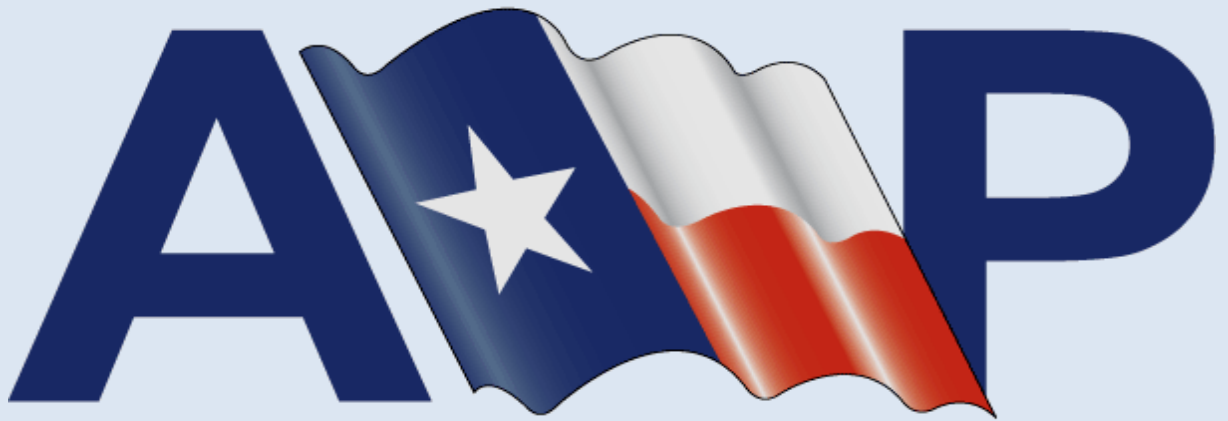


THE UNIVERSITY OF TEXAS SYSTEM



LOUIS STOKES

ALLIANCE FOR MINORITY PARTICIPATION

20TH YEAR IMPACT REPORT

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S a n A n t o n i o C o l l e g e

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FOREWORD

For the past 19 years, the University of Texas System Louis Stokes Alliance for Minority Participation (UT LSAMP) has been engaged in increasing the number and quality of underrepresented minority (URM) students in the state of Texas who earn baccalaureate, masters, and doctoral STEM degrees. The UT System Alliance, comprised of **nine universities and five community colleges**, has coalesced into a comprehensive effort that promotes and sustains a culture of broader participation in academia.



In its initial phase (1992-1997), the Alliance began as an initiative that primarily promoted the participation of underrepresented minority students in STEM baccalaureate programs at all nine UT System institutions and to create partnerships with community colleges to identify and recruit future STEM majors. Through combined multi-institutional efforts, **there was a significant increase in the number of minority students who received four-year STEM degrees from 564 to 881 per year in a period of five years.** The idea of undergraduate research was paramount in this phase and proved to be the method of success for URM STEM students in the UT System. Therefore, the UT LSAMP Summer Research Academy (SRA) was begun and has continued as the primary vehicle by which we measure our student and program success.

In its second phase (1997-2002), the Alliance shifted and expanded its activities to include graduate education. The Alliance began to implement practices that encouraged its graduates to pursue STEM graduate degrees at the master's level. **As a result the number of masters degrees awarded between 2000 and 2002 to underrepresented minorities grew from 96 to 135 per year.**

In its third phase (2002-2007), the Alliance shifted its focus toward doctoral degree enrollment and attainment by underrepresented minority groups. **In a period of five years, the number of Ph.D. degrees awarded to minorities increased from 15 to 33.** This phase also introduced the Bridge to the Doctorate (BD) project which allowed the Alliance to support 34 Ph.D. bound students.

The current phase (2007-2012) of the Alliance has maintained the focus on doctoral degree enrollment but has also re-established the community college connection. Additionally, a new goal was established **to include some of the UT LSAMP scholars in international travel opportunities following their research experiences.** In fall 2009 total URM enrollment in STEM bachelors, master's, and doctoral programs, was at an all-time high of 18,692. In the same semester, 2254 URM students received STEM degrees. Of these 34 were Ph.D. degrees.

With a total URM enrollment of 17,593 for fall 2009, the impact that the UT LSAMP has had and will continue to have on the state of Texas is immense. Our students are graduating at rates higher than ever before and this will directly impact our society as a whole.



EXECUTIVE SUMMARY

The primary goal of the University of Texas System Louis Stokes Alliance for Minority Participation is to **increase the number and quality of underrepresented minority (URM) students** that pursue and earn degrees in Science, Engineering, Technology, and Mathematics in the state of Texas and the nation. For twenty years, our Alliance, which is comprised of nine universities and five community colleges, has promoted STEM education at the undergraduate and graduate levels, and directly supported 1,565 undergraduate students. **More than 90% of these LSAMP scholars have graduated** from UT system institutions and many of the remaining students are currently enrolled and making progress toward their STEM undergraduate degree.

As a Senior Alliance

we have demonstrated that our collaborative efforts reap large rewards and have served as an impressive example of a state-wide commitment to improving enrollment, performance, and graduation of underrepresented groups that have not had access to higher education.

Intellectual Merit

The Alliance's activities, which are centered on a set of interconnected undergraduate research experiences, **advance knowledge and understanding of the academic factors that allow URM students to successfully earn STEM degrees.**

The leadership team of the project is composed of a competent and diverse group of administrators, faculty, and professional staff who are absolutely committed to the notion of broad higher education participation, early talent development, and excellence in performance.

The PI, who is the Acting Dean of the Graduate School of the leading institution and his team of co-Principal Investigators have sufficient access to resources **to ensure that the project is successfully completed and that its most important components are sustained beyond the term of the grant.** An external evaluator provides an impartial periodic assessment of the project to enrich its decision making cycle.

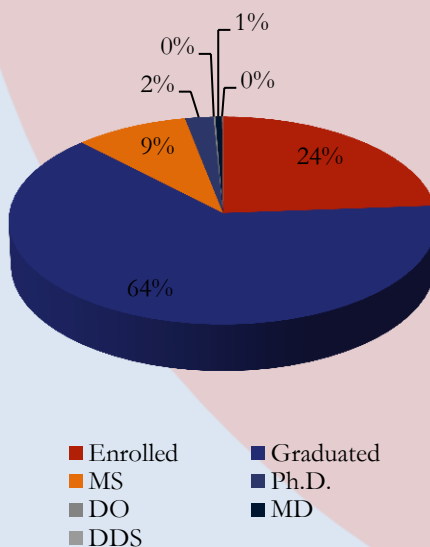


Dr. Benjamin C. Flores
Principal Investigator
UT System LSAMP

Broader Impacts

The core research activities in which LSAMP scholars are engaged serve the purpose of training them to advance discovery and understanding and also promote further depth of learning. The activities broaden the participation of students who are underrepresented minorities and veterans, and in many instances first-generation college students. Results of this effort are disseminated broadly through journal and conference publications, as well as regional and national presentations. **The general benefit to society is the development of a diverse STEM workforce that is globally competitive and truly representative of the nation's 21st century demographics.**

UT System LSAMP Student Status 1992-2010



THE UNIVERSITY OF TEXAS AT EL PASO



The University of Texas at El Paso (UTEP) has served as the lead institution of the UT System LSAMP since 1992. With aspirations of becoming the first national research university in the U.S. with a 21st century demographic, UTEP is the ideal campus to serve as the prime for a program like the LSAMP. **UTEP enrollment continues to increase and fall 2010 recorded over 22,000 students.**

It has been recognized as one of seven emerging research universities by the Texas Higher Education Coordinating Board and several new buildings have emerged on the campus totaling over \$250 million in improvements. Some of the most impressive construction projects will directly benefit the STEM students such as, the newly renovated College of Engineering, the state-of-the-art Biosciences facility, and the almost completed Chemistry and Computer Science building. UTEP also houses several research centers including the W. M. Keck Center for 3-D Innovation and the BIG Transportation Lab. UTEP is a commuter campus and the students live and study in the world's largest bi-national metropolitan area, which makes this university setting unique. **UTEP is recognized nationally for its leadership role in changing the face of U.S. higher education. UTEP students, who are 75% Hispanic, mirror the population of the region.**



Felipe De Alva
SRA class of 2010

LSAMP STUDENT TESTIMONIAL

Felipe De Alva

Through LSAMP, I was assigned to work under the mentorship of Dr. David Zubia, faculty member of the Electrical and Computer Engineering Department and main researcher at the Nano-Materials Integration Laboratory. Dr. Zubia assigned me a project called “MEMS Based Flow Sensor”, in which I was assigned to conduct a few experimental procedures to develop a custom flow sensor in the micron-scale, getting interesting results. **Thanks to the LSAMP Program, I got the opportunity to present my project** at UTEP’s 2010 End-of-the-Summer Symposium, sponsored by the different research programs at UTEP, and in the 2010 UT-System LSAMP Annual Symposium. Also, I was invited to participate as a guest speaker in the S-STEM Undergraduate Research Seminar Series, sponsored by the NSF at UTEP, in which the main purpose was to encourage entering students to participate in the different undergraduate research programs available at UTEP. During the summer of 2011, I worked as an intern at the Sandia National Laboratories, one of the most recognized laboratories in the U.S. Through Sandia’s Student Intern Program I will hopefully get a Master’s Fellowship that will allow me to **continue my studies now in Graduate School.**



THE UNIVERSITY OF TEXAS AT ARLINGTON



The University of Texas at Arlington (UTA) is the second largest institution in the UT System and the fifth largest in Texas. **Current enrollment is approaching 34,000 and UTA continues to be a powerful force in the Dallas-Fort Worth metropolis.** More than \$63 million has been awarded to UTA for research endeavors with a strong focus on bioengineering and micro-manufacturing.

Some of the most impressive research centers in Texas are located on the UTA campus such as: NSF's CREST, the Center for Innovation, the Nanotechnology Research and Teaching Facility, and the Supercomputing Center (one of five). **The student population is diverse and contributes positively to the Alliance's goals of graduating more underrepresented minority students.** Hispanics account for 16.9% and African Americans comprise 14.1%. UTA has been an active and vital member of the UT System LSAMP since its inception and will host the 2011 UT System LSAMP Student Research Conference for the first time.

LSAMP STUDENT TESTIMONIAL

Rebecca Denney

Rebecca Denney started her undergraduate studies in the fall of 2008 at UT Arlington. She is currently a senior with a major in biological chemistry and a minor in psychology. **After receiving her bachelor's degree in December 2012, she plans on attending graduate school to receive her Ph.D.** She participated in the LSAMP summer research program in the summer of 2011 under the supervision of Prof. S. Mandal at the gene regulation and disease research laboratory in the department of chemistry and biochemistry at UT Arlington. For this research Rebecca collaborated with Michael Comer, a fellow LSAMP scholar, on the project entitled "*Impact of Bisphenol-a Exposure on Hox Gene Expression in Human Cells.*"

Rebecca plans to attend the UT System LSAMP annual conference in September 2011 in Arlington, TX and the SACNAS annual conference in October 2011 in San Jose, CA and disseminate her 2011 summer LSAMP research as poster presentations. **She expects her LSAMP research to be published later this year as a co-author with her mentor.**



UNIVERSITY OF
TEXAS
ARLINGTON



Rebecca Denney
SRA class of 2011



THE UNIVERSITY OF TEXAS AT AUSTIN



The University of Texas at Austin (UT)

is the flagship university of the University of Texas System. **Founded in 1883, UT is one of the largest universities in the nation with an enrollment of over 50,000 students.** It awards 12,000 degrees on an annual basis and maintained a research budget of \$644 million for 2009-2010. the campus is a cultural entity with seven museums and 17 libraries and the student body is diverse with

students from every state in the U.S. and 100 countries. **The university also boasts impressive STEM teaching and research facilities** such as: The Norman Hackerman Building, a state-of-the-art science facility, the Center for Transportation Research, the Center for Energy and Environmental Resources, the Center for Computational Biology and Bioinformatics, and the Charles A. Dana Center for Mathematics and Science Education.

Since 1992, UT has served as a vital member of the UT System LSAMP with collaborations occurring among three major offices: the Graduate School, the Cockrell School of Engineering, and the College of Natural Sciences.

LSAMP STUDENT TESTIMONIAL

James Salazar

James Salazar is currently an undergraduate student at The University of Texas at Austin majoring in Biomedical Engineering and Computational Biology. James started his undergraduate studies in fall 2008 and will graduate in Spring 2013. In his third year at UT (2010-11), James participated in an **undergraduate research opportunity with support from the LSAMP.** Entering the research program, James had previously conducted research at his home institution in Professor Mia Markey's Biomedical Informatics Lab (BMIL) and at Harvard Medical School in the Harvard Molecular Technology Group & Lipper Center for Computational Genetics. James has been recognized for his strong performance in academics and research. Prestigious scholarships that he has received include the Virginia & Ernest Cockrell, Jr. Scholarship in Engineering, the Jackie Robinson Foundation Scholarship and the UT Unrestricted Endowed Presidential Scholarship.

In his fourth year, James will be continuing his research in the BMIL and will be completing an undergraduate honors thesis. When he graduates, he plans to **attend a research intensive medical school program.**



James Salazar
SRA class of 2010



THE UNIVERSITY OF TEXAS AT BROWNSVILLE



The University of Texas at Brownsville (UTB) is undoubtedly the most unique member of the UT System LSAMP in that it was established in 1991, only one year before it became a member of the Alliance. The fact that **UTB has never known a campus without serving as a member of the Alliance** speaks volumes as to how important this initiative has been to this university and why it is one of the most popular programs among UTB's

students and faculty. **With a growing enrollment of 15,223 and a Hispanic population of 92%**, UTB is poised to contribute significantly to the growth of URM STEM graduates for Texas and the nation. UTB currently houses nine Center of Excellence including the Center for Biomedical Studies, the Center for Sustainable Communities, and the Center for Gravitational Wave Astronomy. UTB is also unique in that it has merged seamlessly with Texas Southmost College (TSC) to create a four-year institution that provides a full range of degrees and certification programs. The partnership will dissolve in 2015 allowing UTB to grow even further as a separate university and TSC to participate in programs such as the UT System LSAMP as an individual entity.



Marianela Villarreal
SRA class of 2011

LSAMP STUDENT TESTIMONIAL

Marianela Villarreal

Marianela Villarreal has been attending the University of Texas at Brownsville since 2008. She is a Biology major and will be graduating this December with a Bachelor's Degree. The reason she is completing her college studies faster than a common incoming freshman at a 4-year college is due to the Dual Enrollment classes she took in high school. This turned out to be a great advantage and she earned her associates degree in the fall of 2009. **Being part of this tremendous program she is now delving more into going to graduate school and earning a PhD in order to explore neuroscience.** She is very fascinated about the experience that LSAMP provides and has learned so many procedures that she was not allowed to practice fully in her normal laboratory courses. She has gained knowledge in different areas like immunohistochemistry, electrophysiology, animal care, and brain slicing. Marianela participated in the IV Research Symposium in Brownsville, Texas **receiving 3rd place out of many projects that were presented.** She is looking forward to presenting her current project titled "Functional Glutamatergic Phenotype in Septal Neuroblastoma SN56 Hybrid Neurons," in the next conference in Arlington, TX.



THE UNIVERSITY OF TEXAS AT DALLAS



The University of Texas at Dallas (UTD)

is one of the fastest-growing universities in the UT System with an enrollment of 17,128. Established in 1961 by the founders of Texas Instruments, UTD was first known as the Graduate Research Center of the Southwest. It officially became UTD in 1969 and offered only graduate degrees until 1975. UTD admitted its first UG freshman class in 1990 and

became a member of the UT System LSAMP in 1992. UTD has always maintained a strong interest in STEM fields and cutting-edge research. These doctrines have been fully supported by their impressive faculty which includes four members of the National Academies, a current Nobel Laureate, and two past Nobel Laureates. **The freshman retention rate at UTD is 85% and some of the top UG majors include Biology, Computer Science, and Electrical Engineering.** UTD is home to a plethora of research centers including the Advanced Imaging Research Center, the CAD Visualization Lab, the Center for Integrated Circuits and Systems, and the Cleanroom Research Laboratory.



Nirja Dalal
SRA class of 2011

LSAMP STUDENT TESTIMONIAL

Nirja Dalal

My name is Nirja Dalal and I am a Biology major at The University of Texas at Dallas. I entered UT Dallas as a freshman in the fall of 2010. This summer was my first time participating in LSAMP research. **I am grateful to have had the opportunity** to work on a project discovering the effects of Nitric Oxide on metabolic processes in bacteria under the direction of Dr. Spiro, Associate Professor at UT Dallas. I plan to graduate in the fall of 2013 from UTD and **continue on to graduate or medical school.**

THE UNIVERSITY OF TEXAS PAN AMERICAN



The University of Texas Pan American (UTPA)

Located in Edinburg, TX, UTPA serves one of the largest Hispanic communities in the state of Texas. Only 10 miles north of the US/Mexico border, it serves the Rio Grande Valley which is one of the fastest growing areas in the nation. **Annual enrollment for fall 2010 was 18,744** and the numbers are expected to increase at a steady rate. UTPA boasts many accolades in Hispanic higher

education. **They are ranked third in the nation for the number of bachelor's and master's degrees awarded to Hispanics.** They are ranked first in the nation in awarding biology and biomedical science BS degrees to Hispanics and third in awarding BS degrees in mathematics to Hispanics. UTPA is also home to several research center including the Center for Subtropical Studies, the Rapid Response Manufacturing Center, and the Center for Survey Research. Along with UT Arlington, UTPA leads our Alliance in the number of mathematics students recruited to participate in our program. They are a large contributor to the diversity of URM students in the UT System LSAMP.

LSAMP STUDENT TESTIMONIAL

Kassandra McCann

My name is Kassandra McCann, and I am a Mathematics major at The University of Texas-Pan American. I started attending UTPA in 2009 after transferring with an Associate of Arts degree from South Texas College in 2008. I will be proud to graduate in August 2011. I have been a part of the Louis Stokes Alliance for Minority Participation (LSAMP) for Summer 2011 at UTPA. My project, "Distance Functions and Applications to the Smallest Intersecting Ball Problem," **has allowed me to study one of the many real life benefits** of optimization problems in mathematics through the mentorship of Dr. Mau Nguyen and Dr. Cristina Villalobos from UTPA.

Inspired by the rigorous study of Mathematics, I made the Dean's List twice during my time at UTPA. Research has further inspired me to continue my studies at the graduate level. **I plan to attend UTPA in Spring 2012 to pursue a Masters in Mathematics.**



Kassandra McCann
SRA class of 2011

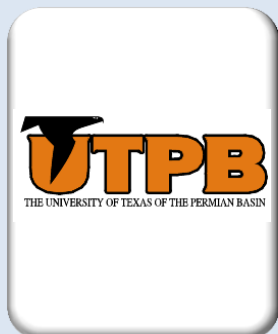


THE UNIVERSITY OF TEXAS OF THE PERMIAN BASIN



The University of Texas of the Permian Basin (UTPB) was established in 1969 as an upper-division university offering junior, senior, and graduate level classes. In 1991, they became a four-year university and offered their first freshman level classes. The very next year, they became an active member of the UT System LSAMP and have done an exceptional job of involving students from the Midland/Odessa area in STEM-related research.

UTPB is a growing campus of over 4,000 students and with the many improvements being made on their campus, they are well on their way to increasing the number of URM students who receive bachelor's degrees in Texas. Some of these improvements are: a new BS in Mechanical Engineering with a Nuclear Engineering concentration optional, a new BS in Petroleum Engineering to be offered fall 2011, and a new science complex with state-of-the-art computer and science labs. **UTPB holds several research grants** from the US Dept. of Energy, the US Dept. of Education, the Texas Higher Education Coordinating Board, the Welch Foundation, the National Institutes of Health, the US Nuclear Regulatory Commission, and the National Science Foundation.



David Bernal
SRA class of 2009

LSAMP STUDENT TESTIMONIAL

David Bernal

I am David Bernal and have graduated from The University of Texas of the Permian Basin with a Bachelors' Degree as a Chemistry major and Biology minor. **As a first generation college student**, I started my undergraduate studies at UTPB in the fall 2004. At UTPB, I was selected as an LSAMP SRA participant. My research project involved Conversion of Simple Carbohydrates to Platform Chemicals. Dr. Mike Robinson served as my faculty mentor at UTPB. Due to my novel research findings as an LSAMP scholar, I attended the 239th American Chemical Society National Meeting and Exposition in San Francisco, CA. Also, I authored a manuscript published by the American Chemical Society in the Fuels and Energy journal. Currently, **I work as a chemist for the city of Odessa.**



THE UNIVERSITY OF TEXAS AT SAN ANTONIO



The University of Texas at San Antonio (UTSA) was established in 1969 and currently has an enrollment of over 30,000 students with 60% of these students classified as minorities. UTSA has three campuses: Main, Downtown, and Hemisfair Park making it the third largest university in the UT System following UT Austin and UT Arlington. It is also the largest university in San Antonio. UTSA expanded their research budget to

\$70 million in FY 2010 and plans to continue that growth. Structural improvements in the past few years have placed UTSA on the path to Tier 1 research status. One of the largest improvements has been the new Biotechnology, Sciences, and Engineering Building which was dedicated in 2006. This building and soon-to-be enhanced College of Engineering were **built in response to the tremendous growth UTSA has seen in the STEM fields.** The College of Engineering has seen more than 90% growth in the past six years. UTSA is also home to several research centers such as the Center for Advanced Manufacturing and Lean Systems, the Center for Research and Training in the Sciences, the Institute for Cyber Security, and the San Antonio Institute for Cellular and Molecular Primatology.



Michelle Salvador
SRA class of 2010-11

LSAMP STUDENT TESTIMONIAL

Michelle Salvador

Michelle Salvador is currently studying a degree in Electrical Engineering at The University of Texas at El Paso. She began her undergraduate studies at UTEP in 2009 and has since then **participated in the LSAMP summer research academy for two years.** She has performed research at the University of Texas at San Antonio and the University of Texas at El Paso. Her expected year of graduation is 2013 and would like to afterwards **continue her studies in graduate school.** In the meanwhile, she enjoys her job as an undergraduate teaching assistant in the field of physics. Michelle is a recipient of the UTEP Presidential Excellence Scholarship and has received a National Action Council for Minorities in Engineering Scholarship.



THE UNIVERSITY OF TEXAS AT TYLER



The University of Texas at Tyler (UTT) was established in 1971 and has a **growing student population of over 7,000 students**, making it one of the fastest-growing universities in the UT System. UTT boasts an impressive 16:1 student/professor ratio and prides themselves on offering a private university experience at a public institution. Since 1992 UTT has been one of the most dedicated and hard-working campuses in the

UT System LSAMP. In 2010, UTT had over \$2.9 million in research spending and their engineering graduates out-perform students from any other Texas university with a 94.9% pass rate for the engineering licensure exam. The College of Arts and Sciences offers science degrees in biology, chemistry, and math. The College of Engineering offers degrees in Civil Engineering, Electrical Engineering, Mechanical Engineering, and Computer Science. **The UT System LSAMP has a very large presence on campus and is proud to be one of the most popular programs at the university.**

LSAMP STUDENT TESTIMONIAL

Chris Martinez

My name is Chris Martinez and I am an Electrical Engineering student at The University of Texas at Tyler. I started attending UT-Tyler in spring 2009 and will graduate in August 2011 as a second generation college student. My research began with my participation in the LSAMP Summer research program in 2011 with my project titled, "Design and Characterization of Tree-based Adders Implemented on FPGAs," under the mentorship of Dr. David Hoe and the use of the resources at the SPEA Computer Engineering Lab at UT Tyler. This research has become a **cornerstone to my academic success and has led to many successful opportunities** such as my poster presentation at the Undergraduate Research Day at the Capitol in February 2011 and my publication and presentation of a research paper at the 2011 SSST conference hosted by Auburn University, Alabama. My success with research has only increased my aspiration to succeed in school and as a result have received such academic honors as Presidents Honor Roll and voted senior of the year by Electrical Engineering faculty. Along with the highly useful skills and knowledge developed through the research, it has really opened my eyes to all the possibilities of higher education and as a result I have **decided to pursue my master's degree at the University of Texas at Tyler** this fall 2011. Much appreciation and thanks goes to Dr. Hoe, faculty and the organizers of the LSAMP summer research program for much of my academic success would not have been possible without them.



Chris Martinez
SRA class of 2011



COMMUNITY COLLEGE EFFORTS

The UT System LSAMP has always maintained an active and engaging relationship with its community college (CC) partners. Phase I included all community colleges in the UT System including Austin Community College, Dallas County Community College, and South Texas Community College. Tarrant County Community College District and Collin County Community College remained partners in the Alliance through Phase III. Five campuses have been members of the Alliance since 1992 and continue to participate in all activities and actively recruit students for research opportunities. Those campuses are: **El Paso Community College, Howard College, Midland College, Odessa College, and San Antonio College.**

The primary activities that our CC partners participate in are the annual UT System LSAMP Student Research Conference and the recruitment of students to the LSAMP Summer Research Academy.

The majority of our CC partners use LSAMP funds to participate in STEM field trips and many CC students have been invited to attend the annual UT System LSAMP conference as attendees and presenters in the past five years. To increase the involvement and exposure of the CC students, **UTPB has organized the first ever “STEM Day Celebration”** for students performing research at UTPB, Howard College, Midland College, and Odessa College. The event will take place September 10, 2011 and the expectations are that this celebration will become a tradition in the Alliance and **become the premiere conference setting** for the UT System LSAMP CC students to present their research, network with faculty, and motivate their CC peers to pursue research. Several campuses, such as Howard College and Odessa College, maintain campus-based

support programs for students interested in research and pre-engineering activities.

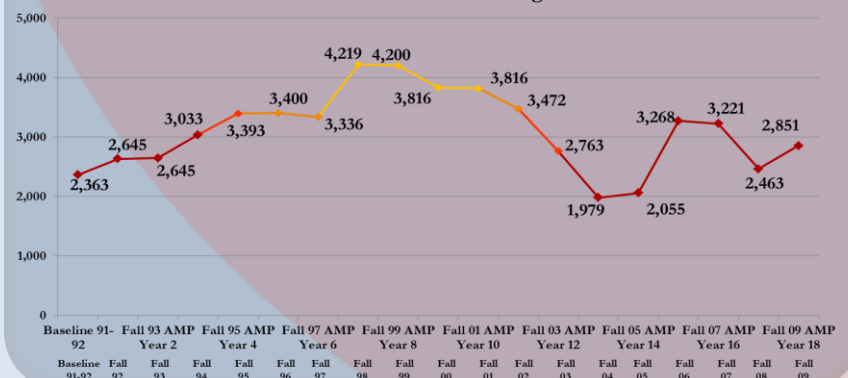
The Alliance is proud of the statistic that 100% of the CC students who participate in the SRA formally “bridge” into their local university following their SRA experience. This is the goal of the SRA-CC component and it proves once more that research is the key to success for our CC students completing their Associate’s degrees and pursuing their BS degrees. Many of these students also report that they **plan to pursue MS and Ph.D. degrees following their BS graduation.**

According to the Texas Higher Education Coordinating Board’s

Closing the Gaps Report, 60% of expected growth in the State’s higher education from now until 2015 will be in community and technical colleges. Based on this statistic, **the Alliance is in a unique and solid position to continue to positively affect the undergraduate student population in Texas** through their collaborative efforts with the entire cadre of UT System institutions and five community college districts.

Currently, **the Alliance is working to add two additional community colleges as partners.** Tarrant County Community College District plans to return during the Senior Alliance phase and Tyler Junior Community College hopes to participate for the first time.

Community College Partners: Enrollment of Underrepresented Minority STEM Students - Baseline through Year 18

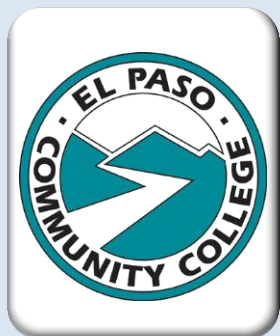


EL PASO COMMUNITY COLLEGE



El Paso Community College (EPCC) has been an active partner in the UT System LSAMP since 1992. It is the fastest-growing community college in the country **and the largest grantor of Associates degrees to Hispanic students in the nation.** EPCC was established in 1969 and currently has five campuses in the El Paso area with plans to open a sixth campus on Fort Bliss, pending approval from the Department of the Army.

EPCC's **current enrollment is over 27,000 students** and it offers 130 academic programs and 350 personal enrichment/continuing education programs. In addition to the traditional services offered by community colleges, EPCC also offers Student Technology Services which is a student-run technology training program, Early College High Schools where students earn their Associate's degree while earning a high school diploma, and a 3-D holographic projection laboratory to provide a state-of-the-art model for delivering K-Gray education. EPCC maintains a mission of quality education, personal enrichment, quality student services, and economic initiatives. EPCC is also home to several STEM student enhancement programs including the Bridges-to-the-Future program and the Math Science Engineering program which specifically targets Early College high school freshmen.



Diana Zamora
SRA class of 2009

LSAMP STUDENT TESTIMONIAL

Diana Zamora

Diana Zamora participated in the LSAMP Summer Research Academy in 2009 as a student from EPCC. Diana started her undergraduate studies in 2007 and is a first generation college student, received an associate's degree in 2009 and transitioned to UTEP in 2009. Her SRA experience was at the UT Austin's Environmental Science Institute and her topic was "Correlation Between Above-Ground and Cave Environmental Conditions in Guam" directed by Jud Partin. Diana presented her work at the 2009 LSAMP Student Research Conference in Austin, TX, in 2009. Her undergraduate major is Environmental Geoscience with a graduation from UTEP in Summer, 2011. **She has been accepted into graduate school** at the University of Arizona where she will major in Hydrology. Diana says that, "**being part of LSAMP was a great step in my career since it opened the doors for research** which led to another REU and being accepted to Graduate School"! Academic honors that Diana has received include Dean's List, 2009-11, Pathways to the Geosciences Fellowship, 2010-11, and graduating Summa Cum Laude. Diana has been working for the US Geological Survey Department in Tucson, AZ during the summer of 2011.



HOWARD COLLEGE



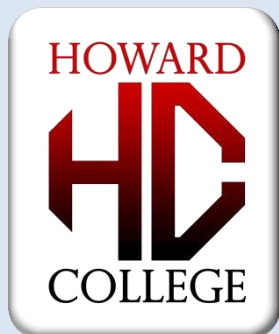
Howard County Junior College District (Howard College) was established in 1945 in Big Spring, TX. Currently Howard College has an **enrollment of over 5,100 students** and has four campuses: Big Spring, Lamesa, and San Angelo. Howard College also has one specialized campus, the Southwest Collegiate Institute for the Deaf (SWCID). There are several STEM associate degrees available including an Associate of Science

in Biology, Chemistry, Computer Science, Geology, Math, and Physics. In the past, Howard College has contributed greatly to the goals of the UT System LSAMP. With an annual science/engineering project created for the LSAMP students, **Howard College has been successful in recruiting and retaining high-quality CC students.** Many of these students have matriculated to UTPB and other Texas universities following their graduation.

LSAMP STUDENT TESTIMONIAL

Bliss Lay

My name is Bliss Lay and I am an Animal Science graduate of Angelo State University. I began my college career at Howard College in 2007 and graduated with my Associate of Science in 2009. **I am proud of my graduation with a degree in Animal Science in May of this year as the next generation in my family to graduate.** I worked for the Louis Stokes Alliance for Minority Participation (LSAMP) grant from the fall of 2008 through the spring of 2009. I worked with Auriel LaFond, Howard College Chemistry Professor on the project of the Periodic Table for Chemistry Department. Through Howard College and Angelo State University I achieved many honors and awards. Some to include Phi Theta Kappa, Presidents List, Delta Tau Alpha, Alpha Chi Honor Society, and **I graduated Magna Cum Laude** from both Howard College and Angelo State University.



Bliss Lay
SRA class of 2008



MIDLAND COLLEGE



Midland College (MC) was established in 1969 and became one of three campuses in the Permian Junior College System. MC became a partner of the UT System LSAMP in 1992 and **continues to involved high-quality students from the Permian Basin area in research initiatives and conference experiences.** MC is unique in that it not only offers over 50 Associate degrees and

certificate options, but it is also considered a Level II (four-year) institution and is accredited to offer a Bachelor of Applied Technology (BAT) degree. Students may also earn upper-level degrees on the Midland campus from various universities. **Currently MC enrollment exceeds 7,000 students** and during AY 2010-2011 MC awarded 389 Baccalaureate and Associate degrees. MC offers the following STEM Associate degrees: Biology, Chemical Technology, Chemistry, Diesel Technology, Geology, Information Technology, Math, Physics, and Welding Technology. Expanded learning facilities and campus improvements are planned for MC in the near future to accommodate and support their expanding student population. Some of these improvements include state-of-the-art classrooms, lecture halls, and laboratory facilities and resources.



Ashley Masters
SRA class of 2009

LSAMP STUDENT TESTIMONIAL **Ashley Masters**

Ashley Masters participated in the LSAMP SRA in 2009 and did her research at the University of Texas of the Permian Basin (UTPB). Her research at UTPB was focused on characterizing the mechanism of microtubule-dependent movement of HTLV.

She received her Associates of Science in General Studies from MC concurrently with her Bachelor of Science in Biology from Sul Ross State University in May 2010. Ashley plans to **pursue a graduate degree at UTPB in the near future.**

ODESSA COLLEGE



Science, Electronics, Engineering, Geology, Math, Physics, Surveying, and Welding. OC provides some unique opportunities for its students including OC Global, which is the online system used to offer students coursework for **accredited programs anytime and anywhere**. There is also the Student Success Center which provides tutors for a variety of subjects as well as resources for students with disabilities.

Odessa College (OC) was established in 1946 and has been a member of the UT System LSAMP since its inception in 1992. **The current enrollment at OC is 5,236 and the campus is considered a Hispanic Serving Institution.** OC offers a myriad of Associate STEM degrees including Associates of Science in Agriculture, Biology, Chemistry, Computer



Raymond Leal
SRA class of 2009

LSAMP STUDENT TESTIMONIAL

Raymond Leal

Raymond Leal is a Mechanical Engineering student at Odessa College. He started at Odessa College Summer II of 2008 and will be **transferring to U.T. Permian Basin** in the Fall of 2011. Raymond plans to graduate in May, 2013 as a **first-generation college student**. He was a mentor during the Odessa College 2009 Pre-Engineering Summer Bridge Program. As an undergraduate he presented at the 2009 LSAMP Conference through the mentorship of Dr. Hardin Dunham, Physics professor from OC.

SAN ANTONIO COLLEGE



San Antonio College (SAC) was established in 1925 and is part of the Alamo Community College District in San Antonio, TX. SAC has been a member of the UT System LSAMP since 1992 and has been the most active community college partner in the Alliance. SAC has maintained an active role in the SRA and has recruited at least five students to perform research at the Alliance universities on a yearly basis.

With a current enrollment of 62,949 for the district and over 37,000 students at SAC alone, it is the largest community college partner in the Alliance and the largest single-campus community college in Texas. Some of the STEM degrees offered at SAC are: biology, chemistry, computer science, earth sciences, engineering, math, and physics. Several campus improvements have been made recently including the construction of the Nursing and Allied Health Complex and the Academic Instruction Center. SAC also maintains one of the most active Society of Mexican American Engineers and Scientists (MAES) chapters in the UT System.

LSAMP STUDENT TESTIMONIAL

Joseph Becerril

My name is Joseph Becerril and I am a Mechanical Engineer. I graduated from UTSA in May of 2010, and I am currently employed by Baker Hughes, one of the top five oil service companies in the world, as a field engineer for Sand Control Systems in the Gulf of Mexico. My first internship was with the LSAMP Program in UTSA's Hard Tissue Laboratory under the mentoring of Dr. Xiadou Wang, where I worked in researching the effect of non-enzymatic crosslinking on human bone. I presented my research in the 2006 LSAMP Conference and 2006 MEAS Symposium, **which opened the doors to an internship with NASA's** Motivating Undergraduates in Science and Technology (MUST) Program. As a NASA MUST Scholar I worked in Johnson Space Center in Houston, where I studied the effect of microgravity in the decalcification of human bone. This research in turn helped me obtain a coop position with Jacobs Technology, one of NASA's contractors, as well as an internship in Cornell's Center for Material Research. This helped me to keep a good grade point average, which added to my experiences and awards allowed me to be offered a full time position in NASA, an offer from Cornell University and UT Arlington **to continue my graduate studies** at no cost to me, and of course my current job at Baker Hughes.



Joseph Becerril
SRA class of 2006

LSAMP LEADERSHIP TEAM: UNIVERSITIES

Principal Investigator



Benjamin C. Flores, Ph.D.
Interim Dean, The Graduate School
Professor, Electrical and Computer Engineering

UTEP UT System LSAMP Lead Institution

Co-Principal Investigator



Helmut Knaust, Ph.D.
Associate Professor
Mathematical Sciences

UTEP

Assistant Director



Ariana V. Arciero, M.P.H.
UT System LSAMP

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Program Coordinator



Sara E. Rodriguez, B.A.
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UTEP

UT System Partner Institutions

Campus Director



Tuncay Aktosun, Ph.D.
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Mathematics

UTA

Campus Director



Andrea Ogilvie, P.E.
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Cockrell School of Engineering

UT

Campus Director



Sarah Simmons, Ph.D.
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UT

Program Coordinator



Jessica Jimenez, M.Ed.
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UT

Campus Director



Guillermo Weber, Ph.D.
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UTB

Campus Director



Juan Gonzalez, Ph.D.
Associate Dean, Graduate Studies
Professor, Molecular and Cell Biology

UTD

Campus Director



Cristina Villalobos, Ph.D.
Associate Professor
Mathematics

UTPA

Campus Director



Tracie Gibson, Ph.D.
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Biology

UTPB

Campus Director



Rachel Ruiz, Ph.D.
Assistant Vice President
Office of P-20 Initiatives

UTSA

Program Coordinator



Darrel Balderrama, M.P.A.
Assistant Director
Office of P-20 Initiatives

UTSA

Campus Director

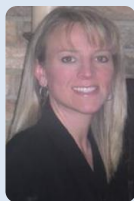


Stephen Rainwater, Ph.D.
Associate Professor
Computer Science

UTT

LSAMP LEADERSHIP TEAM: COMMUNITY COLLEGES

Community College Partners



Campus Director

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Assistant Professor
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OC

Susan Crain Ph.D.
Director
Pre-Engineering Initiative



Campus Director

EPCC

Emil Michal, Ph.D.
Professor
Physics



Campus Director

MC

Thomas Ready, Ph.D.
Professor
Chemistry



Campus Director

SAC

Frank Perez, M.S.
Lecturer
Mathematics

About our Alliance Partners

The Alliance represents a UT System wide commitment, at the highest level of leadership, to **support and evaluate individual campus efforts to improve the participation of students in STEM majors.**

About our Task Force

At each Alliance institution, a Campus LSAMP Task Force coordinates LSAMP activities, as well as identifies, nurtures and monitors the progress of the LSAMP students. **Each Campus LSAMP Task Force includes a Chair and key STEM Faculty.**

Each campus task force is responsible for:

- Promoting the adoption of proven course based strategies
- Involving key faculty and administrators in identifying, nurturing, mentoring and

monitoring the progress of their LSAMP STEM students and;

- Creating and maintaining strong relationships between the universities and community colleges through joint activities and programs.

The state-wide LSAMP Academic Leadership Council, composed of the Chairs of the Campus LSAMP Task Forces, meets yearly to **address systemic barriers to change and to provide leadership for the implementation of curricular reform, as well as faculty and student development activities.**

A state-wide Evaluation Task Force has been formed for the purpose of gathering, analyzing and disseminating data on minority participation in STEM fields at the member institutions.

The Evaluation Task Force responds to the reporting requirements of the National Science Foundation and the data analysis and reporting needs of the leadership of the member institutions and The University of Texas System. The Evaluation Task Force meets yearly, in conjunction with the Academic Leadership Council.

Analysis from the yearly sets of LSAMP cohorts are providing the universities and the community colleges with a better understanding of what their students do and how partner institutions can work together, particularly to **expand and improve transfer programs to ensure the success of community college STEM majors** who enroll at the partner universities.



FACULTY AND STUDENT TEAMS COLLABORATIONS

The NSF and the US Department of Energy (DOE) maintain a **Memorandum of Understanding (MOU)** to provide students with NSF funding to participate in DOE research internships. The MOU was signed in 2001 to synergize the efforts of the two federal agencies in their investment in STEM students with **the ultimate goal of diversifying the US STEM workforce.**

The NSF has traditionally focused on funding research at the university level and providing student development opportunities. The DOE has targeted national laboratories and the research performed at each location. The MOU allows **NSF-funded students to take advantage of the resources available at the DOE's national labs.**

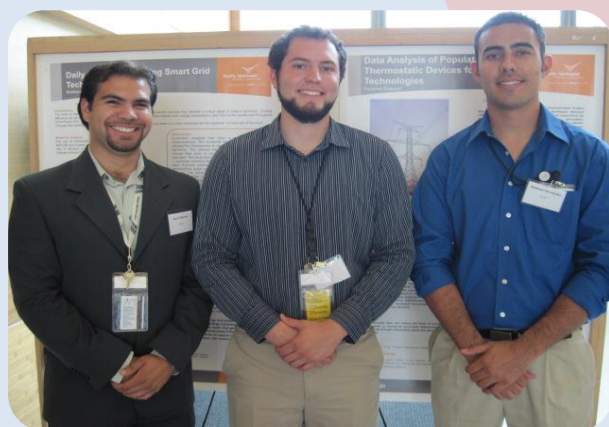
For the past several years, the UT System LSAMP has counted the **Argonne National Lab (ANL)**, the **Lawrence Berkeley National Lab (LBNL)**, and

the **Pacific Northwest National Laboratory (PNNL)** as partners through the NSF/DOE **Faculty and Student Teams (FaST) Program**. Additionally, in 2007 one student was sent to ANL as part of the **Student Undergraduate Laboratory Internship (SULI)**.

Since 2003, the UT LSAMP has sent at least one FaST team to ANL as part of the FaST cooperative agreement between the NSF and the DoE. Several teams have been from **UT El Paso** and several have been from **UT Pan American**. Recently in 2010, UT El Paso sent one team from the Chemistry department to LBNL and one team from the Industrial Engineering department to PNNL. UT Pan American has sent teams to ANL during the summers of 2007-2010. A total of **37 students and 13 faculty visits have been supported** (Table 1). Several faculty members have participated repeatedly so the true number of faculty participants is four (4).

Table 1 **UT System FaST Summer Research Participants**

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Students	3	3	3	2	5	3	3	9	6	37
Faculty	1	1	1	1	2	1	1	3	2	13
Total	4	4	4	3	7	4	4	12	8	50



2010 PNNL FaST Students from left: Aaron Martinez, Federico Esquivel, and Matthew Hernandez



INTERNATIONAL OPPORTUNITIES

Based on its goal of preparing underrepresented minority students for international STEM collaboration, the Alliance has organized a series of international activities that primarily involve international conference participation for undergraduate students who participate in our annual Summer Research Academy (SRA).

The Alliance's leadership team meets annually to select the international conference that the group will attend. **One international activity is planned per year and a total of four have been completed.** One final experience will be held by the completion of the Alliance's fourth phase in 2012. Each campus in the Alliance selects one student to participate in the international experience and each student is accompanied by

their UT SYSTEM LSAMP campus director, and occasionally, by their research mentor.

To date, twenty-seven (27) students and twenty-nine (29) faculty/staff members have participated in the international experience. In total, fourteen females (6 Hispanic and 8 White) as well as thirteen males (3 Black, 9 Hispanic, and 1 White) have attended. In addition, one female student (White) attended a week-long visit to *La Universidad de Concepcion* in Concepcion, Chile in 2007. Table 2 includes conference name, date, location, and number of attendees. Several faculty/staff members have participated repeatedly so the true number of faculty participants is seventeen (17).

Table 2 UT System International Conference Participation

Destination	Conference Name/Date	Students	Faculty/Staff
Concepcion, Chile	Pilot/Dec 2007	1	2
Singapore	Futuropolis 2058/Oct 2008	8	8
Budapest, Hungary	World Science Forum/Nov 2009	10	10
Madrid, Spain	Science in Society/Nov 2010	8	9



UT System LSAMP Faculty, Staff and Students
2010: Madrid, Spain
Science in Society Conference



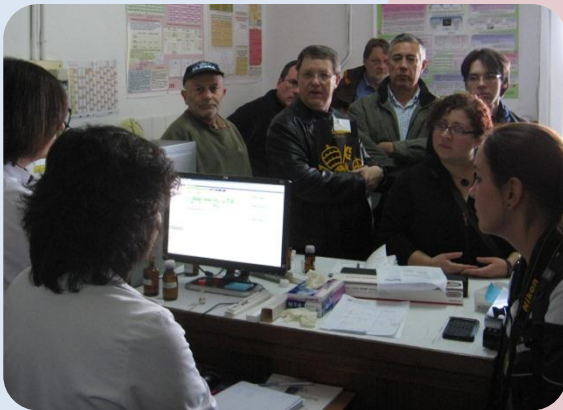
UT System LSAMP Faculty, Staff and Students
2009: Budapest, Hungary
World Science Forum

INTERNATIONAL OPPORTUNITIES



Each campus in the Alliance selects one student to participate in the LSAMP annual international experience.

**UT System LSAMP Group
2008: Singapore
Futuropolis 2058 Conference**



**UT System LSAMP Group
2010: Madrid, Spain
*Tour of Madrid Universities***



**UT System LSAMP Group
2009: Budapest, Hungary
*World Science Forum***



BRIDGE TO THE DOCTORATE AND BEYOND

Seven Bridge to the Doctorate (BD) cohorts have been awarded to the UT SYSTEM LSAMP since the BD project began in 2003. Cohorts I, III, VI, VII, and IX have been hosted by UT El Paso. Cohort II was hosted by UT Pan American and Cohort VIII was hosted by UT Arlington. Cohort I was the pilot and supported ten (10) MS students. All other cohorts supported 12 MS and/or Ph.D. students. With the popularity of the Ph.D. “fast-track”, many of the past and current BD Fellows have made the choice to bypass the MS and move directly into Ph.D. studies. **The UT SYSTEM LSAMP BD cohorts have always been very diverse and have hosted students in all STEM areas including underrepresented disciplines such as math, ecology, and geology.** Additionally, two (2) BD Fellows have been awarded the NSF’s Graduate Research Fellowship Program (GRFP) award and will use that funding to complete their Ph.D. studies.

UT System LSAMP: BD Distribution

UT El Paso:
Cohorts I, III, VI, VII, IX

UT Pan American:
Cohort II

UT Arlington:
Cohort VIII



BD 2008-2010 Fellows presenting a Chemistry workshop to elementary school students

In total, 70 UT System BD fellows have been supported since 2003. Of these, 40 are Ph.D. students and 4 are MS students planning on pursuing doctoral degrees. A total of 10 have earned Ph.D. degrees. Thus, the retention/completion rate is 77 percent. On the assumption that the BD fellows and former fellows currently enrolled stay on course, **the completion rate will be significantly higher than the cumulative ten-year completion rate by STEM Ph.D. students** reported by the Council of Graduate Schools which is estimated at

59% (Analysis of Baseline Demographics Data from Ph.D. Completion Project 2008).

BD is a crucial program to the success of higher education in Texas. Even with the considerable success of UT institutions in awarding bachelor’s and master’s degrees to URMs, at present, **a large gap exists among racial/ethnic groups in both enrollment and graduation.** Historically, the state’s Hispanic and African American populations have enrolled in higher education at rates well below that of the white

population. Given the current demographic trends, **should this gap not be closed, Texas will have proportionately fewer college graduates in the near future, which will translate to a less educated population and ultimately a weaker state economy.** BD funding from the NSF will ensure that talented, underrepresented students of various backgrounds will have the support necessary to earn Ph.D. degrees in a timely fashion and become future leaders in STEM disciplines both in Texas and across the nation.

BRIDGE TO THE DOCTORATE AND BEYOND



Karla Soto, Ph.D. (BD Cohort I)

Metallurgical and Materials Engineering, Spring 2007

GRADUATE MAJOR: Metallurgical and Materials Engineering

“Obtain a Master of Science in metallurgical and materials engineering. Continue in Ph.D. program in Biomaterials engineering and do research.”



Obadiah Kegege, M.S. (BD Cohort II)

Control & Instr. Elec. Design, 2002

GRADUATE MAJOR: Electrical Engineering

“To obtain a Ph. D. in Electrical Engineering and pursue a career in academia as an Engineering Professor.”



Matthew Cheney, M.S. (BD Cohort III)

Chemistry, Spring 2005

GRADUATE MAJOR: Chemistry

“After receiving my Ph.D. in Organic Chemistry with a specialty in enzymatic, asymmetric synthesis, my plans include performing cancer or pharmaceutical research first, then becoming a university professor and continue my research.”



Johanny Meneses, Ph.D. (BD Cohort VI)

Biology, Spring 2007

GRADUATE MAJOR: Biology

“Obtain a PhD in Pathobiology in the area of Molecular Endocrinology. I plan on pursuing a career in academia and do cancer research as well as encourage young people to pursue higher degrees in education.”

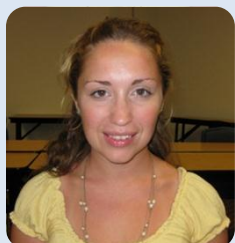


Vincent Gant, B.S. (BD Cohort VII)

Microbiology, Spring 2009

GRADUATE MAJOR: Biology

“Pursue a postdoc in a lab whose primary focus is developing vaccines and antiviral drug therapies against RNA viruses. I want to become a research professor and continue researching vaccines and teaching medical virology.”



Jessica Mooney, B.S. (BD Cohort VIII)

Materials Science and Engineering, 2009

GRADUATE MAJOR: Materials Science and Engineering

“I would like to use my knowledge to solve real-world engineering problems in an industrial setting before making my way back to academia as a faculty member where I can mentor future generations of engineers.”

BRIDGE TO THE DOCTORATE AND BEYOND

The UT System LSAMP Programs continue to be large supporters and catalysts for the NSF's Graduate Research Fellowship Program (GRFP). **In the past three years, two LSAMP Bridge to the Doctorate (BD) fellows have been awarded GRFP fellowships.** Ms. Jessica Navarrete and Mr. Christian Andresen were honored with GRFP awards in 2009. Both students used their awards to supplement the funding they received as BD fellows in order to continue their Ph.D. studies. **Jesica and Christian serve as role models to our undergraduate LSAMP Scholars and continue to inspire them to reach beyond their limits and push themselves to their maximum potential.**

Jesica Navarrete grew up in El Paso, TX and is currently pursuing a **Ph.D. in Biogeochemistry**. She was awarded the NSF Bridge to the Doctorate Fellowship and most currently the NSF Graduate Research Fellowship Program (GRFP). Her PhD work revolves around the interactions between the biosphere and the geosphere to be able to identify the biological markers of microbial activity using Cu, Fe, and Zn transition metal isotopes. She has been working on several other projects which



Christian G. Andresen holds a B.S. in Environmental Science from UTEP and is currently a student in the **Ph.D. in Environmental Science and Engineering Program**, examining changes in primary production and hydrology in Arctic wetlands over the past 40 years using a combination of remote sensing and ground-based measurements. His passion for ecosystems led him to get involved in a variety of research projects including molecular genetics on aquatic invertebrates, salmon, and microbial eukaryotic plankton. He has participated in several projects related to Geographical Information Systems and Remote Sensing technologies in extreme

environments such as the Arctic tundra and the Chihuahuan desert. He is author and co-author of several Journal publications and **has published over two dozen of research abstracts in national and international conferences.** He is a recipient of the NSF Graduate Research Fellowship (GRFP) and The LSAMP Bridge to the Doctorate fellowship. He is an avid nature photographer and some of his amazing photos have appeared in local newspapers, UTEP's magazine, and in the "To the Ends of the Earth: UTEP at the Poles" exhibit.

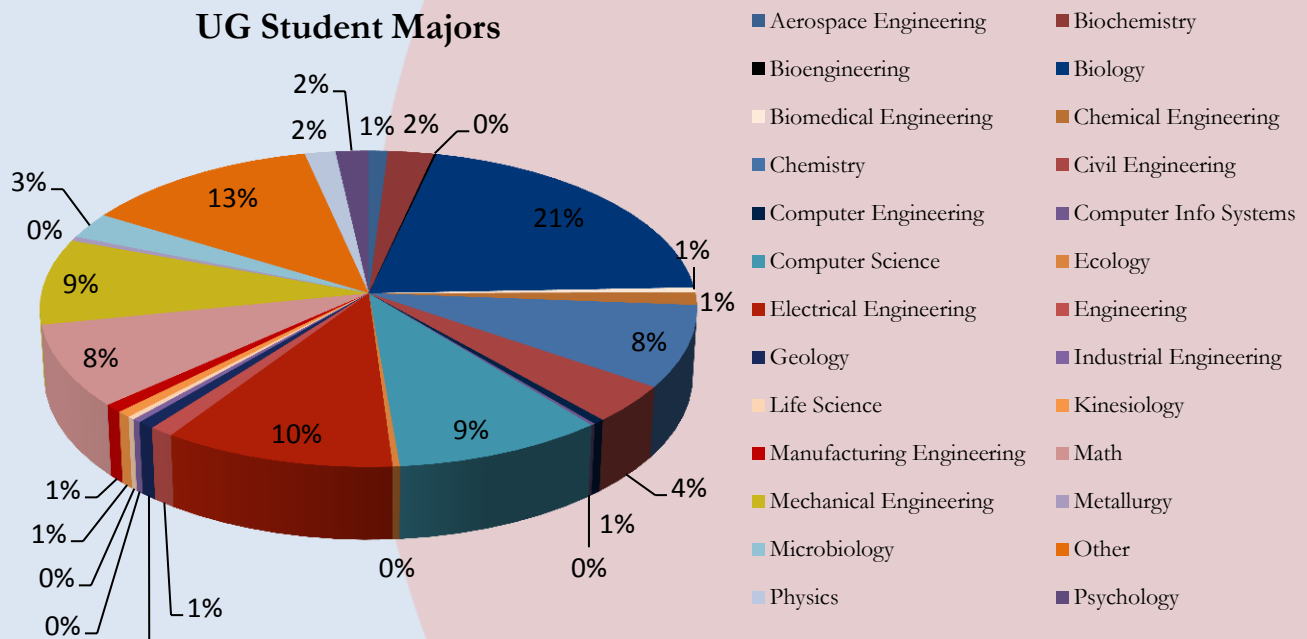


environments such as the Arctic tundra and the Chihuahuan desert. He is author and co-author of several Journal publications and **has published over two dozen of research abstracts in national and international conferences.** He is a recipient of the NSF Graduate Research Fellowship (GRFP) and The LSAMP Bridge to the Doctorate fellowship. He is an avid nature photographer and some of his amazing photos have appeared in local newspapers, UTEP's magazine, and in the "To the Ends of the Earth: UTEP at the Poles" exhibit.

ECONOMIC IMPACT

Whether it is research spending, jobs or academic programs, institutions in the UT System have a profound impact on the regions they serve, accounting for billions of dollars in annual economic activity, not to mention the long-term benefits associated with training future members of Texas' workforce. **In this framework, UT System LSAMP partner institutions have been at the core of developing a workforce of qualified and diversified STEM workforce in Texas.**

In order to truly expand educational opportunities and have the greatest economic impact, we should focus on those students who have the greatest opportunity to benefit. **This suggests targeting first-generation, low-income students, because an education will provide them with the tools to advance from one social level to another. In turn, these individuals will pay more taxes, rely less on public subsidies, become more informed consumers and citizens, and break the cycle of poverty that plagues urban and rural communities alike.**



To estimate the impact of college education one should consider that individuals with bachelor's degrees earn 75% more over their lifetimes than those who only have high school diplomas. This is according to the Georgetown University Center for Education and Workforce. Furthermore, based on the Census Bureau's 2009 American Community Survey, the differential for STEM versus Non-STEM occupations was \$23,105. **This translates, nationally, to an additional income of 20% for STEM workers holding STEM degrees compared to their non-STEM counterparts.**

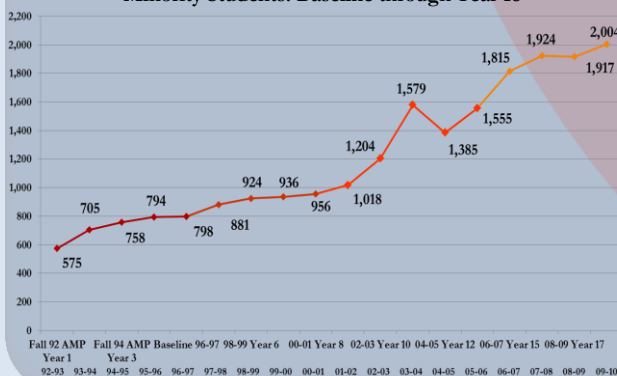
Between 1992 and 2009, STEM baccalaureate degrees awarded by the UT System to underrepresented minorities totaled 20,970. Assuming that 40% of these students remain in the STEM workforce, the salary differential between STEM and non-STEM professional income is estimated the hundreds of millions of dollars per year. **The UT System LSAMP will conduct a full analysis through UTEP's Center for Institutional Evaluation and Research Planning.**

ECONOMIC IMPACT

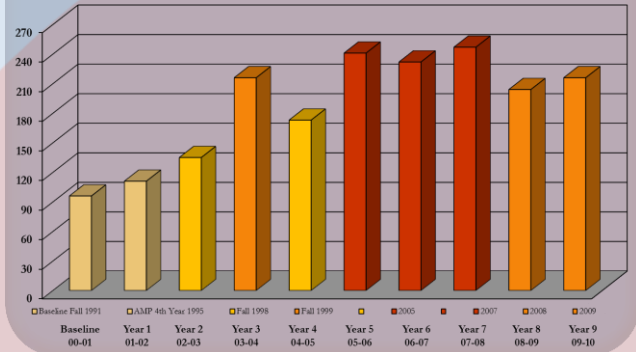
With a yearly budget of \$1.1 million, the UT System LSAMP has served as a major economic force for the UT System and the students and staff it supports.

On average, 70 undergraduate students are provided competitive stipends annually to conduct faculty-mentored research at one of the nine UT System university campuses. These students are also provided limited funding to attend academic conferences to disseminate their research findings. Since 1993 over 1,500 students have received financial support through the UT System LSAMP. **This financing has helped our students continue their studies and provide the means which may not have been available otherwise.** This continued enrollment allows the UT System to increase their student population each year, thereby increasing the economic impact that each campus has on the State. The increase in student population positively impacts all other areas of higher education and community progress by keeping talented students in Texas and hopefully encouraging them to remain in Texas after graduation.

STEM Bachelors Degrees Awarded to Underrepresented Minority Students: Baseline through Year 18



STEM Masters Degrees Awarded to Underrepresented Minority Students: Baseline through Year 18



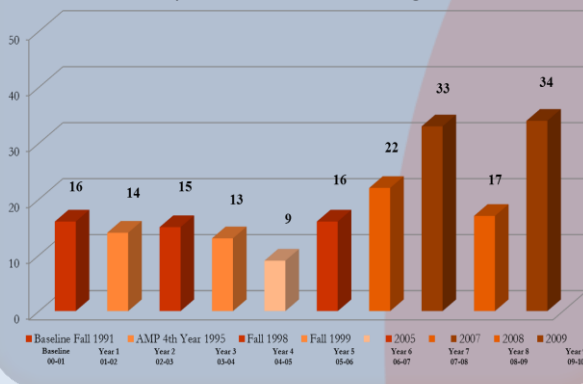
To increase the number of talented students studying in Texas, the Bridge to the Doctorate program continues to provide competitive funding and high-quality research opportunities to students in their first two years of graduate studies. **With a total award of approximately \$80,000 per student, the UT System maintains close to \$1 million dollars per BD cohort.** This funding is invested in tuition as well as living expenses for the BD Fellows. This funding positively impacts the city in which the cohort is hosted as well as the university. Tuition is covered in-full for each fellow so **each university that hosts a BD cohort receives the full graduate tuition for 12 full time students. Additionally, it allows the students to complete two years of academic work without having to rely on student loans or inflexible employment positions.** In the future, this will allow these students to complete their Doctoral degrees with lower debt. Therefore the salary they receive when they begin their post-doctoral or faculty positions will be revenue that goes directly into the economy.

With a total award of approximately \$80,000 per student, the UT System maintains close to \$1 million dollars per BD cohort.

ECONOMIC IMPACT

Additionally, the UT System LSAMP hires a dedicated staff to maintain the everyday workings of the Alliance. These individuals are valuable members of the UT System community and the UT El Paso campus. The staff positions made available by the UT System LSAMP has not only enhanced the UT El Paso workforce, but has allowed qualified individuals to remain in the El Paso area to contribute to its growth and progress.

STEM Doctoral Degrees Awarded to Underrepresented Minority Students: Baseline through Year 18

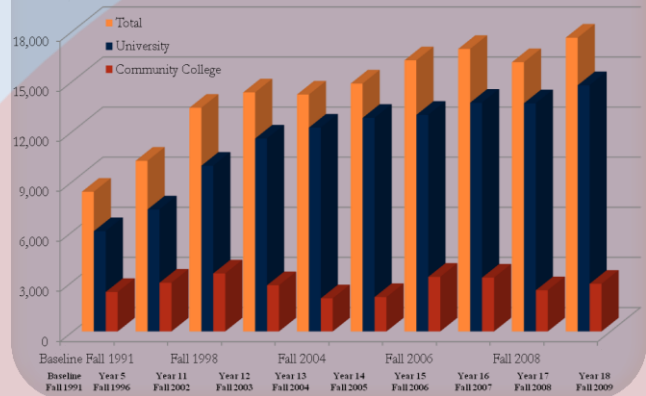


The Bridge to the Doctorate program has impacted a total of 82 students since it began in 2003. This has allowed for a group of diverse

Each BD project indirectly contributes a total of \$987,000 to the host campus

BD has allowed several of the UT system campuses to maintain a competitive graduate cohort and indirectly reap the benefits of the NSF's generous award.

**Undergraduate Enrollment of Underrepresented Minority STEM Students
UT-System Alliance Institutions - University and Community College**



and talented students to remain in Texas for their graduate studies and not only enhance their campus but their local community as well. **Each BD project indirectly contributes a total of \$987,000 to the host campus.** The majority of these funds are invested in the campus through tuition and fee payments, university-based health insurance, university bookstore credit for each student, and the additional investments each student makes by attending the university. **BD has allowed several of the UT system campuses (map below) to maintain a competitive graduate cohort and indirectly reap the benefits of the NSF's generous award.**



CONCLUDING REMARKS AND FUTURE ENDEAVORS

Over 19 years, the Alliance has made great strides in preparing high-quality STEM researchers who will diversify the nation's Higher Education and Industry sectors. In 2005, the UT System Regents developed a strategic plan that called for improving undergraduate success, developing more STEM majors, improving graduate education, and expanding global initiatives as well as increasing research, global competitiveness, and technology transfer by the year 2015. The UT System has explicitly stated its intent to attract and retain diverse and talented students and increase the number of students earning degrees in STEM. **The UT System LSAMP has been a vital partner in this commitment and will continue to improve in order to meet the needs of the State and the Nation.** Thus far, it has developed replicable success strategies to ensure that scores of undergraduates become scientists, technologists, engineers and mathematicians. This type of work continues at the graduate level to further advance the education of a select group of LSAMP alumni through the BD Fellowship.



Presentation at the 2009 UT System LSAMP Annual Conference in Austin, TX



Our BD Students traveling to NSF's 2009 JAM

In six cohorts, the Alliance has worked to develop a sustainable program that firmly shapes professional attitudes and values of URM doctoral students and promotes this program and its replication among emerging research institutions with significant URM student populations. Through these activities, the program not only contributes to the national goal of increasing the number of under-represented minority students in STEM disciplines with terminal degrees in their area of expertise, but also further develops successful strategies for URM graduate students pursuing a doctoral degree that are applicable to other institutions of higher learning with characteristics similar to those of the State (urban research university, high proportion of URM enrollment). **Throughout its four phases, the effort has not only produced high-quality URM STEM degree recipients but has strengthened the Alliance in the largest state in the contiguous U.S.** A diverse team of dedicated staff, faculty, and administrators has allowed the Alliance to continue to meet the challenges of national, URM STEM education.

CONCLUDING REMARKS AND FUTURE ENDEAVORS



UT System BD Students at the NSF's 2009 JAM



2009 UT System LSAMP Annual Conference in Austin, TX



UT LSAMP Conference registration table



The UT System LSAMP Leadership Team at work

In the near future, the Alliance will expand its membership to 16 institutions and continue its state-wide work by ensuring that:

- A greater number of URM students enrolled in partnering community colleges complete STEM associate degrees and **successfully transition to UT System universities.**
- A greater number of URM students and faculty mentors participate in research opportunities offered by **US Department of Energy national laboratories.**
- A significant number of URM students participate in **summer research experiences and complete study abroad programs.**
- A significant number of **veteran students** participate in undergraduate research experiences .
- A significant number of URM and veteran students participate in a **mentoring and support on-line network.**
- An ever increasing number of URM students **become aware of and participate in other closely related NSF funded projects** (including but not limited to S-STEM, STEP, REU, AGEP). ▣

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**THE UNIVERSITY OF TEXAS SYSTEM
LOUIS STOKES ALLIANCE
FOR MINORITY PARTICIPATION**

20TH YEAR IMPACT STATEMENT

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