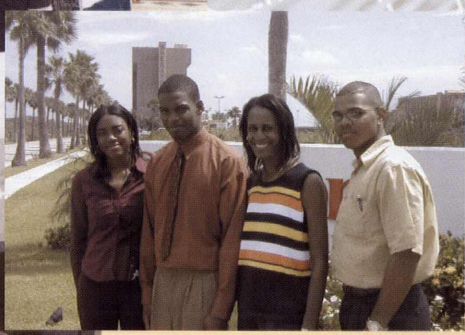
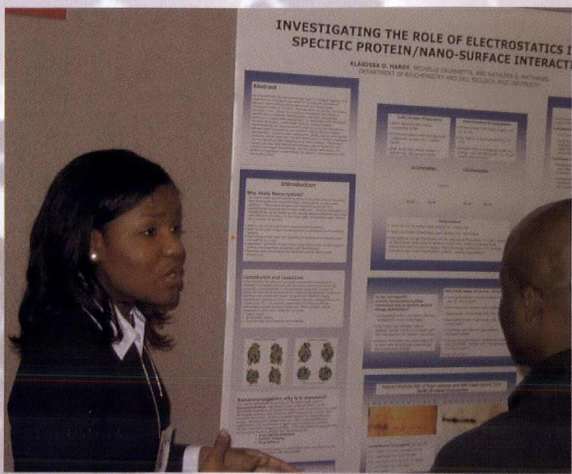
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### *PROGRAM HIGHLIGHTS*

- *MEAMP undergraduate students complete summer international research experiences.*
- *MEAMP partner institutions successful in obtaining external private funds to support STEM matriculation.*
- *MEAMP partners established outreach community-based learning programs.*





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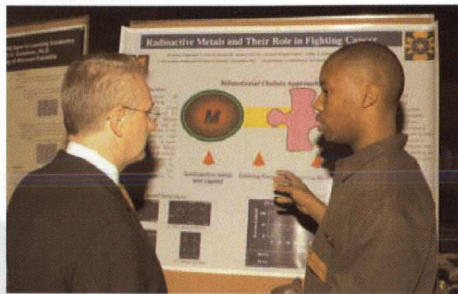


Louis Stokes Mississippi Alliance for Minority Participation

# the Louis Stokes- Missouri Alliance for Minority Participation

LS-MoAMP participant,  
Brandon Tilghman explains his  
research poster to Governor  
Bob Holden.

Brandon is a senior chemistry  
major at the UM-Columbia.  
Tilghman saved the money he  
made researching at the MU  
Research Reactor Center to  
finance a trip to South Africa  
to study AIDS-related  
health problems.



**T**he Louis Stokes-Missouri Alliance for Minority Participation continues to impact the number of underrepresented students who are entering and expanding the pipelines leading to higher education and employment opportunities in science, mathematics, engineering, and technology.

With the continued support of our Alliance member academic institutions, State of Missouri agencies and industry partners, LS-MoAMP remains committed to the principles of diversity, equality and academic excellence.

Synergies created by the cooperative efforts of the Louis-Stokes Missouri Alliance for Minority Participation members are insuring that underrepresented students in the state have every opportunity to maximize their potential for achievement.

The growth in degrees and enrollment project continued success in the future..

*The Louis Stokes-  
Missouri Alliance  
for Minority  
Participation is a  
comprehensive,  
multidisciplinary  
program designed to  
significantly increase  
the quantity and quality  
of underrepresented  
students who receive  
baccalaureate and  
graduate degrees in  
science, engineering  
and mathematics.*

Principal Investigator:  
Charles L. Sampson, Ph.D.,  
Office of the President, University of MO System

Administrative Assistant:  
June Gibson



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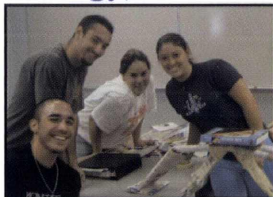
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# New Mexico AMP

## Offering students:

### SMET 101 (Intro. to Science, Math, Engineering & Technology):

- Thinking and learning skills
- Problem solving techniques
- Career exploration skills
- Collaboration and teamwork



### Undergraduate Research Assistantships:

- Cutting edge research
- Faculty mentoring
- Professional conferences
- Preparation for internships, graduate school or the workforce



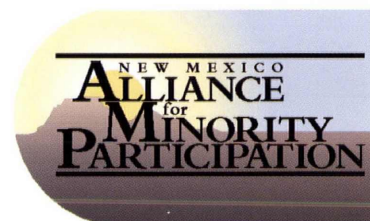
### Student Research Conference:

- Presentation experience
- Faculty and professional mentoring
- Networking opportunities
- Professional, career and academic workshops

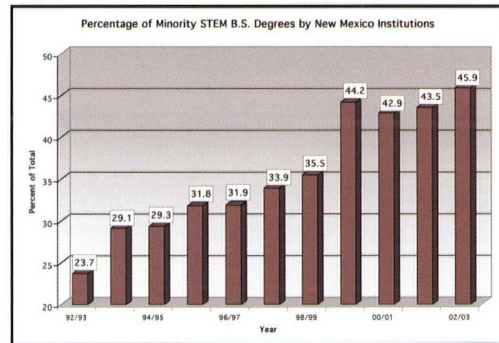
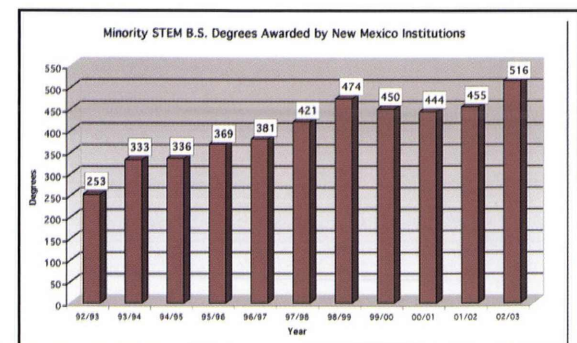


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### And Other Opportunities Leading to Success:



### New Mexico AMP ~ 1993-2003 ~ A Decade of Excellence

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# NEW YORK CITY LOUIS STOKES ALLIANCE



**T**he NYC Louis Stokes Alliance for Minority Participation (NYC-LSAMP) is an alliance of 16 CUNY Colleges and the CUNY Graduate Center. The Alliance goal is to substantially increase the number of underrepresented minority students who pursue and graduate with Baccalaureate Degrees in Science, Technology, Engineering, and Mathematics (STEM).



The NSF supported NYC Louis Stokes Alliance for Minority Participation (NYC-LSAMP) at CUNY has, since its inception in November 1992, been at the forefront of a concerted effort to increase annual minority STEM enrollment and graduation in the City University of New York. Since 1992, over 7,400 baccalaureate degrees have been awarded. The Alliance provides academic scholarship support to CUNY students majoring in the STEM disciplines, making research an integral part of STEM education in New York City.

## LSAMP Program Activities Include:

- Collaborative Learning Approach to STEM Education
- Restructured Gatekeeper Courses in Chemistry, Physics and Mathematics
- Curriculum Coordination and Articulation across the City University of New York
  - Faculty Research Initiation and Articulation Program
- Research Assistantships and Teaching Opportunities for LSAMP Scholars
  - Undergraduate and Graduate Research Fellowships
    - Peer and Faculty Mentoring
- Science and Engineering Learning Centers at CUNY campuses
  - The Urban University Series Conference
  - NASA Summer and Academic Year Collaborations
- Brookhaven National Labs Summer Participation for Community College Students

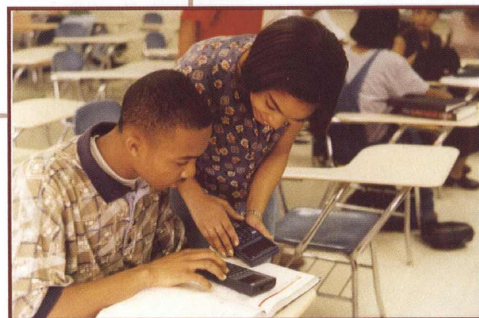
## North Carolina Louis Stokes Alliance for Minority Participation

Dr. Carolyn W. Meyers, Principal Investigator

Dr. Joseph Monroe, Co-Principal Investigator

### Phase III:

The North Carolina Louis Stokes Alliance for Minority Participation (NC-LSAMP), funded by the National Science Foundation, and established in 1992, formed a partnership between eight institutions within the University of North Carolina system with the primary goal of significantly increasing the enrollment and retention of underrepresented minority students in science, technology, engineering and mathematics (STEM). Partner institutions include North Carolina A&T State University as lead campus, Fayetteville State University, North Carolina Central University, North Carolina State University, University of North Carolina at Chapel Hill, University of North Carolina at Charlotte, University of North Carolina at Pembroke and Winston-Salem State University.



During Phase III, program implementation will continue its focus on nurturing and supporting students through their undergraduate studies in STEM curriculums through the institutionalization of "best practices" learned during Phases I and II, and place new emphasis on the attainment of M.S. and Ph.D. degrees in these disciplines. Phase III priorities include expanded undergraduate laboratory research opportunities, community college recruitment and transfers, a school to college summer bridge program, and preparation for graduate school through mentoring and peer group activities.

Together the Alliance institutions continue to play a significant role in producing minority research scientists and faculty to meet the needs of the country. Our partners are committed to maintaining and strengthening this successful "alliance" by embracing institutions with unique and diverse strengths and resources.

### Targeted Activities, Services & Programs

- Supplemental Instruction and Tutorial Services in "Gatekeeper Courses".
- Mentoring
- Peer Study Groups
- Summer Research Programs
- Faculty Mentored Research
- Summer Bridge Programs
- Industry and National Research Laboratory Internships
- Career Advisement
- Stipend Awards
- Conferences and Seminars



Staying the course...  
While Exploring  
New Frontiers  
in **STEM**

North Carolina Louis Stokes Alliance for Minority Participation  
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# *Northeast LSAMP*

## *Summer Activities University of Rhode Island*



The College of Engineering sponsored a week long residential summer bridge program for middle and high school students interested in mathematics, science, and engineering. The program helps students understand how math and science are a key part of being an engineer. Students experienced some of the fun of being in a lab and doing experiments.

### *Northeast Louis Stokes Alliance for Minority Participation*

#### *Alliance Membership/campus contact*

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# OKLAHOMA LS-AMP

Since 1994

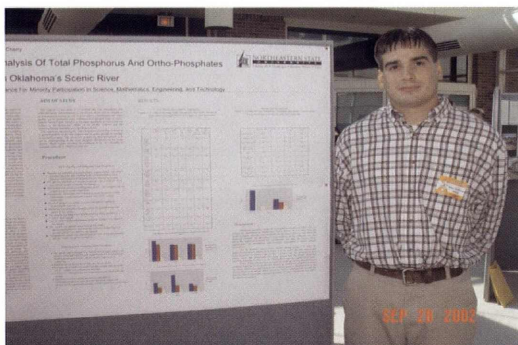
The Oklahoma Louis Stokes AMP program, comprised of 10 partner institutions, continues to provide academic support programs aimed at increasing the number of Native American, African American, Hispanic, and Pacific Islander students earning baccalaureate degrees in the science, technology, engineering, and mathematical disciplines. During the 2002-2003 academic year, which was the 8<sup>th</sup> year of existence, the program continued to make strides toward achieving its goal.

Visit Our Website at

[Ls-okamp.okstate.edu](http://Ls-okamp.okstate.edu)

## Alliance Accomplishments – 2002-2003

- 226 Scholars Supported
- 66 Summer Research Participants
- 593 Baccalaureate Degrees Awarded
- 1 Ph.D. Earned
- 16 Professional Meetings Attended
- 24 Summer Bridge Participants



Alex Henry, Northeastern State University

## Program Provisions and Activities:

- Stipends ranging from \$500 to \$1500
- Incentive Awards for Scholars Admitted to Graduate School during Senior Year
- High School-to-College Summer Bridge Program (Partial support by Oklahoma State Regents for Higher Education)
- Monthly Scholars Meetings with Faculty/Staff Participation
- Participation in Professional Meetings (Partial support by Oklahoma EPSCoR)
- Graduate School Preparation
- Tutoring
- Faculty Mentoring
- Research Internship Program (RIP)
- Annual Research Symposium
- Monitored Academic Progress

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# Pacific Alliance

University of Alaska Anchorage  
University of Alaska Fairbanks  
University of Hawai'i Manoa  
University of Washington

*Our objective is to effect a systemic change in the hiring patterns of Alaska Natives, Native American, and Pacific Islanders in the fields of science, technology, engineering, and mathematics (STEM) by increasing the number of individuals on a career path to leadership within STEM fields.*



The parents of some of our Alaskan students in were raised nomadic, living in close harmony with nature and depending on the land for food and shelter. They are the first generation of their people to ever use money. We started with 1 student in 1996 and there are now hundreds of Indigenous STEM students involved in our Alliance.

Our Alliance offers an array of opportunities designed to help students fulfill their potential in college and develop an interest in graduate study. Students are *teamed*.

## PACIFIC ALLIANCE PARTNERS

- |  |                                    |
|--|------------------------------------|
| Alaska Native Tribal Health Consortium | Kimberly Clark                     |
| Alyeska Pipeline Service Company       | Microsoft                          |
| Boeing Company                         | NANA Development                   |
| bp Exploration                         | NASA Jet Propulsion Laboratory     |
| Denali Commission                      | Rasmuson Foundation                |
| DOWL Engineers                         | Siemens Building Technologies      |
| First Alaskans Institute               | VECO Engineering                   |
| Ford Motor Company                     | US Environmental Protection Agency |
| Hewlett Packard                        | UW Research labs                   |
| IBM Kirkland, Washington               | Yukon Kuskokwim Health Corp.       |
| Intel                                  |                                    |

## RECRUITMENT, RETENTION AND PLACEMENT STRATEGIES

### *High School Outreach*

- Computer building and instruction
- College prep curriculum
- Peer mentoring
- Field Trips

### *Bridge: Summer Experiences for entering freshman*

- Internships with Calculus Prep
- 9 weeks on university campuses

### *Retention*

- Learning community
- Co-enrollment
- Team building
- Group study
- Counseling
- Scholarships
- Internships
- Professional & peer mentoring
- Hands on research

### *Graduate School*

- Information sessions
- Faculty mentoring

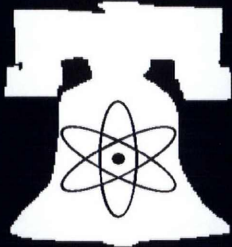


**Building a National Model for Excellence in Native American Higher Education Programs**

<http://www.engr.uaa.alaska.edu/ansep/default.htm>

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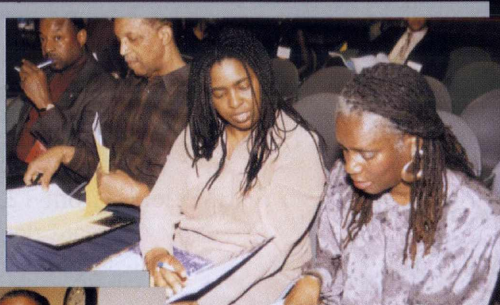


# Philadelphia AMP

Greater Philadelphia Region Louis Stokes Alliance for Minority Participation

Lead Institution: **Drexel University**  
Principal Investigator: **Dr. Harvill Eaton**  
Project Director: **Mr. Stephen R. Cox**

Project Coordinator: **Ms. Veniece Keene**  
Administrative Assistant: **Ms. Linda Senesombath**  
Phone: (215) 895-2203 • Fax: (215) 895-2098



## MISSIONS

- To increase the minority STEM B.S. degree production to 1116 degrees annually
- To increase the minority progression and retention rates in STEM
- To move at least 10% of graduates into graduate STEM education

## ALLIANCE PARTNERS

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# The Puerto Rico Louis Stokes



## Alliance for Minority Participation

[www.prlsamp.org](http://www.prlsamp.org)

The goal of PR-LSAMP is to improve the effectiveness and efficiency of STEM programs, in order to increase the number of students that receive a baccalaureate degree in these fields, and the number of BS graduates that continue on to obtain a PhD degree.

PR-LSAMP is one of the six 'Grand AMPs' originally funded by NSF in 1991. Since then, PR-LSAMP institutions have dramatically increased their undergraduate enrollment in STEM fields, from 12,572 in 1992 to 27,529 in 2003. In this 13-year period, a total of 32,207 baccalaureate degrees in science, technology, engineering, and mathematics were awarded, contributing significantly to diversify the nation's scientific and technological workforce.

Twelve major institutions of higher education are PR-LSAMP participants in Phase III. These institutions are known for their strong commitment to academic excellence and for providing a learning environment conducive to retaining and graduating a significant number of undergraduate students in STEM careers.

### PR-LSAMP activities include:

- Sustained research experiences for undergraduate STEM students
- Faculty and peer mentoring
- Development of web-based modules to enhance students' mastering of science concepts and the development of information technology skills
- STEM Research Program for high schools students to develop knowledge and skills to do scientific research
- The Puerto Rico Interdisciplinary and Scientific Meeting (PRISM) for students to present their research projects to professors and to their peers
- Faculty development to strengthen the teaching and learning process

In 2003, PR-LSAMP was one of the recipients of the NSF's Bridge to the Doctorate Awards. Ten LSAMP graduates received a fellowship and are now enrolled in a science PhD program at UPR-Río Piedras.



Undergraduate Research



Pre-College to College Bridge Program



Faculty and Peer Mentoring



Bridge to the Doctorate Program

Coordinated by:



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Co-PI: Dr. Ana C. Piñero

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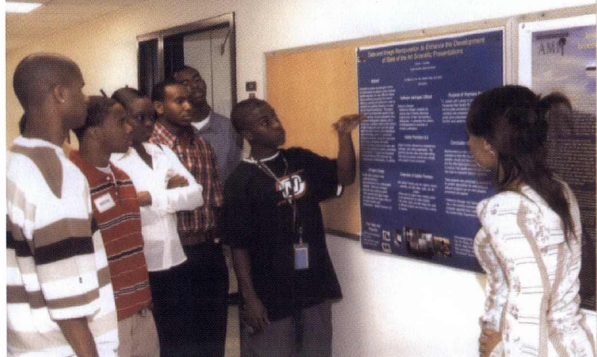
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## THE LOUIS STOKES

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**"Undergraduate Research: The Bridge to Success Through Experiential Learning"**

#### Program Description

The Louis Stokes South Carolina Alliance for Minority Participation Program (LS-SCAMP) represents diversity and undergraduate excellence in the areas of science, mathematics, engineering and technology. Established in 1992 as a collaborative effort between the National Science Foundation and eight higher education institutions in the state of South Carolina, this program is now offered at twelve South Carolina institutions of higher learning. The member institutions are Allen University, Benedict College, Claflin University, Clemson University, College of Charleston, Denmark Technical College, Midlands Technical College, Morris College, Orangeburg Calhoun-Technical College, South Carolina State University (lead institution), The University of South Carolina and Voorhees College. This new alliance embodies all seven of the state's HBCUs, two major research universities and three technical colleges.

Through this initiative enrollment in STEM disciplines has increased from 2455 in fall 1992 to 3850 in fall 2002. In addition, the alliance continues to increase its baccalaureate degree production from 255 in fall 1992 to 544 in 2003.

The mission of the program includes strategies designed to remove the barriers that prevent full participation by

minorities in SMET fields. They include: 1) strengthening undergraduate research education, with emphasis on partnerships with local graduate research centers, and national and federal laboratories 2) increasing underrepresented SMET baccalaureate degree production 3) providing opportunities for students to improve their qualification and enhance their preparation for graduate studies in SMET fields.

#### LS-SCAMP Program Impact

SCAMP programs have had a persistent effect on SMET retention and graduation rates.

- The growth in minority SMET degrees is almost 2.5 times the growth in non-minority SMET degrees at SCAMP institutions.
- The growth in minority SMET enrollment is almost five times the growth in non-minority SMET enrollment at SCAMP institutions.
- Retention and persistence for minority SMET students continues to compare favorably to retention for minority non-SMET students and SMET persistence has reached historically high levels.
- Post-baccalaureate studies have significantly increased through the efforts of the SCAMP Summer Bridge Programs and experiential learning opportunities.

#### LS-SCAMP Program Activities

*"Providing Challenging Opportunities to Get Exceptional Outcomes"*

- Summer Bridge Programs - 5-week residential
- Graduate Preparation Institutes
- Undergraduate Research Internships
- Academic Enhancement Workshops
- Scholarships
- Mentorships
- Annual Science and Engineering Research Conference

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#### Alliance Partners

Allen University \* Benedict College \* Claflin University \* Clemson University \* College of Charleston  
 Denmark Technical College \* Midlands Technical College \* Morris College \* Orangeburg-Calhoun Technical College  
 South Carolina State University \* University of South Carolina \* Voorhees College

*"Providing Challenging Opportunities to Get Exceptional Outcomes"*



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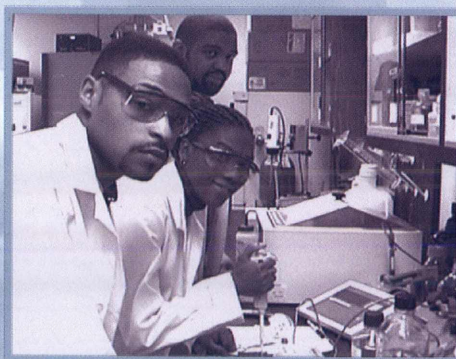
## New Directions for the Alliance

The State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) is a coalition of 16 institutions within the SUNY system, one of the largest public college/university systems in the nation. This coalition works in collaboration with federal, state, and local government agencies, major national laboratories, industry, private foundations, and professional and community organizations.

To produce change in the order of magnitude necessary to meet degree production and enrollment targets, SUNY LSAMP has designed and implemented a comprehensive network of services that have a positive impact on students, faculty, and institutions.

### Services include:

- Scholarship and stipend support.
- Workshops and tutoring in science, technology, engineering, and mathematics (STEM) disciplines.
- Mentoring programs that link faculty and staff to students.
- Paid research and internship opportunities.
- Opportunities for students to attend professional conferences and present the results of their research.



- Assistance to students in preparing for and applying to graduate programs.
- Innovative enrichment courses and program models.

### Plans include:

- Getting the word out to promote the programs on each campus and throughout New York State.
- Putting into place a coherent organized strategy to attract additional funding from corporate, foundation, and government sources. We will build on our successes and our innovative programs.
- Contributing to the body of scholarly work about best practices in UREP STEM education and support services.
- Developing a system for improved tracking of SUNY LSAMP graduates and extensive data analysis of program data.
- Increasing the recruitment of students through new and improved relationships with secondary school programs for UREP STEM students.

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# Tennessee Louis Stokes Alliance For Minority Participation

## OVERVIEW

Tennessee State University (TSU), LeMoyné-Owen College (LOC), Middle Tennessee State University (MTSU), University of Memphis (Memphis), University of Tennessee at Knoxville (UTK), and Vanderbilt University (Vanderbilt) partnered to form the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP). The goal of the TLSAMP program is to increase the number of the underrepresented science, technology, engineering, and mathematics (STEM) students by at least 100% at the end of the five-year period. The objectives to support the goal of the alliance are to:

- recruit underrepresented students to pursue science or engineering as a career
- improve the quality of the learning environment for underrepresented science and engineering students at all schools
- ensure that a larger number of undergraduate students are prepared to enter graduate programs

## PROGRAMS

- Recruitment Programs
- Student Support
- Summer Bridge Program
- Undergraduate Research
- Tutorial Programs
- Drop-In Centers
- Graduate School Preparation
- Curriculum Reform
- Faculty Mentoring
- Industry Mentoring
- Peer Mentoring
- Collaborative Learning
- Supplemental Instructions



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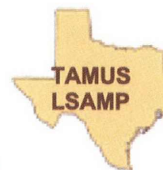


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2003-2004

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DEVELOPING UNDERGRADUATE EXCELLENCE

Featured in action are Prairie View A&M University, Texas A&M University, Texas A&M University at Corpus Christi

Texas A&M University at Corpus Christi (TAMUCC) Awarded Texas Higher Education Coordinating Board "Star" Award

AMP students at Texas A&M University Corpus Christi are expected to participate in at least 10 hours per week of research experiences under the supervision of a faculty mentor. In 2003, the University received the STAR Award from the Texas Higher Education Coordinating Board in recognition of its success in increasing the participation and success of south Texas students in science fields.

AMP mentor, Dr. Suzzette Chopin, Professor of Biology and Director of Pre-Professional Education and Special Programs at the university, says TAMUCC finds ways to help students remain in science through graduate school and a job in science. One of the ways the program reaches students is through peer mentoring.



Dr. Chopin featured above with AMP students came to TAMUCC in 1994 and began mentoring undergraduate students in 1996. Dr. Chopin's students have presented at over 30 conferences and have won 10 awards for their presentations. Many of her students have matriculated into graduate and professional schools, and have been active in encouraging their peers to pursue research experiences. For example,

Michael Floissac, AMP student at TAMUCC chose as a research to focus on the effect of Ginkgo biloba on embryological development. Michael received first place at the 13th Annual Undergraduate Research Symposium at the University of Texas Medical Branch and a Young Researcher Award at the Southern Section Meeting of the Society for Experimental Biology and Medicine.

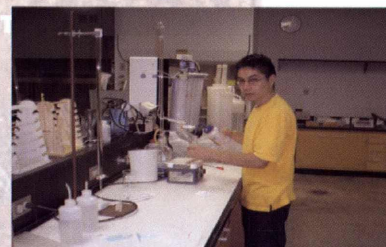
Michael interned with the World Health Organization in Geneva. His experience there solidified his interest in public health and he is currently completing his Master's of Public Health at the University of Texas Health Science Center.

Freshmen tend to be first-generation college students at TAMUCC, where they become part of peer mentoring under the leadership of Chopin. Dr. Chopin encourages students to participate in research projects, despite their academic levels.



Andrea Rochas, recent graduate of TAMUCC, explains peer mentoring to a group of incoming freshmen. Andrea is currently a doctoral student in marine biology at Old Dominion University.

Texas A&M University



Lazaro Medrano worked in the civil engineering department in the summer undergraduate research program. The program is designed to encourage undergraduate students to pursue graduate work in engineering. Medrano spent the summer working with engineering faculty on a research project.



Undergraduate researchers Adriana Campos, Chris Romero and Erica Garcia explain the benefits of hands-on research to the participants at the Third Annual Undergraduate Research Symposium in Fall 2003.

Prairie View A&M University



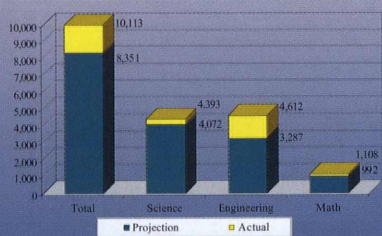
Shantel Easley, a junior electrical engineering student at Prairie View A&M University, researched methods to design an electric car under the supervision of Dr. Warsame H. Ali.

# University of Texas System LSAMP

## A Catalyst for Change



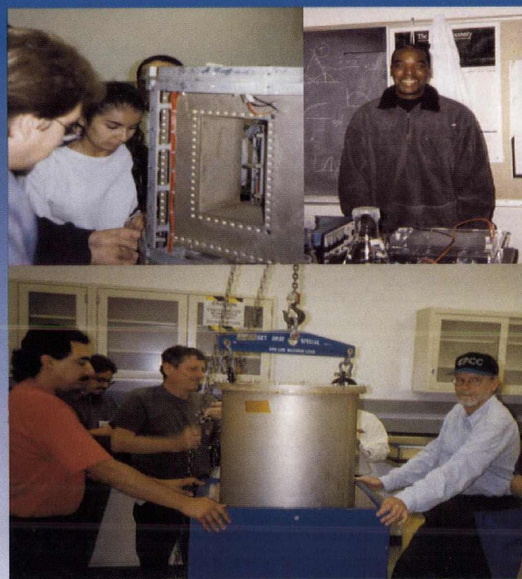
STEM Bachelor's Degrees Awarded to Underrepresented Minority Students By Academic Fields Contrasted to Expected Increases (1991-92 to 2002-2003)



UT-System LSAMP

In the past year, the annual number of underrepresented minority graduates in the engineering disciplines has more than doubled that of the baseline year (1992-93). This is a significant increase as state and national statistics over the past several years have shown that both the enrollment and graduation of undergraduate engineering majors is declining.

The University of Texas System LSAMP has brought together the nine academic components of The University of Texas System in an effort to increase the number of underrepresented minority students enrolling in and graduating from baccalaureate programs in science, technology, engineering and mathematics (STEM). At the same time, the Alliance has sought to increase the enrollment of underrepresented minority students in STEM graduate programs at UT-System institutions. Emphasis in Phase III is on increasing graduate opportunities for underrepresented minority individuals at Alliance institutions, especially at the doctoral level.



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# University System of Maryland

## Louis Stokes Alliance for Minority Participation



University of Maryland, Baltimore County

University of Maryland, College Park

University of Maryland Eastern Shore

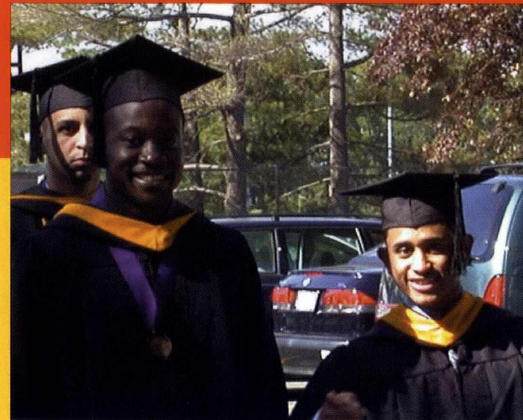
### Program Success

- Awarded 528 science, technology, engineering and mathematics (STEM) degrees to minority students in 2002-2003
- Continued enrollment of over 3,000 minority STEM students
- Continued direct support of nearly 300 LSAMP students
- Advancement of many LSAMP students to top graduate schools including Georgia Institute of Technology, Duke, Johns Hopkins, Case Western Reserve and Rensselaer Polytechnic Institute
- Summer 2003 student research positions included Fogarty MIRT-Lancaster University, NASA, Harvard, NIH, Stanford, HHMI-University of Colorado at Boulder, Duke, Northrop Grumman and Army Research Laboratory

### Honor Societies

Students continue to be inducted into prestigious honor societies including:

- Phi Beta Kappa
- Phi Kappa Phi
- Pi Mu Epsilon (mathematics)
- Tau Beta Pi (engineering)
- Golden Key



### Program Highlights

- Undergraduate research
- Academic support
- Summer bridge
- Mentoring
- Financial assistance
- Service
- Cultural events
- Advising and counseling
- College and lab visits
- Conference presentations
- Math bridge program
- Student recognition receptions

#### UMBC

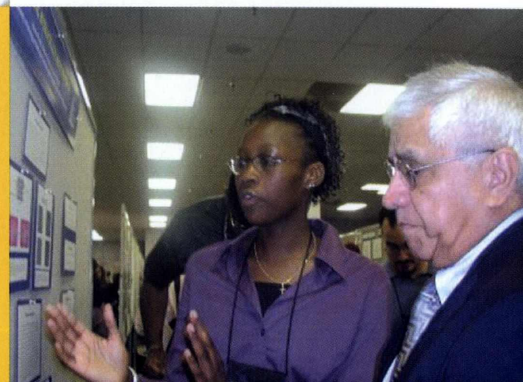
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# Washington/Baltimore/Hampton Roads - Louis Stokes Alliance for Minority Participation Program

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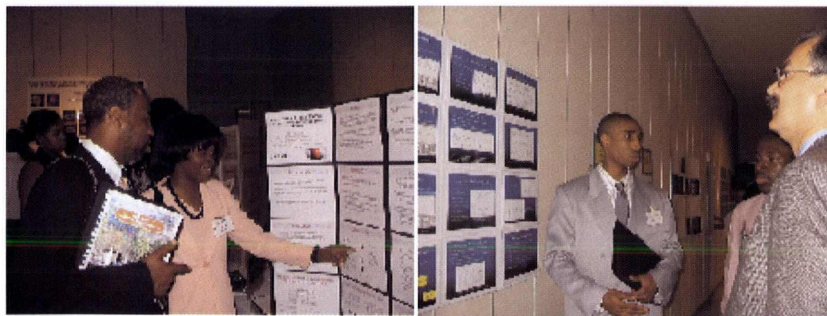
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### Third Annual Undergraduate Research Symposium



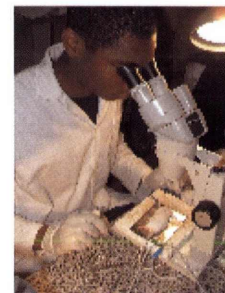
Over the past seven years, the Washington/Baltimore/Hampton Roads Alliance for Minority Participation (WBHR-LSAMP) has received base support from the National Science Foundation to increase undergraduate research participation for minority students in Science, Technology, Engineering and Mathematics (STEM) fields. This Alliance includes Howard University as the lead institution with Morgan State University, Bowie State University, the University of the District of Columbia, Hampton University, Norfolk State University, and Virginia State University as partners. Project participants in the WBHR-LSAMP program include the project director, alliance coordinator, project coordinators, research mentors, and students. The combined total minority students enrolled in STEM fields at this WBHR Alliance exceeds 24,000. Over the past 7 years, more than 7,000 students have graduated from these institutions with B.S. degrees in STEM fields.

The WBHR-LSAMP program supports undergraduate research for students. The overall objective of this program is to ensure that the LSAMP student has well-rounded research opportunities. Students are expected to participate during the summers and the academic year in research at their home institutions, at other research universities and in industrial or national laboratories. The overall goal of the program is to encourage minority students to pursue doctoral degrees in STEM fields and to become involved in research careers. During the 2002-2003 academic year, the WBHR-LSAMP provided junior/senior level students with research opportunities during the first & second semesters and summer; conducted specialized classes through the Cisco Networking Academy, organized a special video-conferencing course for students enrolled in Calculus; provided tutorial support for students in gatekeeping courses (Biology, Calculus, Chemistry, & Physics); provided financial assistance to STEM students during the fall and spring semesters, and facilitated the transfer of community college students into STEM programs at WBHR institutions.

## Impact and Systematic Changes

There has been a significant impact on students and systemic change as evidenced by the fact that for the academic year 2002-2003, the WBHR-LSAMP partners continued to have students involved in numerous activities including the 60<sup>th</sup> Annual Meeting of Beta Kappa Chi, The Harvard Calculus Reform Project and the Undergraduate Tutoring Support Program. Undergraduate research is a common experience for STEM students. Undergraduate students at all of the WBHR-LSAMP institutions are involved in research during the academic year and during the summers. Most of the students enrolled in STEM programs within the WBHR Alliance now take advantage of summer internships at institutions within the WBHR-LSAMP Alliance, at other major research universities, national laboratories, and industrial laboratories. In addition, more than 4,000 students were supported by the WBHR-LSAMP Project through workshops, tutorials, summer institutes and travel to professional meetings.

### Summer Research Students





## WESTERN ALLIANCE TO EXPAND STUDENT OPPORTUNITIES (WAESO)

<http://www.asu.edu/WAESO> Email: [waeso@asu.edu](mailto:waeso@asu.edu)

THE NATIONAL SCIENCE  
FOUNDATION



NSF sponsored undergraduate  
component of the Western Alliance to  
Expand Student Opportunities

### WAESO Participating Institutions

#### Arizona:

Arizona State University  
Cochise College  
Maricopa Community College System  
Dine (Tsaile Campus)  
Pima Community College  
University of Arizona

#### New Mexico and Western Texas:

Eastern New Mexico University  
Dine College  
New Mexico Highlands University  
New Mexico Institute of Mining and Technology  
Northern New Mexico Community College  
Santa Fe Community College  
University of New Mexico  
Western New Mexico University  
El Paso Community College

#### Nevada:

Northern Nevada Community College  
University of Nevada, Las Vegas  
University of Nevada, Reno

#### Colorado:

Colorado State University  
Community College of Aurora  
Mesa State College  
Pikes Peak Community College  
Pueblo Community College  
Regis University  
University of Colorado at Boulder  
Colorado State University - Pueblo

#### Utah:

Brigham Young University  
Salt Lake Community College  
Southern Utah University  
University of Utah  
Utah State University  
Utah Valley State College  
Weber State University

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The LSAMP-Western Alliance to Expand Student Opportunities (WAESO) is now engaged in Phase III of operations. After exceeding our goals of doubling the number of baccalaureate degrees per year within the SMET disciplines during Phases I and II, our goal for Phase III is to once again, double the number of graduates within our region. WAESO continues to increase the quality and quantity of underrepresented minority students receiving degrees in science, mathematics, engineering, and technology throughout our region which includes institutions in Arizona, Colorado, New Mexico, western Texas (El Paso Community College), Nevada and Utah.

LSAMP-WAESO activities in which students participated include:

- peer study groups (local and over the Internet)
- summer bridge programs
- faculty-directed undergraduate research projects
- graduate preparation institutes, mentoring, and research conference



MGE@MSA/WAESO students presenting their posters at its 3rd Annual Student Research Conference on April 1st, 2003 at Arizona State University.

Supported in part by a grant from the Alliance for Graduate Education and the Professoriate program of the National Science Foundation (NSF), WAESO held its 3rd Annual Student Research Conference in conjunction with the Minority Graduate Education at Mountain States Alliance (MGE@MSA) Graduate Student Fair on April 1st, 2003 at Arizona State University. Undergraduate and graduate students within the SMET disciplines participated in a series of student poster presentations and exhibits especially designed to assist them in pursuing graduate studies in science, mathematics and engineering.

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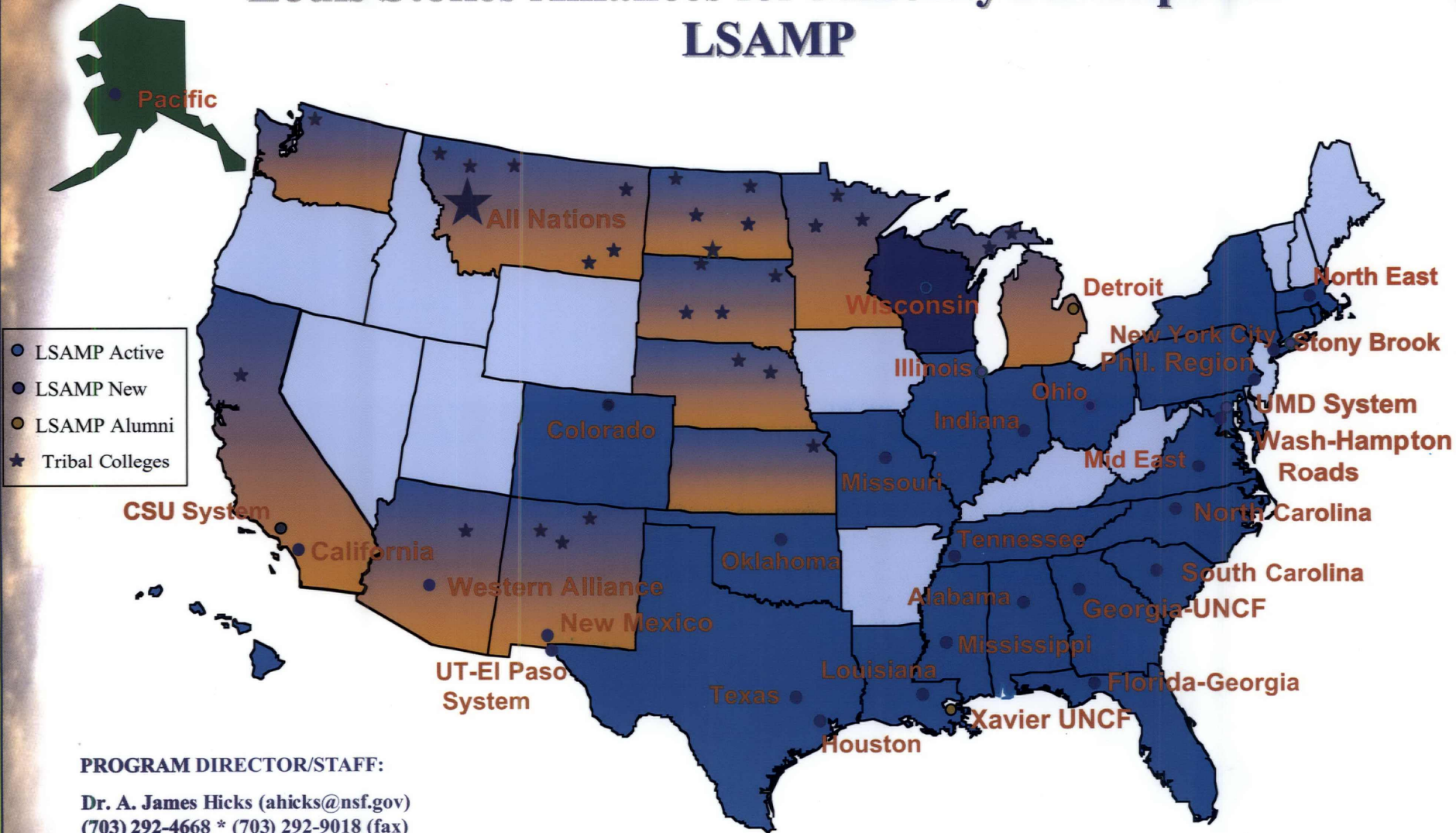
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- LSAMP Active
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- ★ Tribal Colleges

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