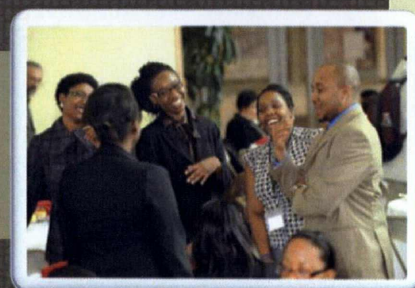
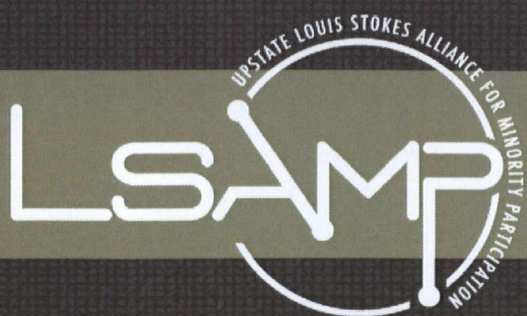


# Upstate Louis Stokes Alliance for Minority Participation

Impact Report 2007-2011

The Upstate Louis Stokes Alliance for Minority Participation is dedicated to increasing the number of historically underrepresented students receiving four-year degrees in science, technology, engineering, and mathematics.



# Upstate Louis Stokes Alliance for Minority Participation

Impact Report 2007-2011

The Upstate Louis Stokes Alliance for Minority Participation is proud to be a part of national efforts to diversify our nation's science, technology, engineering, and mathematics workforce. In my role as Vice Chancellor and Provost of Syracuse University and Principal Investigator for the Upstate LSAMP Project, I recognize the limitless possibilities that can result from alliance efforts to educate and support our students throughout their undergraduate and graduate training. LSAMP encourages state-of-the-art breakthroughs, builds an entrepreneurial mindset, and provides a strong support system to help our students stay rooted to their goals and passion, and to possibly discover some new ones.

Funds provided by the National Science Foundation (NSF) support research and education in most fields of science and engineering that are administrated through formed alliances between universities and colleges. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the United States. The goal of our alliance is to increase and aid in the retention of traditionally underrepresented minority groups in the STEM disciplines and to develop pipelines from the bachelors to advanced degrees.

I am proud of the work carried out by the members of the Upstate LSAMP leadership team and all of the successes that have led us to this place. I thank the National Science Foundation and the national LSAMP Community for devoting their time and effort towards our common passion to guide the scholars of our future.

Eric F. Spina  
Vice Chancellor and Provost  
Syracuse University  
Upstate LSAMP PI

## Upstate LSAMP

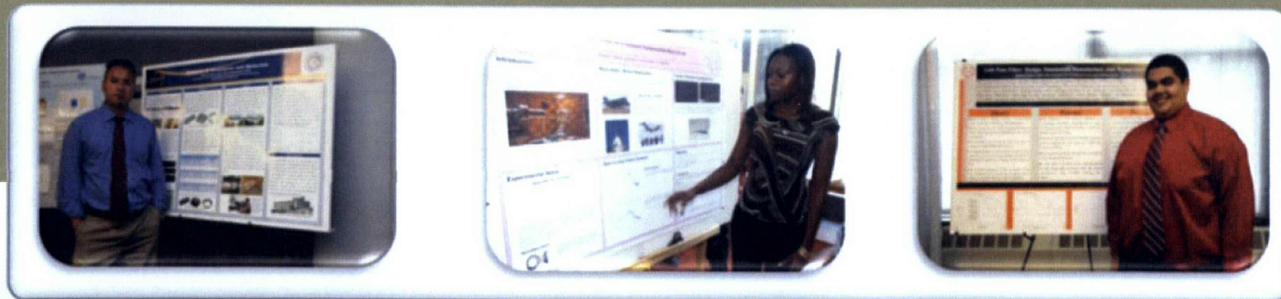
The Upstate Louis Stokes Alliance for Minority Participation is dedicated to increasing the number of historically underrepresented students receiving four-year degrees in science, technology, engineering, and mathematics.

# Upstate LSAMP Overview

The call to reform virtually all aspects of the K-16 education pathway seems to have reached a crescendo over the past few years. Recognizing the profound impact the changing global economy will have on the U.S. and related threats to our preeminence as the world's technological leader, reports from the National Academies, Federal agencies, professional societies, policy and education think tanks and others have been crying out for innovative strategies to respond to and address this looming crisis. While the causes of these concerns are multi-faceted and potential solutions subject to rigorous debate, irrefutable is that access to and success in higher education is influenced by numerous and often interconnected social and academic factors.

The Upstate New York region is a microcosm of this national reality, with innovation playing a central role in the development of a new economy for the region, and the Upstate colleges and universities working together to develop the next generation of innovators. Equally imperative is growing a workforce highly qualified for our knowledge-based economy that is representative of our nation's demographics. The ULSAMP alliance is designed to tap into the rich potential of groups historically underrepresented in the STEM fields, and to respond to our nation's goals and pressing local needs.

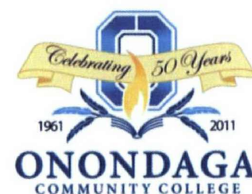
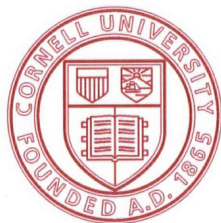
The Upstate Louis Stokes Alliance for Minority Participation (ULSAMP) is dedicated to maximizing the potential and increasing the number of African American, Latino American and Native American (AALANA) students receiving bachelor degrees in the fields of science, technology, engineering, and mathematics (STEM). The program supports student success by providing: funding, research and internship opportunities, academic enhancement, and mentoring services. Over the past four years, ULSAMP activities have had a major impact on the students, faculty, staff, and communities affiliated with the alliance institutions. ULSAMP has provided numerous opportunities for the growth and development of the people involved with the project. ULSAMP continues to provide students with experiences that provide a strong foundation for their future. Many of these initiatives would not have been possible without the support of the National Science Foundation.



# The Upstate Alliance

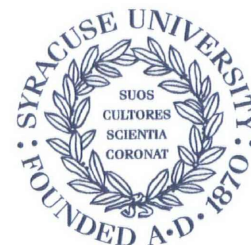
The Upstate LSAMP alliance was formed in 2007 and comprises seven institutions of higher education in the Upstate New York region. There are five 4-year institutions and two community colleges in the alliance: Clarkson University, Cornell University, Monroe Community College, Onondaga Community College, Rensselaer Polytechnic Institute, Rochester Institute of Technology, and Syracuse University (Lead Institution). These institutions - public and private, large and small, undergraduate, comprehensive and doctoral - are together determined to impact the region in the near-term by increasing substantially the number of underrepresented students who complete degrees in science, technology, engineering and mathematics (STEM) disciplines and, in the long-term, by increasing the numbers who move into related careers, including graduate school on the way to a professorial or research appointment.

The ULSAMP institutions are located in the Upstate New York region, which spans from the Hudson River Valley to Lake Ontario on the north coast of New York, and boasts a stellar tradition of cultural diversity, an array of institutions of higher education ranging from community colleges to distinguished research institutions, and pioneering industrial and technological innovations. The ULSAMP alliance provides a mechanism to synthesize these three regional assets and enables the institutions to contribute to the regional and national need for academically talented individuals prepared to make significant contributions to a high-tech workforce.



Rensselaer

R·I·T



# *The Upstate Alliance*

The Upstate Alliance institutions have benefitted greatly by being a part of the national LSAMP program. The LSAMP grant has allowed institutions to focus on diversifying student bodies which in turn impacts the U.S. STEM workforce. At any given time during the academic year, over 200 students are directly participating in Upstate LSAMP programs and activities. Having ULSAMP on our campuses has fostered an environment conducive to beginning the process of institutional transformation as it relates to underrepresented students and STEM education. Changes on campus, made possible by LSAMP funds, not only benefit LSAMP students, but also have a positive impact on students not affiliated with the program.

The ULSAMP Alliance was formed to promote strong academic performance and professional advancement through a combination of existing support structures and novel alliance-wide programming to insure that scholars have a strong connection to each partner institution and the Alliance as a whole. Our program continues to provide rich opportunities to engage and expose talented students of color to rich educational experiences like faculty-mentored research, international education, exposure to graduate education and careers as academics, and pathways to STEM careers for those who would pursue work outside academe. The benefits of ULSAMP to the partner institutions are numerous; ranging from enriching our understanding and appreciation of the needs and aspirations of others, further enhancing the quality of our support services, deepening partnerships and creating new collaborations in support of students. Importantly, this program has enabled the ULSAMP Alliance to contribute to the national need for academically talented individuals prepared to make significant contributions to the future high-tech workforce.



# *Major Areas of Focus*

## *Research*

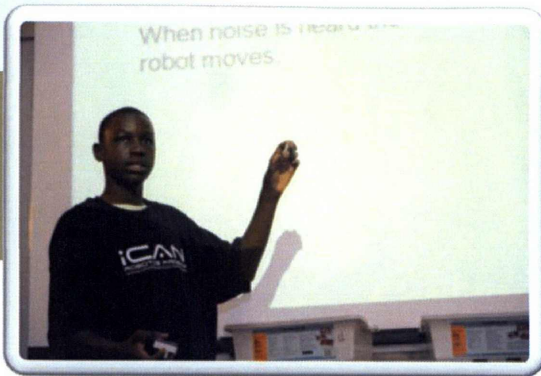
Undergraduate student research is one of the most powerful predictors for student success in STEM education. Undergraduate research allows students to connect their coursework to practical laboratory applications, and students who participate early in their college careers are significantly more likely to be retained in STEM fields and pursue graduate study. The ULSAMP staff places a major focus on undergraduate student research and students from all alliance institutions are encouraged to pursue research experiences early in their academic careers. With an increasing focus on community colleges, a number of initiatives have been developed to ensure community college participation in undergraduate research throughout the alliance. Participation in ULSAMP activities opens doors to coveted research and career building opportunities. As a result, more than 125 students have participated in faculty-guided summer and academic year research since the formation of the alliance. These research opportunities have taken place throughout the alliance, at institutions across the country, as well as national laboratories.

## *Internships*

In addition to laboratory research experiences, ULSAMP students have benefited from alliance-wide collaborative relationship with corporate and industry partners. Students have been placed in internships with a number of our corporate partners including: Eastman Kodak, Xerox, IBM, JP Morgan Chase, O'Brien & Gere, GE Global Research, Welch-Allyn, Inc., and National Grid. These career-building placements have benefited students greatly in their pursuit of STEM careers and many of these internship relationships have led to full-time employment offers.

## *Recruitment*

In order to reach the goal of substantially increasing the number of underrepresented students graduating with degrees in STEM fields, institutions provide a supportive environment to ensure the success of all students. Research shows that students affiliated with a program such as ULSAMP, graduate at a much higher rate than unaffiliated students. LSAMP actively recruits students through high school visits, community college transfer programs, and regional and national conferences. On the respective campuses, faculty and staff play a role in publicizing the benefits of ULSAMP to eligible students.

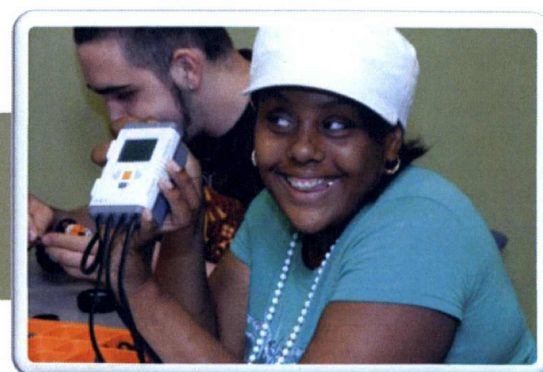
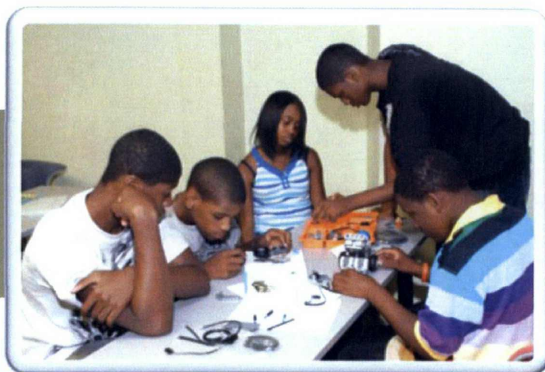


## *Faculty Mentoring*

The ULSAMP program has aided in developing new relationships between faculty and undergraduate students. The program has created a nurturing environment for students to learn under the guidance of senior faculty and at the same time, broadened participation of underrepresented students in STEM research. Faculty affiliated with ULSAMP play major roles in providing research appointments in their laboratories for student learning and serving as faculty mentors. These mentors are a mix of educators and advocates who set high expectations for achievement of ULSAMP students while advocating for their success. These mentoring relationships aid in improving overall academic achievement, help students make informed decisions about STEM baccalaureate and graduate study, and helps develop skills needed to enter a STEM career.

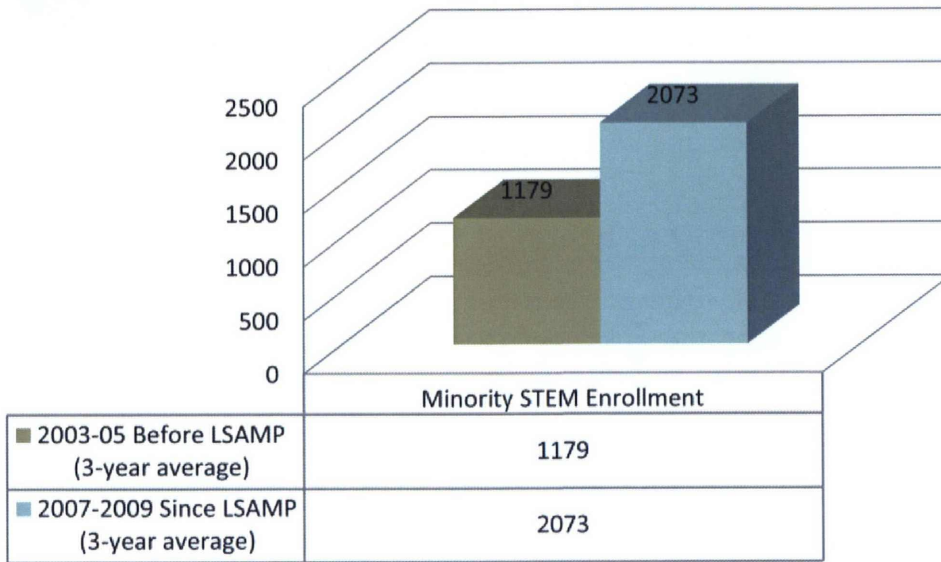
## *Early Outreach*

Outreach is a major part of the work done by the ULSAMP institutions. In order to increase the number of underrepresented students interested in STEM fields, K-12 outreach is necessary. By showcasing a wide range of technologies in a fun and interactive way, the various ULSAMP activities serve as opportunities to motivate more minority students to pursue careers in these fields. The initiatives are designed to aid in eliminating the so-called “digital divide” by providing young students and their families opportunities to develop an understanding of and appreciation for science, technology, engineering, and mathematics.

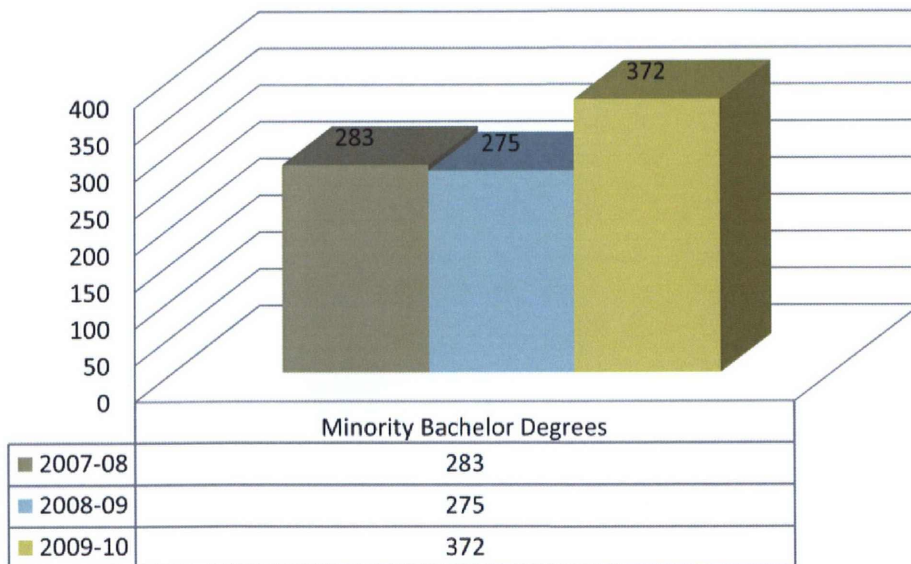


# Upstate LSAMP STEM Data

## Upstate LSAMP Minority STEM Enrollment



## Upstate LSAMP Minority Bachelor Degrees



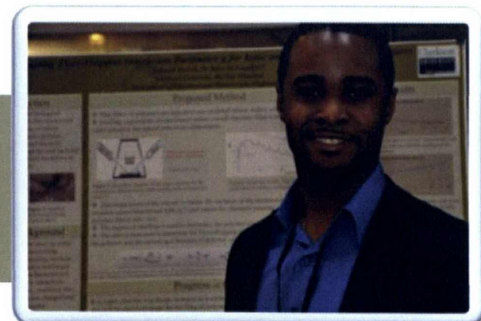
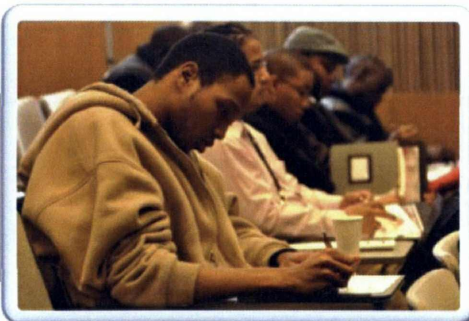


# Clarkson University

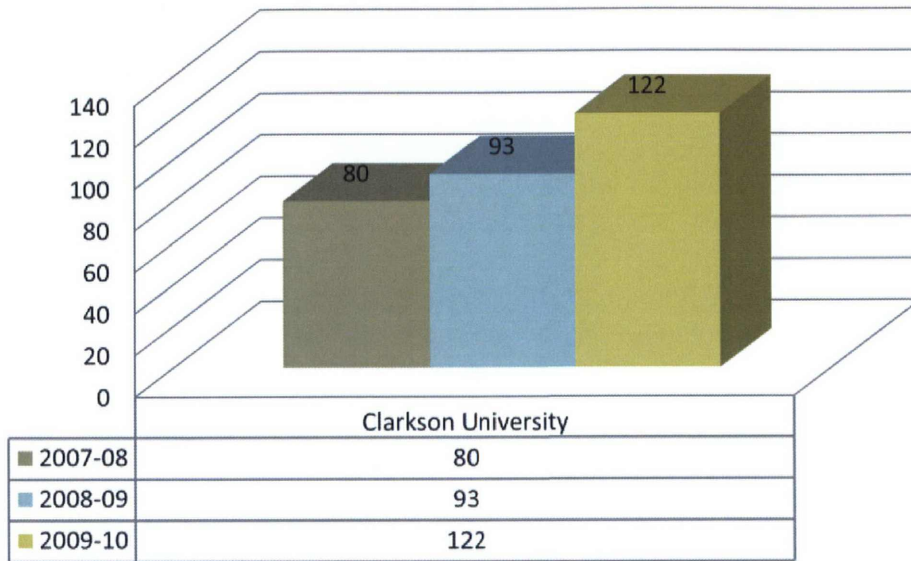
Clarkson University is an independent technological university offering baccalaureate, masters, and doctoral degrees. In the spring of 2011 3,202 students (2,722 undergraduate) were enrolled in one of Clarkson's 50 degree granting programs (21 STEM) which include engineering, science, mathematics, business, liberal arts, and interdisciplinary majors. Clarkson is nationally ranked, with nine Ph.D. programs among its engineering and science departments. Clarkson's enrollment has continued to increase allowing for many recruitment opportunities in the STEM fields.

In 2007, Clarkson's overall goal was to increase minority student enrollment and graduation rates in STEM disciplines. The presence of LSAMP has helped us reach many of our goals. Initially, we wanted to increase enrollment of minority students, by 58. Since the implementation of LSAMP programing, the total STEM enrollment at Clarkson rose by 151 students, and minority enrollment in STEM disciplines rose by 64 students. Our overall STEM degrees awarded have decrease by 34, but our minority STEM degrees awarded increased by 8. We have seen an 88% retention rate for our direct LSAMP participants within the last 4 years, resulting in 27 graduates. 96% of our graduates earned STEM degrees, and had an average GPA of 3.13.

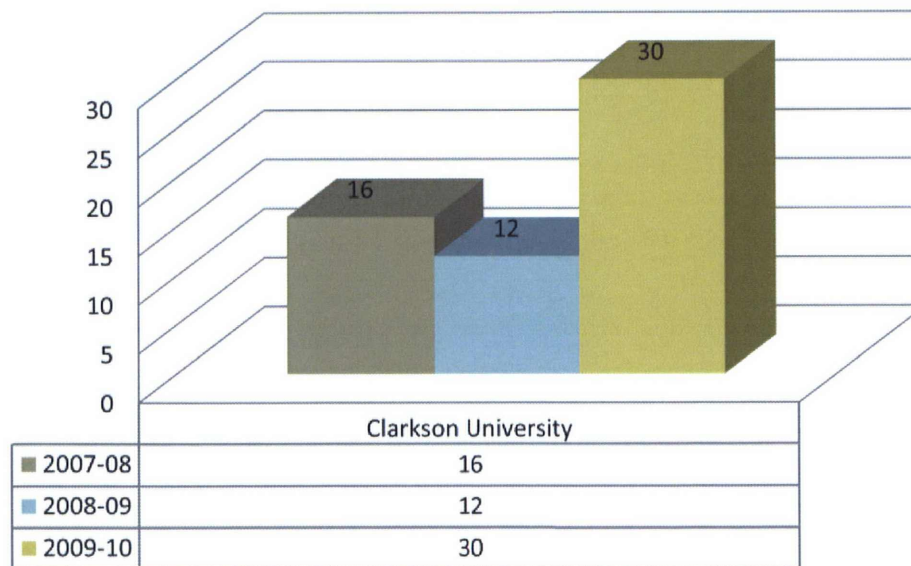
In the spirit of continuous improvement, and to ensure an increase in eligible students in STEM fields, Clarkson LSAMP continues to offer a variety activities and services. With the aid of LSAMP funding, Clarkson was able to generate an academic safety net program for faculty to receive progress reports to be shared with the students during advisor meetings; these meetings help students prepare plans for academic and professional success. With continued funding, we continue to provide academic and professional workshops, tutoring, team building and cultural events, as well as, academic and summer research opportunities. Additionally, workshops will be held on graduate school preparation, to assist students in the graduate school process and increase the acceptance rate into graduate programs in STEM fields.



## Clarkson Minority STEM Enrollment



## Clarkson Minority Bachelor Degrees

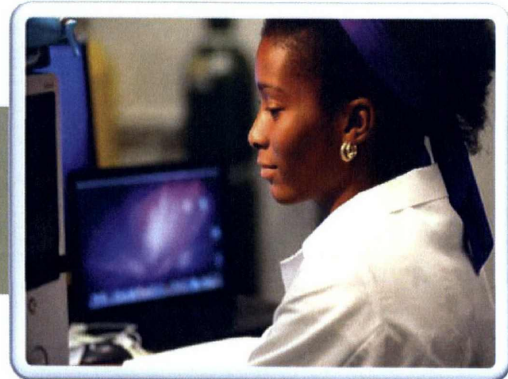


# Cornell University

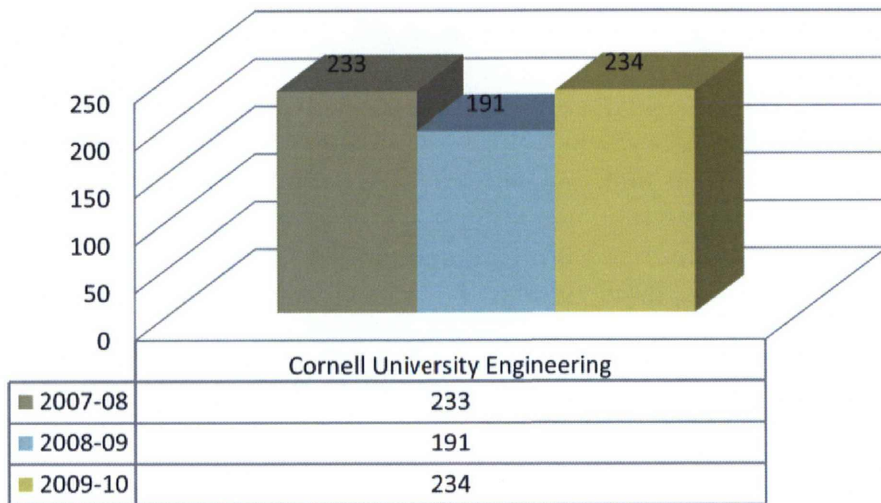
Cornell University, in the center of the Upstate region, is both a private university and the land-grant institution of New York State. Cornell is also the most educationally diverse member of the Ivy League and is a partner of the State University of New York. The university has seven undergraduate units and four graduate and professional units in Ithaca, two medical graduate and professional units in New York City, and one in Doha, Qatar. Cornell's enrollment, drawn worldwide to its stellar programs, includes over 13,900 undergraduate and over 6,700 graduate/professional students. The College of Engineering provides undergraduate students with the opportunity to select from 13 majors across 11 different engineering fields.

Since the launch of the Cornell LSAMP Program, Cornell Engineering has experienced increased success in the recruitment and retention of URM students. From 2006-2010, applications from URM students increased by 69%, the number of admits increased by 33.4%, and the number in the enrolling class increased by 59.3%. Additionally, from 2006-2010, the percentage of URM Students in the enrolling class increased from 8.2% to 13.2%. Since the inception of the Cornell LSAMP efforts, the total enrollment of URM students in engineering also rose from 7.5% (Fall 2007) to 10.2% (Fall 2010).

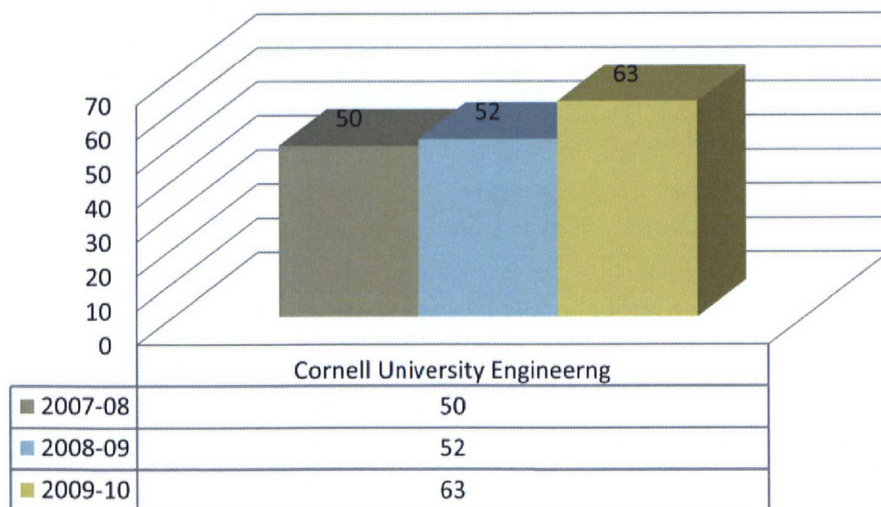
Leveraging LSAMP funding has allowed Diversity Programs in Engineering to increase staff dedicated to assisting in coordinating recruitment and retention activities respectively targeting prospective and current LSAMP Scholars. The Diversity Programs in Engineering office has staff committed to the development and success of undergraduate and graduate students from backgrounds traditionally underrepresented in Engineering as well as related STEM disciplines. With the help of the LSAMP grant, DPE staff members are able to meet with LSAMP students each semester to discuss study skills, early intervention strategies, and other academic and personal issues. Additionally, students enrolled in the Cornell LSAMP Scholars Program receive access to advising, academic development programs, and other opportunities focused on preparing them for undergraduate research experiences and advanced graduate studies.



## Cornell Minority STEM Enrollment (Engineering)



## Cornell Minority Bachelor Degrees (Engineering)

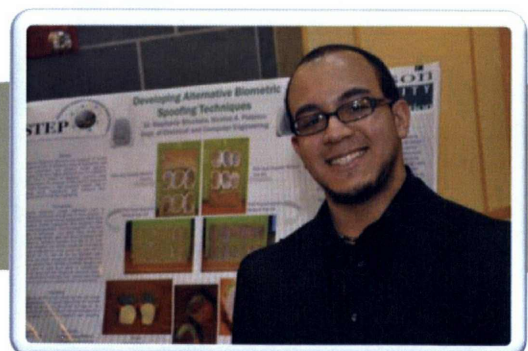
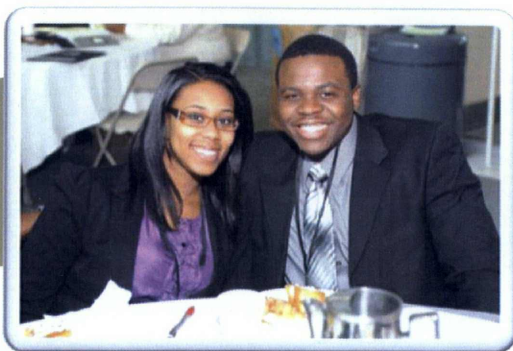


# Monroe Community College

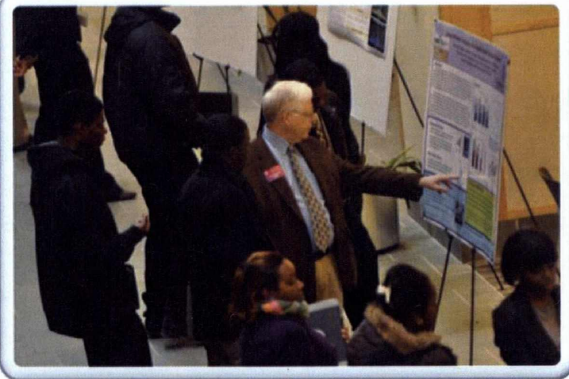
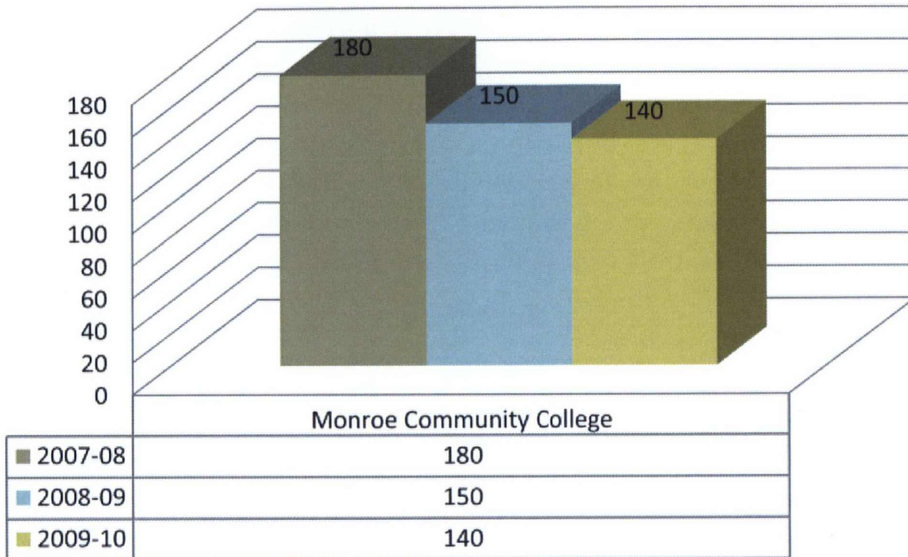
Monroe Community College is many things: a place to continue learning and acquire career skills, a foundation for a four-year degree, a center for academic and cultural opportunities, a vital catalyst for workforce development, and so much more. Nationally ranked and recognized as one of the most innovative community colleges in North America, MCC is also one of the best academic values in the country. MCC, in Rochester, NY grants over 83 different Associates Degrees, as well as a variety of certificate programs. From 2007 to 2009, MCC's total average annual enrollment was 36,258. MCC continues to deliver prepared, motivated students to our four-year partners; strengthening the support and opportunities provided at the two-year college and the pipeline to transfer institutions.

MCC has identified a number of local needs and ULSAMP provides the impetus for addressing the need for recruitment to and retention in STEM. Since LSAMP, MCC has continued to expand the direct recruitment of eligible minority students into STEM disciplines beginning as early as middle school; and awareness of STEM as early as elementary school. In addition, outreach to the substantial undeclared population that comes to MCC supports efforts placed on strong recruitment to enrollment in a STEM program. A partner with the Rochester City School, suburban and rural districts, and the Horizons Project (cradle to STEM city-wide initiative), U-LSAMP resources have assisted with our targeting of underrepresented minority students in these districts.

The MCC ULSAMP continues to provide academic enrichment and student support. For LSAMP students, the most frequently used academic enrichment is tutoring at the Natural Science Education Center (NSEC). Over thirty five hours of instructor-led tutoring and over twenty-five hours of tutor-lead tutoring are offered in NSEC. The center is opened for extended hours to accommodate the varied hours of community college students with academic assistance available in various STEM-related disciplines. In addition to tutoring in NSEC, students are able to engage in peer-led study groups, independent study or co-learning activities. These support systems have helped students reach their goals of pursuing STEM degrees at four-year institutions



## MCC Minority STEM Enrollment



# Onondaga Community College

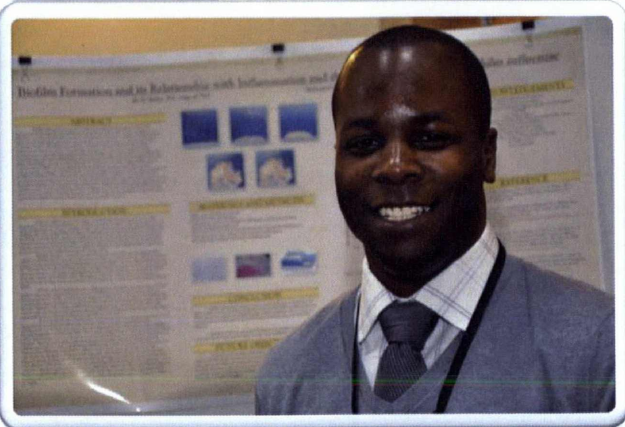
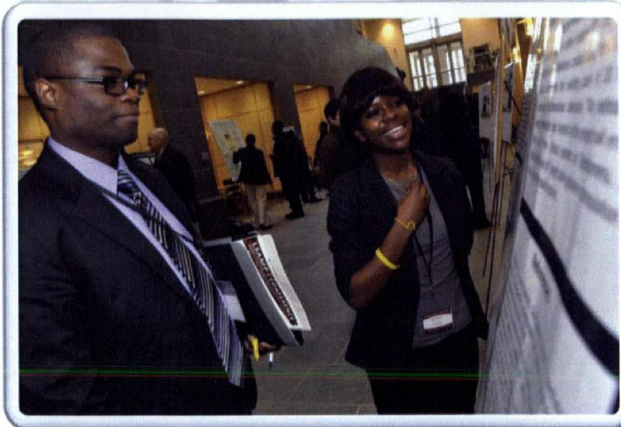
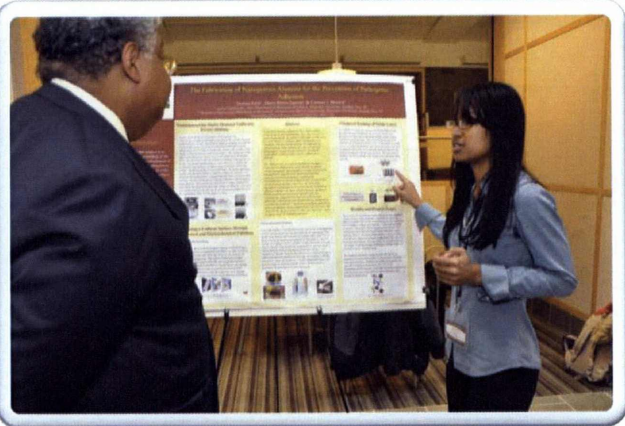
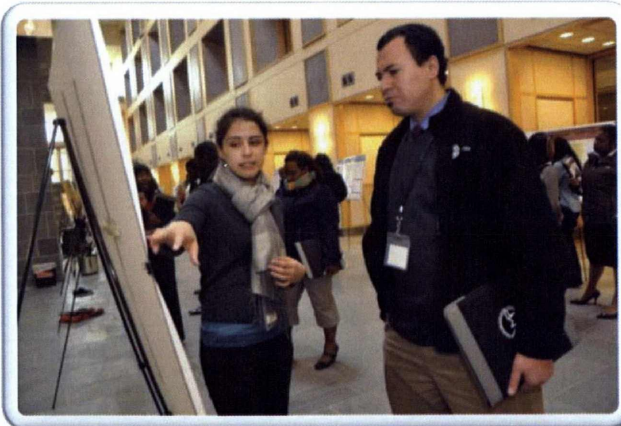
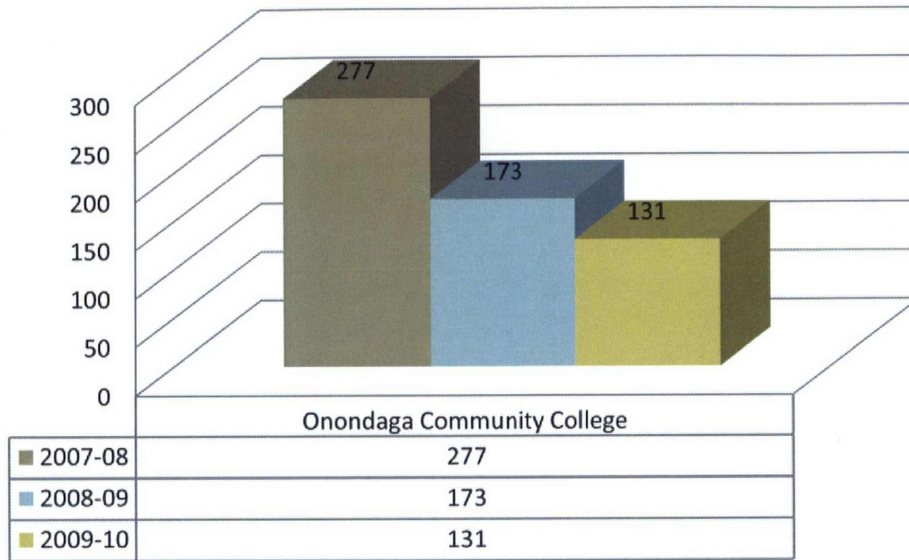
Onondaga Community College is the second largest educational institution in the region, the fastest growing college in the SUNY system, and one of the fastest growing community colleges in the nation. The College is jointly sponsored by the State University of New York and Onondaga County and is accredited by the Middle States Commission on Higher Education. OCC offers over 50 degree and certificate programs, serving as a gateway to higher education for individuals of all ages and backgrounds, including many first-generation, low-income students. OCC has articulation agreements with over 30 four-year institutions in over 80 degree programs. Students can pursue a bachelor's or master's degree on the OCC campus at any of the nine colleges or universities who participate in the Regional Higher Education Center. Enrollment at OCC was 11,899 in spring 2011 and STEM majors were at 9%.

Onondaga Community College's LSAMP program has been actively promoting under-represented students majoring in STEM disciplines throughout the project period extending from 2007-2011. The impact of the LSAMP program at Onondaga Community College has been significant. During this period, our LSAMP program enrolled 112 students, which represented 3.18% of all STEM majors at Onondaga. Students who graduated and/or transferred represented 22.3% of all LSAMP scholars. Twenty students graduated and, of these students, 14 transferred to four-year colleges/universities with hope of completing STEM degrees.

While leveraging LSAMP funds, OCC has been able to increase the number of students conducting research at four-year institutions. In addition, recruitment activities in Onondaga County, New York City and surrounding areas have continued to expand. With the work of the Upstate LSAMP alliance, OCC has developed partnerships with four-year colleges and universities to provide 2+2 arrangements to increase the number of clear transfer pathways for students on the road to receiving four-year degrees in STEM fields.



## OCC Minority STEM Enrollment





# *Rensselaer Polytechnic Institute*

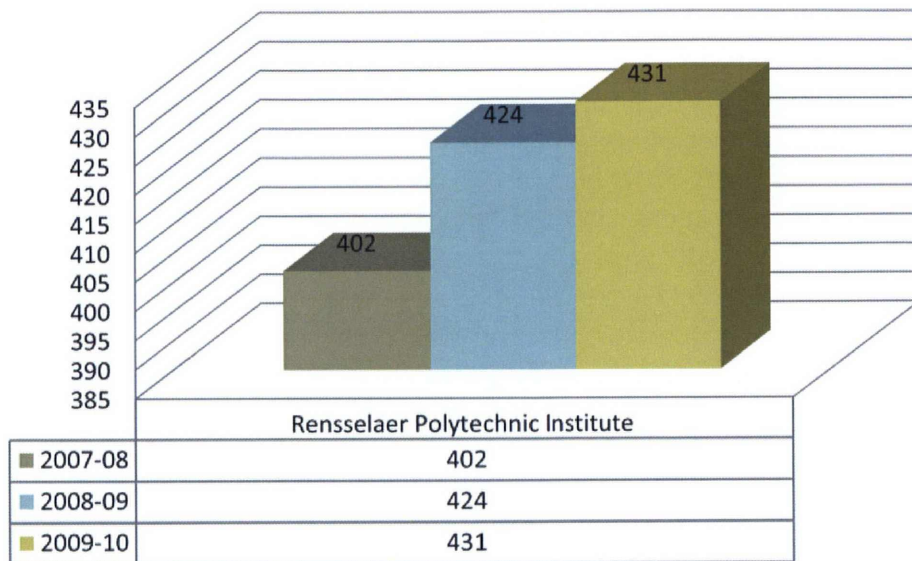
Rensselaer Polytechnic Institute, located in the NY state capitol district, is the nation's oldest technological university. Since its beginning in 1824, Rensselaer maintains its mission of technology in service of humanity. The STEM disciplines are an undercurrent in all degree programs and areas of scholarship - from the traditional fields of Science and Engineering to the Arts, Humanities and Business. Today, Rensselaer has approximately 5200 undergraduates and 1200 graduate students on the Troy, NY campus, with the majority of these students in Science and Engineering. Rensselaer has a campus in Hartford, Connecticut with programs for the part time student and adult learner in Engineering, Computer Science and Business. There are currently 1200 part time students enrolled in the programs administered on the Hartford campus.

Since the launch of the Rensselaer LSAMP program, we have made progress in two areas: First, we have increased our outreach and recruiting efforts to traditionally underserved populations, specifically in the mid- and southwest portions of the country. Secondly, we developed two programs designed to (1) retain the URM students in their undergraduate programs and (2) expose them to the broad range of research programs on campus. Our recruiting efforts have been successful, as evidenced by our overall enrollment of URM students which has increased by 10% over the first period of the grant. While the BS graduation rate has held constant, we have made significant gains in the graduation rates of the Hispanic and Latino students. We also observe that African American women have a graduate rate that equals the overall graduation rate.

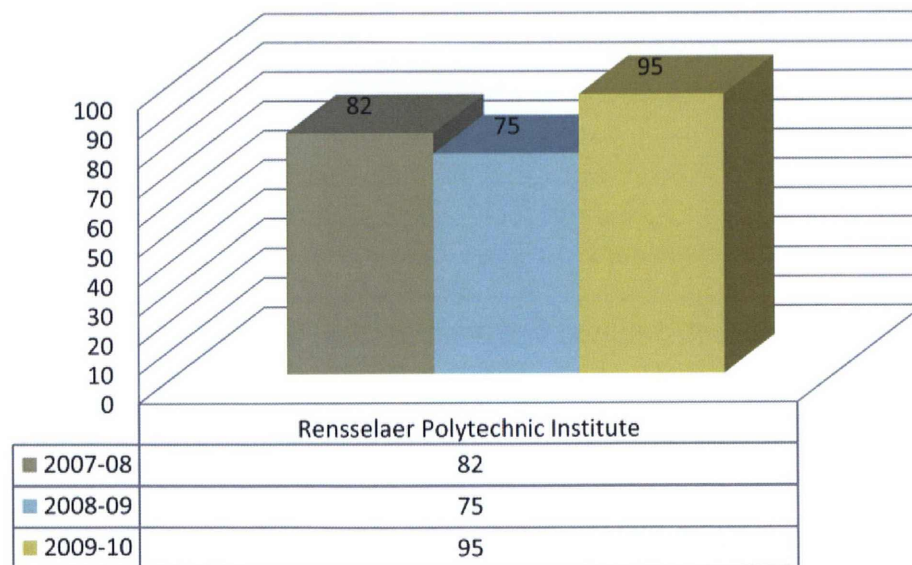
The Rensselaer LSAMP program complements our existing diversity initiatives for the campus community and for the citizens of the Albany-Troy-Schenectady capitol district. LSAMP has aided in the expansion of one of our cornerstone diversity initiatives, where faculty, students, and staff come together in February for the Black Family Technology Awareness Day. This event draws on average, 1200 members of the community to campus to provide minority youth with exposure to technology, technology-related education, and career opportunities. The momentum has carried over to the campus activities, where the Provost's office has now formed a diversity committee charged to draft a strategic plan for faculty hiring, student recruiting, campus enrichment, and awareness activities.



## RPI Minority STEM Enrollment



## RPI Minority Bachelor Degrees

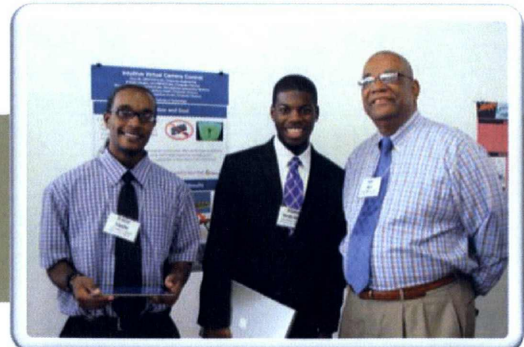


# Rochester Institute of Technology

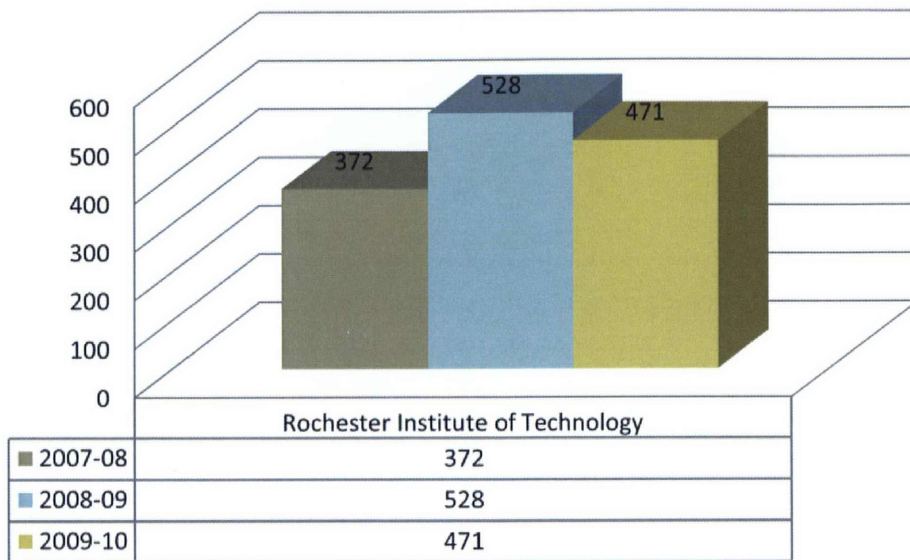
Rochester Institute of Technology (RIT) is a comprehensive Masters University with an emphasis on applied research in such areas as Imaging, Microsystems, Information Technology, Manufacturing and Sustainability. RIT enrolls nearly 17,206 full and part-time undergraduate and graduate students in more than 150 career-oriented and professional programs and has the fourth oldest, and one of the largest cooperative education programs in the world. RIT's strategic focus on increasing underrepresented students has created opportunities for partnering with urban school districts, community colleges and community based organizations.

The decision to pursue an LSAMP grant was part of RIT's strategic effort to diversify its students, faculty, and staff. At the time of the decision to submit, there was a recognition that support structure needed to be in place to assist in the success of underrepresented students. At an institutional level, the President and Board of Trustees approved a strategic plan with metrics for the recruitment and retention of underrepresented students and faculty. Since LSAMP, there has been an increase in enrollment of first time freshman from underrepresented populations into the STEM disciplines from 188 in 2006 to 272 in 2009.

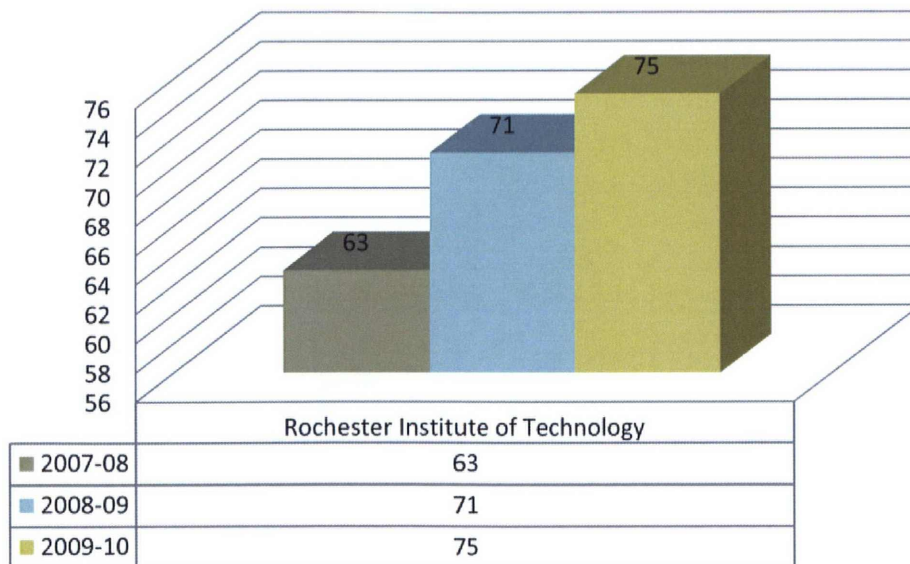
Many of the founders and early mentors of the LSAMP program at RIT have moved into positions of leadership within RIT giving LSAMP a greater opportunity for integration into university structures. For example, RIT created a university-wide task force on the success of underrepresented students led by the co-PIs of the RIT LSAMP program. This has led to institutional changes in advising and support services. Leveraging the LSAMP grant aided in obtaining additional grants focused on underrepresented populations i.e.; McNair, NACME Block Grant, New York State C-STEP, and GEM. In addition, the RIT LSAMP program has collaborated with the RIT Center for Student Innovation to increase underrepresented student participation in undergraduate research.



## RIT Minority STEM Enrollment



## RIT Minority Bachelor Degrees

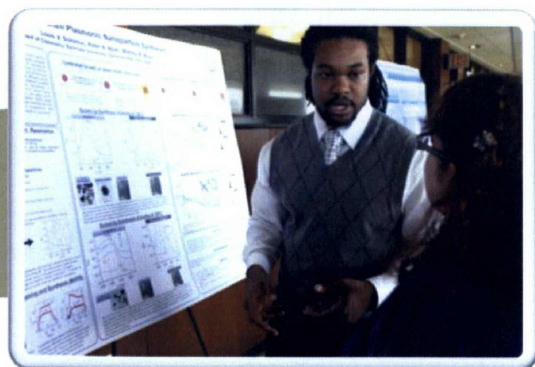


# Syracuse University *(Lead Institution)*

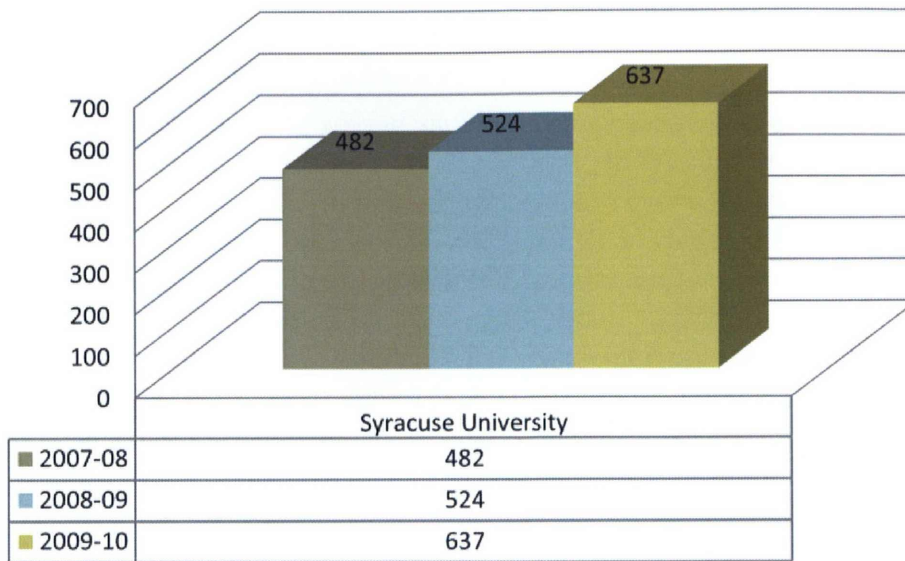
From its founding in 1870, Syracuse University has been the embodiment of Scholarship in Action—education that transcends traditional boundaries through a combination of innovative thinking, daring choices and entrepreneurial attitude. Our iconic campus is nestled amongst the rolling hills of Central New York—itself a crucible of historic changes and progress. Building on that foundation, SU continues to create opportunities for students and faculty to push limits, build pathways, and make connections that lead to new discoveries and transformational change. Enrollment is 11,455 undergraduate, and over 6,000 graduate and law students. An active effort to link students to the world, both locally and globally, the Upstate LSAMP Alliance has been a unique venue for advancing this agenda through the enhancement of campus diversity.

Since LSAMP, our minority STEM enrollment has increased from 482 in 2007-08 to 637 in 2009-10. Increasing the number of minority students pursuing STEM degrees is a major goal for SU and the LSAMP program. SU has followed a “Geographies of Opportunity” approach to recruiting initiatives, in an effort to diversify our pool of applicants. Following diversity trends across the nation, SU has opened recruitment centers in NYC, DC, Atlanta, and Los Angeles. This has allowed SU to tap an increasingly rich resource of underrepresented students in STEM areas. In addition to first-time freshman, SU has been actively engaged in recruiting students from community colleges. SU has instituted articulation agreements with our community college partners as well many others across the nation.

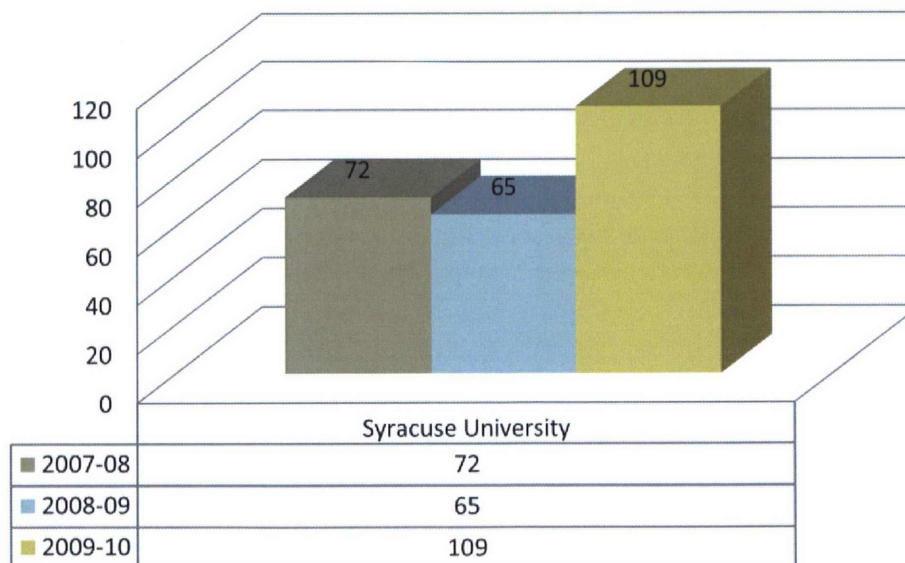
The LSAMP program at SU has created synergistic relationships with the Chemistry Summer REU, International Chemistry REU, and the Syracuse Biomaterials Institute, which allows more minority students to pursue undergraduate research under the guidance of faculty mentors. Additionally, the SU LSAMP program has forged relationships with National Grid, The National Society of Black Engineers, and the Syracuse City School District to create summer programs for middle and high school students in an effort to develop a STEM educational pipeline. Moving forward with LSAMP, will allow us to expand and institutionalize our efforts.



## SU Minority STEM Enrollment



## SU Minority Bachelor Degrees



## *Additional Impact...*

**Clarkson University's LSAMP** has created an environment where students have the opportunity to attend academic and professional workshops as well as, team building and cultural events even if they are not directly funded by the program, to assist students in the graduate school process and increase the acceptance rate into graduate programs in STEM fields.

**Cornell University's LSAMP** has expanded their hallmark on-campus recruitment programs, which are the Fall and Spring Diversity Hosting Weekends (DHW). The focus of Fall DHW is to cultivate the interest of high school seniors in applying to Cornell, while the focus of Spring DHW is to yield recently admitted students to Cornell. During these programs, the visiting students have the opportunity to stay in residence halls with current undergraduate students; learn details about the admission and enrollment process; participate in interactive lab demonstrations; and interact with faculty, staff, and students.

**Monroe Community College's LSAMP** has expanded the pre-freshmen summer bridge program for students who declare a STEM program or meet the academic requirements to enroll in a STEM program. With a strong STEM emphasis, MCC LSAMP has focused on building the collegiate skills needed for successful completion, the character development needed to endure collegiate challenges, and the career preparation needed for successful entry to a STEM field at a four-year institution.

**Onondaga Community College's LSAMP** has expanded research opportunities and created a culture of research for community college students. These students have conducted summer research at our four-year alliance institutions as well as the Brookhaven National Labs. In addition, an LSAMP research prep course was developed to assist students with developing skills to be competitive in the REU application process

**Rensselaer Polytechnic Institute's LSAMP** assisted in the creation of a taskforce with the primary mission of meeting the needs of underserved students. This team consists of the Office of Graduate Education, the Office of Graduate Admissions, and the Deans of the five schools on campus. From these meetings, a comprehensive strategy to recruit and provide access for underrepresented students to graduate programs at Rensselaer was developed. In addition, the Dean of Graduate Education has reserved the most prestigious fellowships, the Rensselaer Graduate Fellowships for these students so that the cost of graduate education is not a burden.

**Rochester Institute of Technology's LSAMP** aided in the creation of the Osgood Laboratory. It became clear after the first year of LSAMP operation at RIT there was not a tradition of undergraduate research, particularly for underrepresented student populations. Dr. Osgood created a teaching lab where students with little or no research experience could learn research protocols and basic equipment by conducting simple, then more sophisticated experiments increasing their skills and making them more competitive for research programs. In addition, RIT LSAMP leaders spearheaded an alliance-wide Faculty Institute on Teaching and Learning to develop strategies to improve the student success and retention rates in mathematics and science courses. This work has aided in helping students build strong foundations in gateway and other advanced courses.

**Syracuse University's LSAMP** was able to increase the number of students directly participating in research opportunities through LSAMP. Since 2007, more than 40 students from across the country have conducted summer research at SU through the LSAMP program. In addition the SU program has grown from 10 students directly participating in the academic year program to 95 students actively engaged in programming efforts. The SU LSAMP spearheaded an alliance-wide institute on best practices in recruitment and financial aid concerning underrepresented populations. This meeting helped to develop strategies of leveraging LSAMP funds with other institutional funds and support to increase the number of STEM students.

Two SU LSAMP scholars, Luis Romo and Tagbo Herman Niepa won \$50,000 in a business competition to develop a biomedical technology company. Helios Innovative Technologies is a product based medical device start-up-company that uses UV-C light technology to provide highly effective, environmentally friendly, sterilization systems. They work towards the prevention of bacterial and viral contamination through contact modes. UV-C light kills and eliminates bacteria and viruses within 5 minutes of exposure. Their goal is to minimize the risk for viral and bacterial pathogens in medical settings, which will lead to reduced hospital acquired infections, health care expenses for patients and hospitals and ultimately improving the quality of healthcare.

