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FOREWORD

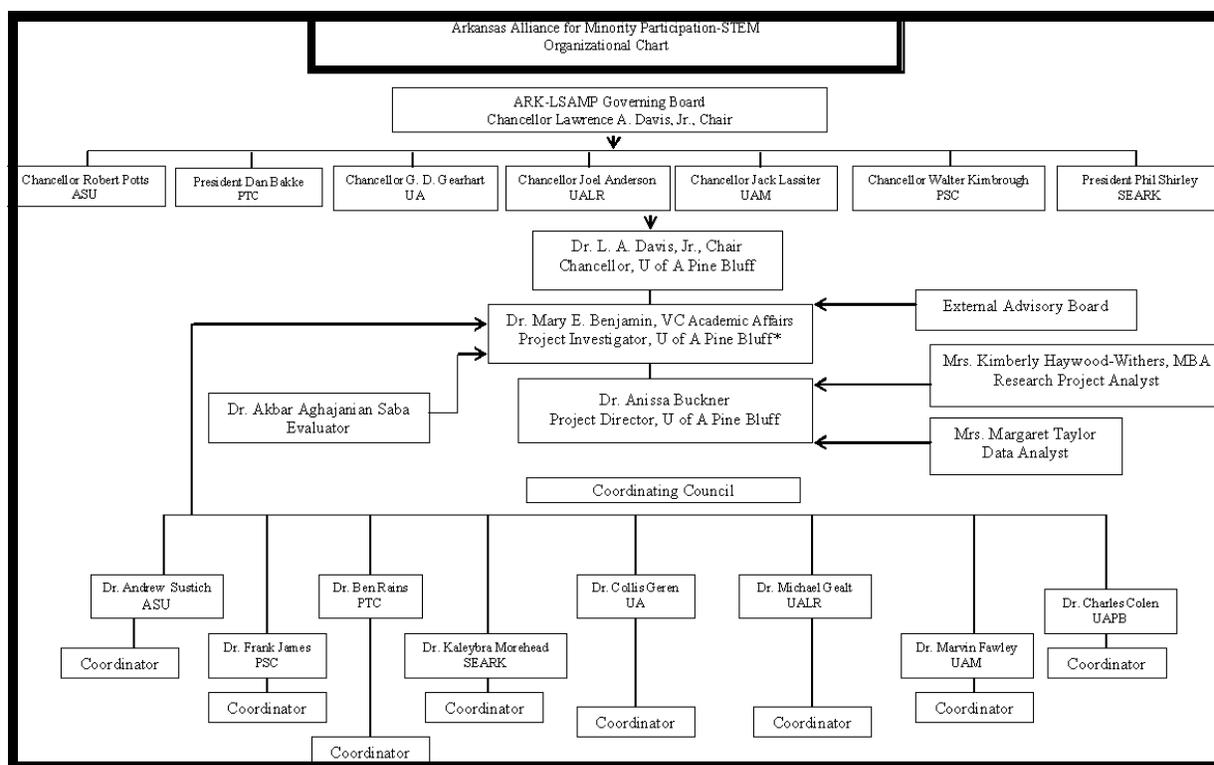
The Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) began in 2008 and is delighted to be a part of the National Science Foundation Louis Stokes Alliances for Minority Participation. The overall goal of ARK-LSAMP is to increase the number of underrepresented minorities who major, graduate and obtain positions in Arkansas' and the national workforce in Science, Technology, Engineering and Mathematics. We are extremely proud of our partnership with the Arkansas Science and Technology Authority over the last three years which has allowed us to continuously support our students throughout their undergraduate career. The impact of a program of this magnitude has profound benefits for the state of Arkansas, our region and the nation. We share some of our accomplishments at each alliance member institution and within the overall alliance.

Executive Summary

The Arkansas Louis Stokes Alliance, which received its first NSF-LSAMP grant in 2008, is a shared STEM educational enrichment and research training program jointly implemented by eight Arkansas institutions of higher learning. The Alliance members are Arkansas State University (ASU), Philander Smith College (PSC), Pulaski Technical College (PTC), Southeast Arkansas College (SEARK), the University of Arkansas (UA), the University of Arkansas at Little Rock (UALR), the University of Arkansas at Monticello (UAM), and the University of Arkansas at Pine Bluff (UAPB). The membership includes universities, community colleges, public and private institutions all connected by a common vision of increasing the number of well-prepared underrepresented minority students in STEM disciplines. The University of Arkansas at Pine Bluff (UAPB) is the lead institution.

ARK-LSAMP builds on relationships established through the STEM Coalition, a group of business leaders, scientists and educators committed to developing the STEM workforce to help fuel Arkansas' economy. It also builds on lessons learned by the lead institution (UAPB) in implementing an NSF-HBCU-UP grant. The Arkansas Science and Technology Authority (ASTA) and the Arkansas Department of Higher Education through its STEM coordinator also provided valuable data and guidance in helping to design the program. Representatives of all Alliance members and the original state partners are shown in the organizational structure.

(See below)



LAC Local Advisory Council
 ASU Arkansas State University
 PSC Philander Smith College
 PTC Pulaski Technical College
 SEARK Southeast Arkansas College

UAF University of Arkansas at Fayetteville
 UALR University of Arkansas at Little Rock
 UAM University of Arkansas at Monticello
 *UAPB University of Arkansas at Pine Bluff – Lead Institution

Funded by the National Science Foundation, the Arkansas Science and Technology Authority, and by Member Institutions

Executive Summary

(CONTINUED)

Having completed three years of implementation, ARK-LSAMP serves 200 STEM majors, an increase of 145 since the Alliance began. As of Spring 2011, the Alliances' average retention rate is 68% with the range among institutions being 25.9% to 87%. In May 2012, the first cohort is expected to graduate. Forty students have participated in research internships external to their campus in research labs and corporate management. Twenty-five have presented (oral or poster) at professional meetings (e.g. the NSF Emerging Researchers National (ERN) Conference in STEM in Washington, D.C.; Arkansas EPSCoR; and Research Day at the Capitol, Little, Arkansas).

Some notable accomplishments of Alliance member campuses include: establishing STEM clubs (PTC, SEARK, UA, and UAPB); volunteering for community projects (PTC, SEARK, UALR, UAPB); STEM Day (SEARK); Nobel Laureate Guest Lecturer, Dr. John Hall, Physicist (UAPB, UA); presentations to the Board of Trustees (ASU and UAPB); and election by ARK-LSAMP students for campus leadership positions.

ARK-LSAMP has not only helped to prepare its students for campus leadership positions, it has also provided rich research internship experiences for the students. Among the eight ARK-LSAMP programs, there were 25 internships provided with four being international. Many of these sites were cultivated through the Guest Lecturer Series which has manifold purposes; role modeling of STEM professionals, first hand contact by university, industry and governmental agency representatives with STEM students; and introduction of students to diverse research models, sites and STEM disciplines. The Guest Lecture Series is a vital component of the ARK-LSAMP Program.

Other critical components of the ARK-LSAMP program are:

- A Pre-First Year Summer Experience
- COHORT grouping for three Freshmen courses
- Study groups
- Student study area
- Formally organized STEM Clubs that are recognized and listed by Campus Student Support Services
- Volunteer community service
- Staffing of STEM Academy tables at High School and Junior College for Recruitment Days
- Availability of the ARK-LSAMP Project Director, Co-Principal Investigator and Research Project Analyst as sounding board for students
- Attentive Executive Committee and committed campus coordinators
- Support of the Presidents and Chancellors
- Support of the External Advisory Board
- The Annual ARK-LSAMP Research Conference

Executive Summary

(CONTINUED)

ARK-LSAMP has also increased the interaction among the ARK-LSAMP students through the Annual ARK-LSAMP Spring Research Conference, the ARK-LSAMP website and the Pre-First Year Summer Institute. This is critical in building a network among the ARK-LSAMP students at the Alliance institutions and on the individual campuses.

Critical to ARK-LSAMP sustainability is the decision by the Arkansas Science and Technology Authority Board of Directors to award funding—\$70,000 (2008-2010); \$96,000 (2011) for stipends to sophomore, junior, and senior ARK-LSAMP students. Additionally, a significant development for the lead institution, UAPB, is the Chancellor's and the University's decision to approve a new \$6 million facility for the STEM initiatives. To date, the Arkansas Legislature Review Committee has approved the method of finance for the facility. This building is an outgrowth of the innovation underway in STEM education at UAPB and its partnership with other Arkansas institutions in helping to prepare the next generation of U.S. scientists.

HIGHLIGHTS/IMPACTS

Introduction

In 2008, the Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) began with funding from the National Science Foundation. In a few short years, the Alliance has grown to approximately two hundred (200) students with the largest numbers from Cohort I set to graduate in Spring 2012.

ARK-LSAMP is composed of eight colleges and universities all located within the state of Arkansas sharing a commitment to help increase the pool of Science, Technology, Engineering and Mathematics (STEM) graduates in Arkansas' workforce and in the nation. The Alliance is strengthened by its commonality and by its diversity. There are seven public and one private institution including two 2-year community colleges, one 4-year college and five universities.

The participating institutions are: Arkansas State University (ASU); Philander Smith College (PSC); Pulaski Technical College (PTC); Southeast Arkansas College (SEARK); University of Arkansas, Fayetteville (UAF); University of Arkansas at Little Rock (UALR); University of Arkansas at Monticello (UAM); and University of Arkansas at Pine Bluff (UAPB), the lead institution.

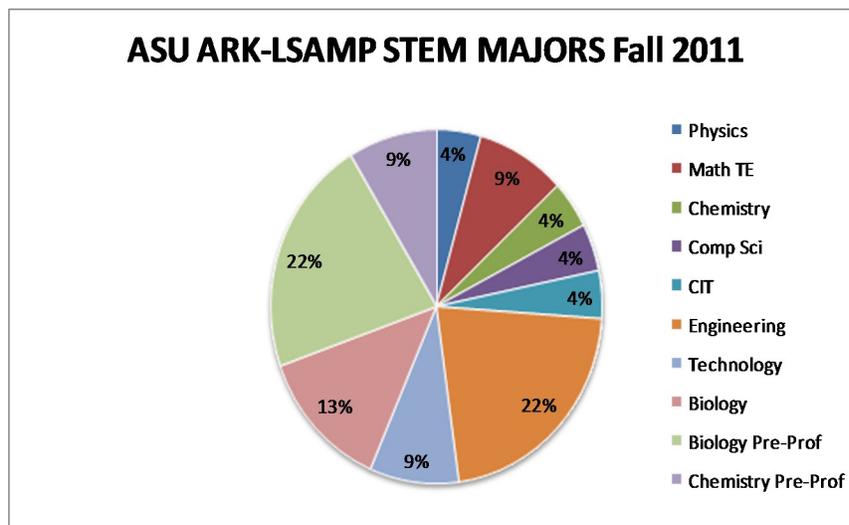
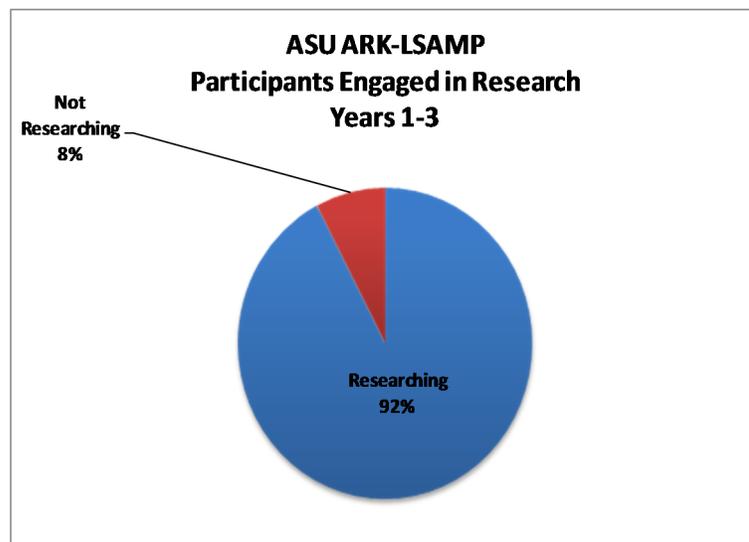
The expected outcome of this new and much needed Alliance is to help Arkansas join other states in the region and in the national initiative to strengthen America's competitiveness in science, technology, engineering and mathematics. This is being achieved through a well-coordinated set of educational, research and training enrichment activities on each campus resulting from collaborative engagement in planning for curricula enhancement, internships, guest lecturers, attendance and presentations at professional meetings, and other STEM related activities.

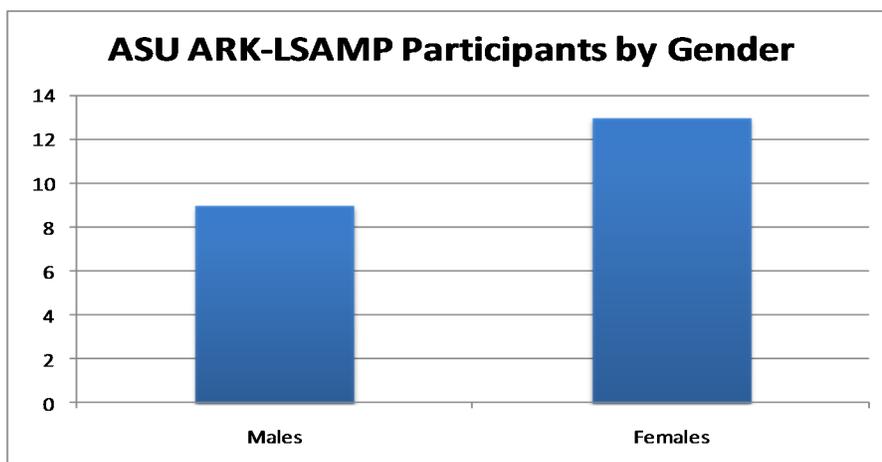
Impact 2011 for the ARK-LSAMP provides current information for the overall Alliance in addition to updates from each Alliance member institution. Collectively, progress over the past three years is indicative of the attainment of planned objectives in our common effort to achieve the overall goal of helping to increase the number of well-prepared underrepresented minorities in STEM careers.

Arkansas State University

Over the past three years, ASU ARK-LSAMP has enrolled 24 students. We have students of all Cohorts represented. Currently there are 22 students, of those students, 13 have done or are presently doing research. Without counting Cohort IV, a total of 92% of our ARK-LSAMP students are doing research. ASU is home to 5 STEM programs ARK-LSAMP, McNair Scholars, URM, Noyce, and ELF; of those 5 programs ARK-LSAMP, McNair, and URM's primary goal is to serve minority students. ARK-LSAMP is the only program that offers incoming freshman a 6-week preparatory program. ASU ARK-LSAMP had the pleasure of hosting the Pre-First Year Summer Institute in 2010 with huge success.

ASU ARK-LSAMP expects all of Cohort IV to engage in research by Fall 2012. ASU ARK-LSAMP has a student-centered orientation. The students are given individualized attention and meet as a group throughout the school year. They are connected to various resources ASU and other institutions have to offer. Students are introduced to other STEM programs early on to create the smoothest transition. We strive to connect our students with our STEM partners so they can receive funding and mentorship throughout their college career. 100% of Cohort III participates in STEM research and two of our students conducted research in the Virgin Islands via URM, one of our STEM partnerships. We expect more students to participate in internships, conferences, and research presentations. The students have been so pleased with their experience; they market ASU ARK-LSAMP to their STEM friends and students they meet in their classes.





Arkansas State University's ARK-LSAMP *Leadership*



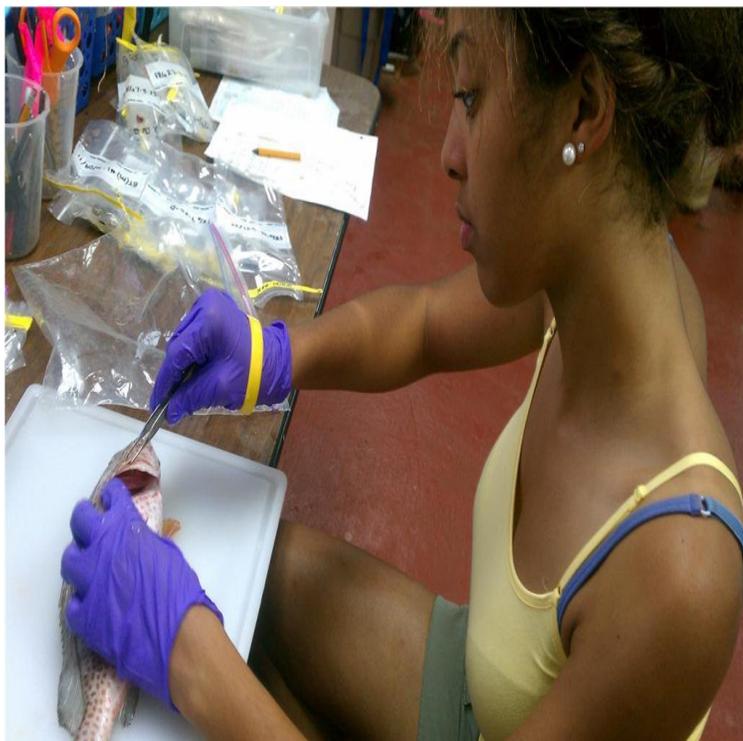
Andrew Sustich is Dean of the Graduate School and Dean of The Honors College at Arkansas State University. He is a Professor of Physics with research interests in theoretical nuclear physics and in science education and collaborations across the P-20 (Pre-K through graduate education) spectrum and professional development opportunities for teachers. He holds a B.S. in Nuclear Engineering, and an M.S. and Ph.D. in Physics, all from the University of Illinois at Urbana-Champaign. Following the Ph.D., he served as Visiting Scientist at the National Superconducting Cyclotron Laboratory on the campus of Michigan State University before joining the faculty at Arkansas State University.



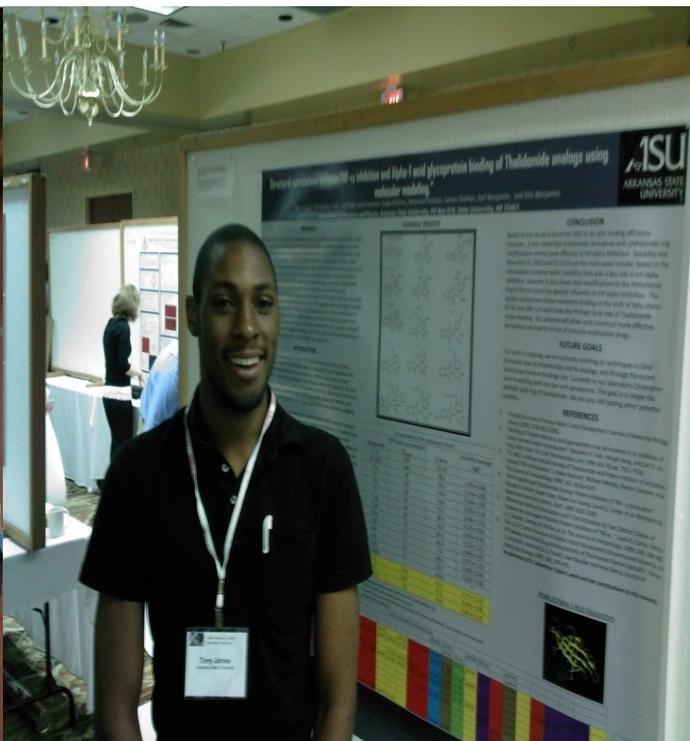
Ammi T. Vinson, is the Assistant Campus Coordinator for the ASU-ARK-LSAMP STEM Scholars Program. She coordinated the 2010 ARK-LSAMP Summer Institute held at ASU, obtained a BS in Sociology with a Psychology minor from Illinois State University (ISU) in 2008 and is currently working on a MS in College Student Personnel Services with an emphasis in College Counseling at ASU. She has worked with college students for over 5 yrs (Advisement 3.5yrs ISU; LSAMP 2yrs ASU).

RESEARCH PICTURES

**Marnaya Ellis, Sophomore:
Chemistry Pre Prof and Psychology Double Major**



**Tony James, Senior:
Chemistry BA and BS Double Major**



**Kayla Parker, Sophomore:
Chemistry and Biology Pre Prof Double Major**



**Kayla Watkins, Junior:
Physics Major**



Philander Smith College

Since the start of ARK-LSAMP in 2008, enrollment in STEM at Philander Smith College has significantly increased. Throughout the duration of the program, we have had 36 participants sponsored through ARK-LSAMP and actively engaged in STEM sponsored events and activities. To ensure that ARK-LSAMP participants are informed of various opportunities and resources available to them, bi-monthly meetings are scheduled. Information disclosed includes internship and REU's, tutoring schedules, collaborative learning assignments, and upcoming conferences. In addition to giving general STEM related information, workshops are hosted. Participants have found our Time Management, Reading and Writing, Academic Portfolio Development, Academic Resume', Business Cards and Networking Workshops, very resourceful and instrumental for managing their course loads and meeting STEM professionals on and off-site.

In 2010, ARK-LSAMP sophomore participant, Misha Dowd, was awarded a summer internship. As a Computer Science major and an aspiring "Super Computer" builder, she was able to build a website from scratch for a company. When she returned in the Fall, she boasted about her experience of consulting with management about the details of the site and satisfying their requests. Special thanks was given to one of the ARK-LSAMP Internal Advisory Committee members, Angela Daniels, for assisting her in the process of securing the internship. Other students were given internship opportunities as well: Jordan Pryor, Byron Johnson, and Anna Ragan (all Biology majors) each had experiences at the University of Arkansas for Medical Sciences in Little Rock, Arkansas in the fields of their interests.

Over the last year, we had the honor of having two ARK-LSAMP participants engage in Undergraduate Research. Fanchon Laster, ARK-LSAMP 2009 Summer Institute Participant, presented her Research Poster on "*Chemical Analysis of Salicin from the bark of a willow tree by utilizing an Attenuated Total Reflectance (ATR) Fourier Transform Infrared (FT-IR) Spectrometer*" at the ARK-LSAMP Annual Research Conference on April 30, 2011. In addition, she presented her research at the 95th Arkansas Academy of Science Conference in Monticello, Arkansas and received an award for 2nd place.



Joseph Bradley
Left Side

Freshmen ARK-LSAMP participant, Joseph Bradley, engaged in Undergraduate Research in summer 2011 at Philander Smith College campus with research advisor, Traci Hudson. His research involved assessing Fourche Creek by doing water metabolism, photosynthetically active radiation, water quality analysis, ambient water biomonitoring, sediment collection and characterization as well as sediment toxicity testing.

For practice on oral presentations, Mr. Bradley was invited to present his research to all Philander Smith College faculty at the Fall Faculty and Staff Institute. Mr. Bradley attended the Emerging Researchers National (ERN) Conference in February 2011 and the 2011 ARK-LSAMP Annual Spring Research Conference.

When considering the impact that ARK-LSAMP has had on the participants at Philander Smith College, we have noticed an increased interest in research and internship opportunities. The exposure that participants have received by attending the Annual Research Conference and attending various Lecture Series has provided students with insight to obtaining the aforementioned experiences. Although there have only been six participants to date from ARK-LSAMP, this contributes to the larger number of reported internship and REU experiences across the Division of Natural and Physical Sciences.

In regards to expected outcomes for Philander Smith College ARK-LSAMP participants for this annual year, there are action plans set in motion to work diligently with participants on securing more internships and REU's. This involves assigning each participant with a faculty and student mentor to ensure adequate guidance. Mentors will be responsible for assisting the participant in finding opportunities by their interest, reviewing participant applications before submission, and assisting with follow-up communication. Our goal is to have 50% of Cohort IV engaged in an internship or REU during Summer 2012. Many participants elect to take summer courses instead of gaining research experience; however, our participants will be advised to plan ahead and add the course to their Spring 2012 schedule to prevent any intervention.

ARK-LSAMP at Philander Smith College has allowed many students (Underrepresented Minorities) to embrace STEM and the many opportunities available to them as citizens, students, and future professionals. Philander Smith College is working campus-wide to expose students to opportunities outside of the classroom in relation to their discipline and fields of study. Thus, the ARK-LSAMP program staff is working in unison to ensure that our participants are well informed of events, conferences, resources, and workshops that would best assist them in their academic endeavors. With focus university-wide placed on research and STEM, we understand the urgency and importance of ensuring that our participants are well prepared.

Philander Smith College's ARK-LSAMP *Leadership*



Frank A. James, PhD,
Right Side
Tia Hickman,
Left Side

As Vice President for Academic Affairs, Dr. Frank James is responsible for the daily operations of Academic Affairs, a team of professors and professionals who offer curricula that lead to more than fifteen degree programs in five academic divisions, Academic Success Program, Academic Advising, the Library, Institutional Research and Assessment, Accreditation, as well as sponsored programs and grants, including Campus Coordinator for ARK-LSAMP. With an extensive background in Mathematics and academia, Dr. James enjoys serving students! All his efforts reinforce his goal—to work with his colleagues in providing PSC students with a quality education, critical thinking skills, and current technology so they can develop their own leadership abilities as contributing members of society.

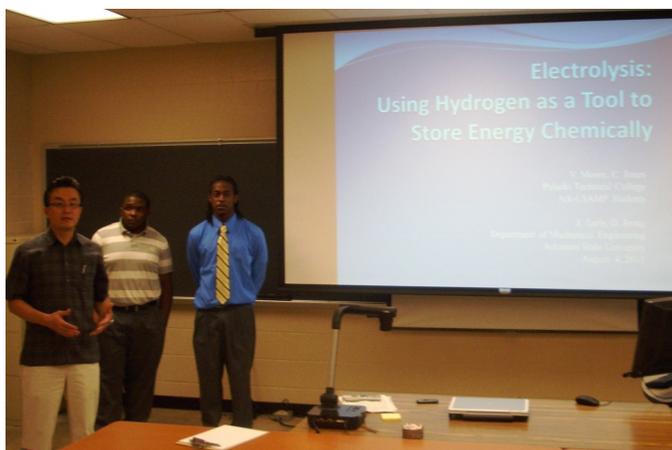
Tia Hickman serves as the Data Collector and Assistant to the Campus Coordinator with the ARK-LSAMP program. In addition to ensuring that information is communicated to the lead institution, University of Arkansas at Pine Bluff, she works hand in hand with ARK-LSAMP participants. Her effort is continuously given to make certain that participants are involved in various “STEM”ulating activities, events, and conferences for academic versatility and success.



Pulaski Technical College

Summer research 2011, PTC in partnership with ASU - Jonesboro

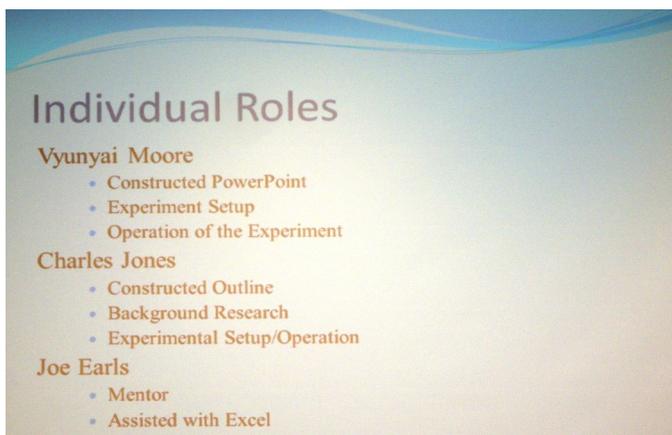
Mr. Charles Jones and Mr. Vyunyai Moore were interns in the laboratory of Dr. David Jeong at Arkansas State University – Jonesboro, a member of the ARK – LSAMP alliance. The summer work focused on electrolysis and hydrogen production. In addition to their own research, the students were involved in various aspects of the engineering department at ASU, and both are considering continuing their education at that institution. Dr. Ellis Benjamin, the primary contact and investigator for ARK-LSAMP at Arkansas State University, was instrumental in sharing the opportunity and carried out administrative tasks needed to allow our students to attend. Mr. Jones plans on studying environmental science at ASU, and has been working with Dr. Benjamin's office regarding continuing work in ARK – LSAMP.



(l to r, Dr. D Jeong, Mr. V. Moore, and Mr. C. Jones at the beginning of their presentation)



(l to r, Mr. V. Moore and Mr. C. Jones presenting their research in the summary presentation)



A screen shot of a portion of the presentation.



(l to r, Mr. Jones, Mr. Moore, Mr. Schulte in the laboratory where they conducted their research)

Pulaski Technical College's Network for Success

Dr. Ben Rains

Mathematics, Natural and Social Sciences Division

Dean, Mathematics, Natural and Social Sciences

Dr. Rains is the Campus Coordinator for PTC's ARK-LSAMP. He joined Pulaski Technical College 12 years ago, and has been involved in various courses in STEM disciplines. His background is in biology, with an emphasis in microbiology, botany, and general environmental issues including wetlands mitigation. With a background in the health care field, he has been involved with pre-professional health care students as well as general STEM majors.

Jennifer Combee

Administrative Assistant to the Dean and ARK – LSAMP

Ms. Combee has been with the division of Math, Natural and Social Sciences for six years and is a graduate of Pulaski Technical College. She works with the ARK-LSAMP Program in the Mathematics Department.

Bruce Schulte

Instructor of Physical Sciences

Mr. Schulte assists Dean Rains in LSAMP Program implementations. He assists with recruitment linking ARK-LSAMP to other campus enrichment programs such as the Student Success Network (SSN). Two current LSAMP students (Charles Jones and Vyunyai Moore) received internships in energy storage research this past summer at Arkansas State University in Jonesboro, Arkansas. He also organizes field trips to sites such as UA and to UALR. He also supervises ARK-LSAMP students in his lab and assists with two to four year college transfers.

Coach Richard Moss

Mr. Moss has been a Student Success Coach since the Network for Student Success was established. He is also an adjunct faculty member and works with first year students and strives to promote a culture of educational success. Mr. Moss is a graduate of UALR, and has been an integral member of PTC's ARK – LSAMP program.

"Student Participants in ARK LSAMP at Pulaski Technical College by COHORT"

2008—2010

Cohort I

Jacqueline Robinson – Student transferred to UALR to continue to further her education.

Cohort II

Steven Caradine – Mr. Caradine transferred to UALR after finishing his degree at PTC. This fall Mr. Caradine is furthering his education at UAMS, and is interested in cytotechnology.

Jermaine Ivy – Mr. Ivy is an employee with Hewlett Packard in Arkansas. He has continued at PTC. Mr. Ivy is furthering his education in information technology.

Charles Jones – Mr. Jones has been extremely active in ARK – LSAMP, both on campus and with the alliance. He was a mentor at the summer institute at ASU in the summer of 2010, has been active with STEM on campus, and in the past summer worked as an intern at ASU. Additionally, Mr. Jones has become an elected member of the student government on campus, as well as many other campus activities. He currently plans on transferring to ASU – Jonesboro to continue his education in the general area of environmental sciences.

Broderick Bozeman – Mr. Bozeman has transferred to the University of Arkansas at Fayetteville and is continuing his education in the college of engineering.

Famous Bradford – Mr. Bradford transferred to UALR, and is studying biology and chemistry. Mr. Bradford reports being on the dean's list in the last semester.

Cohort III

Cornell Cornelius – Mr. Cornelius has transferred to the college of engineering at the University of Arkansas – Fayetteville.

Vyunyai Moore – Mr. Moore is currently enrolled at PTC.

In The Future.....

PTC plans to continue to work with the Student Success Center coaches as well as visit area high schools. During these visits we will present the opportunities available in the ARK LSAMP project. This year we have met with counselors at various high schools and are starting recruitment and we all plan to present information about the opportunities ARK-LSAMP provides. Coordination with the Student Success Center has proved to be a vital element in the continued success of this program, and has greatly encouraged current students to continue with their education. In consultation with Coach Moss and area high schools, we expect to have a robust cohort of students for the next 2012 Summer Institute.

In the past year, PTC has entered into an articulation agreement with UA- Fayetteville with the goal of providing direct transfer opportunities to the College of Engineering. Additionally, ARK-LSAMP members, UA, UAPB, UALR, and ASU – Jonesboro are members of the advisory committee for the Division of Mathematics, Natural and Social Sciences. For this year, we will continue the work of developing further specific articulation agreements in the STEM disciplines and provide transfer guidelines for students. This is another area where the ARK – LSAMP alliance has provided a constructive forum to advance STEM fields in Arkansas.

Southeast Arkansas College

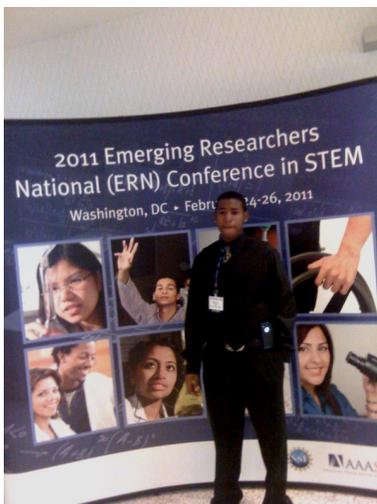
Southeast Arkansas College ARK-LSAMP has changed the lives of eight STEM Scholars since its inception. To date, five scholars have obtained degrees at Southeast Arkansas College and three are currently enrolled at an Arkansas college or university for advanced degrees. One graduated in May 2011 with a bachelor's degree from the University of Arkansas at Fort Smith and is employed in his area of studies. The SEARK College program has had at least four associate STEM Scholars over the years.

The SEARK College STEM Club has been able to maintain its existence with an active group of STEM Scholars from Cohorts I, II & III. The Scholars have participated in college events, as well as community service activities. On campus, the STEM Scholars participated in Fabulous Friday (see below), when local high school students visit and tour the College's campus. ARK-LSAMP was able to set up an exhibit table to display its activities and provide information about the program. This event has been an effective tool in recruiting new scholars; in fact two of the past scholars were recruited during this event.

The STEM Scholars participated in several community service activities, including a Thanksgiving basket for a needy family, career clothes donation to a nonprofit organization and a "Don't Drink and Drive" campaign for the holidays. The students have also been able to attend campus lecture series that address issues from time management to resume writing. In February, two STEM Scholars and the coordinator were able to attend the Emerging Researchers National Conference in Washington, D.C. It was a great opportunity to attend the workshops, listen to their fellow peers present their exhibits, and network.

The staff for the SEARK College ARK-LSAMP includes Mr. Sam Domineck, Dr. Kaleybra M. Morehead and Ms. Jennifer Woodmansee. Mr. Domineck is SEARK College's ARK-LSAMP Program Data Analyst. He also serves the College as a Financial Aid Officer. Dr. Kaleybra M. Morehead is also Vice President for College Affairs/Advancement. The Office of College Affairs' charge includes retaining and recruiting students, college and community relations, public information and marketing, and development. Ms. Jennifer Woodmansee, Administrative Specialist for College Affairs, while not employed by the program, is often the first contact for many prospective students and scholars for the College's ARK-LSAMP.

SEARK College ARK-LSAMP expected outcomes are that of recruiting and encouraging an increasing number of minority students to enroll in STEM Programs at Southeast Arkansas College and to pursue advance degrees, hopefully at institutions that support LSAMP.



Mr. Roderick Hill at the Emerging Researchers National (ERN) Conference in STEM.



SEARK ARK-LSAMP STEM Program's Fabulous Friday.

University of Arkansas

The College of Engineering employs a full-time Director for Engineering Recruitment. The director is responsible for day to day operation of the engineering Welcome Center, engineering recruitment office, the mail/call center and campus visits by prospective students and their parents. The recruitment office is staffed by engineering students (upperclassmen) who travel to high school events and classrooms across the country. The recruitment office is also charged with recruiting underrepresented minority (URM) students for all diversity programs in the College of Engineering (ECAP, ARK-LSAMP and Women in Engineering). The strategies used are: high school classroom presentations, career fairs, direct mailings, telephone calls and university admissions database. By utilizing these strategies, the College of Engineering has experienced a 78% increase in URM freshman (Fall 2006 vs. Fall 2010); while experiencing a 39% increase of URM in the undergraduate student body for the same time frame.

There are currently 31 students in the UA program. This represents a 65% retention rate for returning students in Cohort I through III. The average UA grade point for the current students in Cohort I through III is 2.78. Listed below are activities designed to help ARK-LSAMP students academically.

The University of Arkansas ARK-LSAMP students participated in the following activities to improve their academic abilities and classroom interaction: Chemistry Boot Camp/Supplemental Instruction (SI) with a weekly review session for chemistry; Calculus Boot Camp/SI for weekly review sessions for calculus; chips, queso and calculus for mid-term review sessions for calculus with all you can eat chips and queso; and a Brownies with Brewer session for a mid-term review session in chemistry with Dr. Brewer and all you can eat brownies. Additional events directed toward retention included dinner and a meeting for a monthly dinner held at local restaurants with invited guest from the university and professional community. Guests have included: Dr. Calvin Mackey – engineer and acclaimed motivational speaker; Dr. Marcus Huggins – engineer and rep for the National GEM Consortium; Ken Vickers – Director, Micro Electronics and Photonic Center & Graduate Program; TA Walton – Director, National Center for Reliable Electric Power Transmission; Al Ashley – President, Arkansas Mentoring & Networking Association. The mentoring meetings included weekly individual meetings with the ARK-LSAMP coordinator.

During the 2010 – 2011 academic year, three UA ARK-LSAMP students participated in research under Dr. Julie Carrier in biological engineering. The research project was entitled, “Saccharification of Sweetgum: Effect of Agitation During Dilute Acid Pretreatment”. The students that conducted the research were Andrea Banks – senior, biological engineering, Rakiya Tasiu – senior, biological engineering and LaCrea Wilson – senior, biological engineering. The students presented their research at the 2011 ARK-LSAMP Spring Research Conference in Little Rock, AR.



(r to l, Andrea, LaCrea and Rakiya presenting at the ARK-LSAMP Conference)

During the 2011 summer term, an additional three UA ARK-LSAMP students participated in summer research and internships: Cornell Cornelius – senior, computer engineering (Pulaski Technical College transfer), Philip States – junior, civil engineering (CVEG), and Nehemiah Stephens – senior, mechanical engineering.

Working with KML Files and Google Maps API

Cornell Cornelius worked under Dr. Dharmendra Saraswat with the UA Cooperative Extension Service in Little Rock, AR.



Cornell working in the computer lab.

The Effect That Crack Mouth Opening Displacement (C.M.O.D.) has on Hot-Mix Asphalt to Resist Fracture Energy

Philip States worked under Dr. Andrew Braham in the UA Civil Engineering Department as part of the George Washington Carver REU program.



HD Enhanced CT Scanner GSI Image Verification Testing Update

Nehemiah Stephens worked in Milwaukee, WI as a summer research intern with GE Healthcare Systems.



(Nehemiah Stephens at GE Healthcare intern presentation)

With the addition of the 2011 Cohort (10 students), our goal is to increase the retention of currently enrolled ARK-LSAMP students to 70%. We are also aggressively working with cohort 3 to raise their average GPA through success workshops, tutorial services, and financial support to reduce the need to work vs. time dedicated to study.

UA's ARK-LSAMP STAFF

UA students are supported by the College of Engineering and coordinated by Thomas Carter, III "TC" – Assistant Dean for Engineering Academic & Student Affairs. The office is located in the Bell Engineering Center, Student Records Office and staffed by Hannah Johnson – Administrative Assistant.



(TC and Hannah in Bell 3189)

University of Arkansas at Little Rock

Science and technology are prime drivers of economic development but too few students, especially those from underrepresented groups, are choosing training and careers in those fields. The Arkansas LSAMP program will help the economy of Arkansas by promoting STEM careers to underrepresented groups in Arkansas and by providing academic support to the participants in the program.

The UALR LSAMP Program began in 2008, along with the other Arkansas LSAMP programs. We are now interacting with our fourth cohort of students. All of our policies and programs are designed to promote success by our participants. In the three years since then, the UALR LSAMP Program has developed recruiting mechanisms; recruited participants; provided careful academic advising for all participants; promoted internships and research experiences for the participants; developed a website for the program; organized workshops, field trips, and social activities; informed participants of seminars and volunteer opportunities; developed a freshmen experience course to support the students; secured space, furniture, and computers for a student lounge; and developed informal, cooperative relationships with other campus programs.

Recruitment for the first three cohorts was a two-step process. First, the Office of Admission and Financial Aid sent us lists of UALR applicants who were interested in STEM majors. We then wrote letters inviting them to apply directly to our office; students who applied in the spring attended the Summer Institute in the following summer. Secondly, we recruited from freshmen STEM classes; these students were admitted into the program but did not participate in a summer institute. In the past year, (recruitment for the fourth cohort) we joined forces with the Office of Admissions and Recruitment. We developed a common scholarship application form and jointly discussed each applicant who met ACT and GPA requirements for a variety of scholarship programs (though not LSAMP). This process was very useful in helping us identify likely candidates and the cohort entering in Fall 2011 is larger and has better academic credentials than those of previous years. Our website (ualr.edu/lsamp) also is helping to advertise the program.

Five students were recruited to the first cohort of LSAMP at UALR in the fall of 2008. Of these five, one is entering her senior year, one transferred to another university with an LSAMP program, one dropped out of UALR, and one has just returned to UALR after a health-related leave of absence. In the second year of the program, we recruited 13 participants. Six of these participants are still majoring in STEM fields; four are enrolled at UALR but no longer majoring in a STEM field; and three are not currently in school. We recruited ten students in the fall of 2010. Seven of these students are enrolled in STEM majors at UALR; two students are still at UALR but changed to a non-STEM major; and one student dropped out of UALR. We recruited 14 participants for the fall of 2011. Thus, we now have 30 participants in the program.

Most freshmen enjoy more success if they connect to peers and faculty immediately after their arrival on campus—hence the national rise in freshmen experience courses. We developed and teach a freshmen-experience course (“Science Skills”) for students majoring within the College of Science and Mathematics. This course teaches computer, writing, speaking, statistical, and science-literacy skills. It also allows students to broaden their knowledge of science in general and research at UALR in particular—an eye-opening approach that is beneficial to young students who have limited views on potential careers in STEM. Furthermore, it provides continued opportunity for community building within the LSAMP Program.

In addition, student success is enhanced with individualized attention, such as one-on-one specialized advising. Drs. Lanza and Winter jointly advise each of the participants every semester as they plan their schedule for the next semester. Students majoring in Biology and Chemistry get the most detailed advising because Lanza and Winter know those fields and departments best, but even students in engineering and information science benefit from the advising sessions. Topics are not limited to course selection, but also include discussion of appropriate scholarship requirements and opportunities, finding research and internship positions, and securing tutoring help from departments and from Student Support Services.

Becoming a STEM professional requires experience beyond the classroom. To this end, each year we have sponsored workshops emphasizing the benefits of research and internships, providing information on finding such experiences, and giving tips on writing resumes and letters of application. Not as many students as we would like have taken advantage of these opportunities, but we are continuing to encourage such experiences and feel that experienced participants will persuade others to apply in the future. In April 2011, we hosted a speaker from the Student Conservation Association who provided information about paid internships; one of our students received an internship with the US Fish and Wildlife Service as a result of this session and plans to seek employment with that agency after graduation. To date, 10 students have been involved in summer internships or research experiences.

Exposure to professionals outside of UALR also contributes to professional development in participants. One of our approaches is to sponsor field trips. Field trips have included visits to the Arkansas Crime Lab, Riddle's Elephant Sanctuary, UALR's Nanotechnology Center, and the Biochemistry Department of the University of Arkansas for Medical Sciences. We also inform students of seminars sponsored by departments in the two colleges at UALR hosting STEM majors (College of Science and Mathematics and College of Engineering and Information Technology) as well as appropriate ones sponsored by groups like the Clinton School of Public Service, Philander Smith College, and the Arkansas Green Building Council. We disseminate information on centers for volunteer opportunities—e.g., providing tutoring services to local schools, helping judge science fairs, and serving as a mentor with the Girls of Promise career day.

The student lounge in Fribourgh Hall room 215 is our major physical development for the program. Students are able to use a dedicated study and social area to complete assignments and projects. The student area is 450 square feet in size, with a conference table, desk space, a kitchenette, a library, and computer terminal area with four computer terminals.

We continue team building with the participants with social activities. As our first activity of each year, we invite all participants and their families to a picnic at a Little Rock park along the Arkansas River. Students have organized an annual "Thanksgiving Feast"—Drs. Lanza and Winter provided turkey and ham, while the participants brought and shared appetizers, vegetables, and desserts. In addition, we host "Pizza Fridays," Earth Day picnics, and celebrations for Charles Darwin's birthday.

An important aspect of our program is the connection we have formed to the University Science Scholars Program (USSP), an NSF-funded scholarship and enrichment program directed by Drs. Lanza and Winter. The purpose of this program is to support, academically and financially, talented and needy students majoring in biology, chemistry, or geology. LSAMP students who major in biology, chemistry or geology can participate in both programs; 12 students are currently in both programs. Our goal is that LSAMP students who do not qualify as freshmen for USSP achieve high enough grades at UALR that we can admit them to USSP. The two biggest advantages of being in USSP is that larger scholarships are available and that this is an avenue of funding for sophomores-seniors to continue their STEM enrichment activities.

UALR's STAFF INTRODUCTIONS

Three UALR staff members direct the day-to-day operations of the UALR LSAMP Program but have assistance from many other staff at UALR.



Dr. Janet Lanza

Drs. Janet Lanza and Jim Winter act as co-directors of the project. Dr. Lanza holds a Ph.D. from the University of Connecticut and Dr. Winter holds a Ph.D. from the University of Minnesota. Their activities include recruiting and selecting participants, academically advising participants, teaching a experience course (Science Skills) to the participants, planning and conducting field trips, workshops, and social activities.



Dr. Jim Winter



Mrs. Erica West joined the UALR LSAMP staff in the summer of 2011 as a Student Development Specialist. She has a Bachelor's degree from UALR and is currently working on her Master's degree in College Student Affairs. Her duties include helping students solve bureaucratic problems, awarding scholarships, organizing statistical reports, attending campus recruitment events, participating in student-related campus activities, and maintaining files and correspondence.

Dr. Michael Gealt, Dean of the College of Science and Mathematics, is the signature authority of UALR's LSAMP Program. He is a member of the ARK-LSAMP External Advisory Board. He helps plan strategies and tactics, interfaces with upper-level UALR administration when necessary. Staff in Dr. Gealt's office help as needed.

Other campus staff help the UALR LSAMP program run smoothly. Mr. Vernard Henley, Director of Recruitment and Outreach for the Donaghey College of Engineering and Information Technology, helps identify and mentor LSAMP participants majoring in the College of Engineering and Information Technology. Dr. Logan Hampton, Interim Division Chief for Student Development/Dean of Students, and Nick Steele, Assistant Director for Admission, direct the Chancellor's Leadership Corps and cooperate with us to keep the students who are part of both programs stay on track.

Data

Students in the UALR LSAMP Program have largely been retained in STEM majors—16 of the 28 students in the first three cohorts continue to have STEM majors. They are on track with course completion and should graduate on time. Furthermore, the GPAs of the first three cohorts average to 3.43, an exceptional achievement.

Goals

The overall goal of the Arkansas LSAMP Program is to increase the graduation rate of underrepresented groups in STEM majors.

The UALR LSAMP Program aims to provide enough mentoring and academic support that participants will:

- be academically successful
- continue in a STEM major
- find and complete internships and research experiences that help them solidify their career goals.

The methods of the UALR LSAMP Program include:

- Provide high-quality and one-on-one academic advising
- Expose participants to STEM professionals both at UALR and other institutions
- Develop peer-to-peer connections so that participants help and encourage each other

UALR's Scholars Putting Research to Work!!



(above) James Houston--Jet engine heat transfer



(below) Markeita Gentry--Developing a Fruit Nutrition Information System for Promoting the Improvement of Community Health



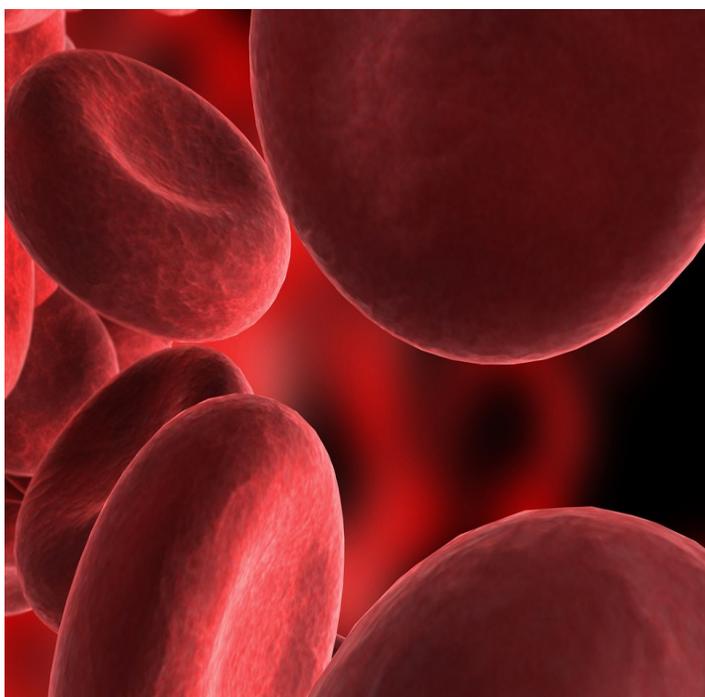
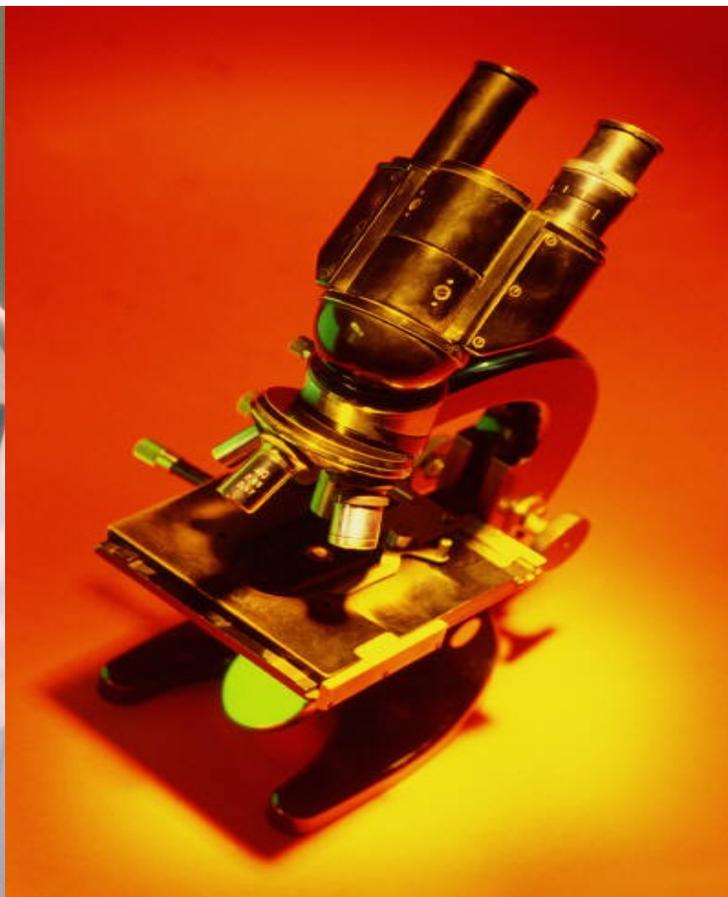
(above) Ruddle Allen--Abundance of insects and arachnids in Frego Bract vs. Arkot 9608 cotton plots



***UALR's Scholars Putting Research to Work!!
(continued)***



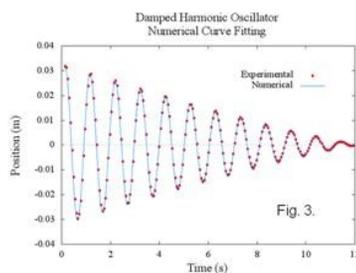
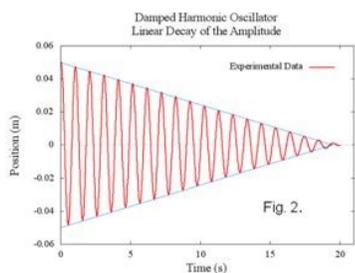
(above) Bukola Odeniyi- Checking out a specimen



(above) Dolapo Odeniyi- Using caspase inhibitors to reverse cell apoptosis

University of Arkansas at Monticello

The UAM ARK-LSAMP program began in 2008 with 5 participants selected from students already accepted for the fall term who met the minimum requirements for participation. The two students who continued, Jaime Garcia and Joseph Grant, had excellent GPAs and participated in a freshman research project during Spring Semester, 2009. They presented their research as separate posters at the ARK-LSAMP Spring Conference, April, 2009. Jaime, a mathematics major, has continued his student research at UAM with Dr. Juan Serna and also did a summer internship during 2011 at Arkansas State University. He has presented his research at the ARK-LSAMP conferences in 2010 and 2011 and at the national Sigma Zeta meeting in 2011. He is planning to graduate after the current semester (Fall, 2011) and is looking for possible graduate schools, including those that have Bridge to the Doctorate programs.



Jaime Garcia (mathematics) presenting his poster “Numerical Approximations to Linear and Nonlinear Oscillatory Systems Subject to Damping Forces” at the 2010 ARK-LSAMP conference, along with some of his results showing experiments results and their fit to mathematical models that he helped derive.

Cohort II (Fall 2009) consisted of three participants. These students had higher qualifications than the minimum for the ARK-LSAMP program. Elia Garcia (biology major), Alexandria Bridges (mathematics major) and Elatisha Bush (biology major) all were successful in their first semester and continued into a new course, “Research Experience for ARK-LSAMP Students” that provided background information and exercises on scientific research and laboratory participation in a DNA sequencing project. They presented a joint poster on their sequencing project at the ARK-LSAMP spring meeting in 2010. Alexandria Bridges and Elia Garcia continued in the ARK-LSAMP program and Elia continued her research work with Dr. Karen Fawley and Dr. Marvin Fawley, presenting a second poster at the ARK-LSAMP spring meeting in 2011. Elia also participated in a summer research experience at Arkansas State University in 2011.



Elia Garcia (biology) and Alexandria Bridges (mathematics) present their research “Evidence for heterogeneity in the nuclear ribosomal internal transcribed spacer region of some *Carex* species (sedges)” at the spring ARK-LSAMP conference.

Cohort III (Fall 2010) comprised four student participants, all with ACT scores of 22 or greater. The three remaining participants of Cohort III are Kylene Criner (computer information systems major), LaTarnesha Jacobs (biology major) and Esgar Jimenez (chemistry major). In addition to the standard participants, we added two nontraditional students to the program using UAM scholarship money to support their participation. These two students, Anabel De la Cruz (mathematics major) and Darren White (biology major) participated along with the Cohort III students in the spring research course and together they presented the results of their DNA sequencing project at the spring ARK-LSAMP conference in 2011. Darren White was able to participate in summer research at Arkansas State University. All of these students are currently seeking mentors for continued research. This fall (2011), we have six new freshmen who make up Cohort IV. Once again, the minimum ACT score for the group is 22. We are looking forward to good things from this group!

At UAM, we seek to encourage research and scholarship among our participants through a number of mechanisms. The research course for first-year participants, "Research Experience for ARK-LSAMP Students," has provided a solid introduction to research for all of our students. Every participant who has completed the course has presented her/his results as a poster at the ARK-LSAMP spring meeting. This means that all of our participants have presented at a meeting by the end of their first year in the program. Every fall the entire ARK-LSAMP group attends the Arkansas INBRE meeting in Fayetteville, Arkansas. The students experience research presentations by faculty and students and take tours of facilities at the University of Arkansas, including a private tour of the DNA sequencing facility. This can be quite an experience for some of the students who have never before been to Fayetteville or experienced a research university. Scholarship is encouraged through group study times, small group mentoring, and rigorous expectations. Students also learn the basics of resume building and preparation, application to internships and graduate schools, and the expectations of graduate schools and careers in research. Our faculty tell us that they have seen the difference that ARK-LSAMP has made in our students.

UAM'S ARK-LSAMP STAFF



Dr. Marvin Fawley is the UAM campus coordinator for the ARK-LSAMP project. Dr. Fawley is Assistant Dean for Science and Research in the School of Mathematical and Natural Sciences. He holds the rank of Associate Professor. Dr. Fawley has research interests in molecular evolution and psychology, particularly the evolution, diversity and taxonomy of algae.



Ms. Leslie Lowery began her new duties as a data analyst in August, 2011. Ms. Lowery is a 2006 graduate of the University of Arkansas at Monticello with a degree in Business Administration – Management. She has been the Administrative Specialist II with the UAM School of Mathematical and Natural Sciences for the past four years.

The UAM ARK-LSAMP program got off to a rather slow start, with several students in Cohort I who were not well prepared for STEM studies. However, with extensive recruiting efforts in subsequent years, we have greatly increased our retention rate and the overall GPA of our group. We expect this trend to continue with our Cohort IV group and into our Cohort V as well. We also see encouraging results, with students excited about summer internships and shifting their interests, essentially aiming higher than they did when they were incoming freshmen. We expect to graduate our first ARK-LSAMP participant this year. Jaime Garcia entered the program as a freshman in 2008. He expects to graduate, probably this fall, with a degree in mathematics. By the time he graduates, he will have at least four research presentations at meetings, a summer internship at UAM, and an off-campus summer internship on his resume. These are the results that we expect from our ARK-LSAMP students at UAM.

University of Arkansas at Pine Bluff

Lead Institution

The University of Arkansas at Pine Bluff (UAPB) as the lead institution has coordinated with seven Arkansas Colleges/Universities to ensure the delivery of a core set of STEM Enrichment activities to help increase the number of well-prepared STEM students and graduates on each campus. The core activities (i.e., Guest Lecturers, participation in the Pre-First Year Summer Institute, external internships) are being offered in addition to campus innovations such as specialized courses (Science Skills—University of Arkansas at Little Rock; Research Experience for ARK-LSAMP students—University of Arkansas at Monticello) and student outreach activities show Alliance campus variation. Through teleconferences, e-mails and telephone calls along with at least two Governing Board and Coordinating Council Meetings per year, (attended by the external evaluator who shares evaluative data), the ARK-LSAMP team remains informed and committed. Also, a very energizing and synthesizing component is the Annual Spring Research Conference. The conference brings together the campus leadership and ARK-LSAMP students for 1 1/2 days of instruction through poster presentations, sharing a guest lecture experience, networking and bonding among the diverse campuses, and a Governing Board and Coordinating Council Meeting.



Dr. Akbar Aghajanian-Saba, Arkansas Louis Stokes Alliance for Minority Participation STEM Scholars External Program Evaluator, reports to ARK-LSAMP Leadership during the 2011 Annual Spring Research Conference.

Dr. Sederick Rice, special guest lecturer for the 2011 Annual Spring Research Conference held in Little Rock, AR used examples from his book on “4 Tubas, a Guitar and a Gallery of Cheerleaders”. Dr. Rice emphasized the importance of mentors on the journey to the PhD.



UAPB Campus Profile

Currently, there are forty-seven (47) UAPB ARK-LSAMP participants on the campus. The UAPB STEM Scholars Academy consists of the Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP) and ARK-LSAMP. All scholars are engaged in weekly meetings. Guest lecturers and research experience/internship providers are presented on a monthly basis. Methods are in place to help provide early assistance to students who may struggle with courses. Program staff directly help students as a first step when problems are discovered with courses. Four week progress reports are given to students to have instructors made aware of the hours for tutoring in biology, chemistry, mathematics, and physics and have access to all academic tutorial labs. Additionally, ARK-LSAMP students are engaged in professional meetings, field trips and travel to graduate schools as a part of their STEM enrichment process.



Students from the UAPB STEM Scholars Academy and UALR ARK-LSAMP attended the Annual Biomedical Career Day at the University of Arkansas for Medical Sciences with Dr. Anissa E. Buckner.



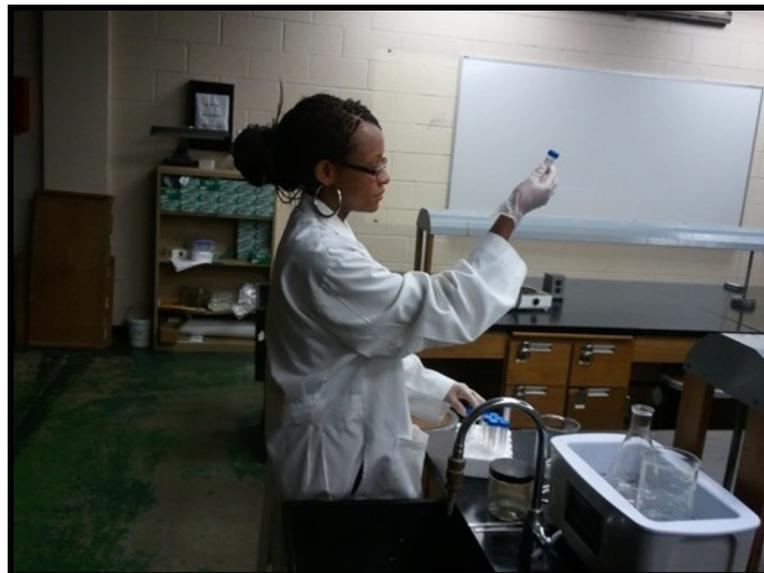
In February 2011, six (6) STEM Scholars represented the University of Arkansas at Pine Bluff at the National Conference on Higher Education. They are the following: Ms. Yulanda Riley, UAPB Career Services Coordinator, Dr. Anissa Buckner, chair, Biology Department and project director ARK-LSAMP, Jamaal Phillips, junior Industrial Technology major, Keisha Cawley, junior Biology major; Kierra Smith, senior Computer Science major; Ashley Rich, junior Biology major; Courtney Mazique, sophomore Chemistry major and Kendra McCraney, sophomore Chemistry major.



In February 2011, eight (8) STEM Scholars represented the University of Arkansas at Pine Bluff at the Emerging Researchers National (ERN) Conference in STEM in Washington, D.C. Adrienne Hatchett, Whitney LaGrone, Keisharra Eldridge, Courtney Carroll, Danny Burl, II, Brennon Luster, Brian Holmes and Michael Holmes attended the conference. Two (2) of the students, Adrienne Hatchett and Danny Burl are ARK-LSAMP participants and the other six (6) students are HBCU-UP participants. Drs. Mary E. Benjamin, Anissa E. Buckner and Antonie Rice (HBCU-UP project manager) also attended this conference.



Dr. John Hall, Nobel Laureate, and world renowned physicist, visited the UAPB campus in Spring 2011. He presented a research talk entitled *“Space Experiment to Test Einstein’s Assumptions about Space, Time and the Speed of Light”*. He and his wife Lindy shared a luncheon with the ARK-LSAMP students and STEM Faculty. They held an open forum with students.



Ms. Ashley Rich conducted research with Dr. Julie Carrier and Kris Bunnell in the Biological and Agricultural Engineering lab at the University of Arkansas in Summer 2011. Her research focused on extracting hemicellulose from switchgrass for a more cost efficient way of producing biofuels.

Ms. Keisha Cawley conducted research with Dr. Muthasamy Manoharan at the University of Arkansas at Pine Bluff in plant biotechnology.



The UAPB STEM Academy has outgrown its current ~1200 square feet of office space. In a continuous, integrated effort, the ARK-LSAMP lead office, HBCU-UP project staff and the U.S. Department of Education project staff collaborated with the Vice-Chancellor for Academic Affairs and Chancellor Lawrence A. Davis, Jr. to gain permission from the University of Arkansas System President to begin construction on a \$5.9 million UAPB STEM Academy Conference Center. This new building request results from the expansion of STEM enrichment activities which now exceed the current space for student use, program administration and STEM student preparation. Through a U.S. Department of Education grant and through Title III, \$4.7 million has been identified for the facility.

In the summer of 2011, **Mr. Jamaal Phillips** had the opportunity to intern with Tyson Foods in Dawson, GA at the South Georgia Location. The main focus of the internship was to learn the chicken business and the processing of the chicken from the egg to the final product. He worked in four different locations including: live production in Oglethorpe, GA; processing plants in Vienna, GA; Buena Vista, GA; and the processing plant located in Dawson, GA. He learned the functions of each of the plants and how the chicken is developed, properly killed, cut-up, and processed into the food that is available to the customer. He also learned the 14 management principles of the Toyota Way and was able to see how those principles are integrated into the work done at the plants to make South Georgia so successful!



Ms. Phillisia K. Sims is currently a senior at the University of Arkansas at Pine Bluff majoring in chemistry. In summer 2011, she participated in a research experience at the United States Embassy in Paramaribo, Suriname. She was assigned the position as a Health Research Specialist where she conducted several water testing experiments. She tested for several different pesticides that could be a health hazard in the water system in Suriname. She was able to enter some of the homes of local citizens of Suriname to conduct research.

ECONOMIC IMPACT

Economic Impacts of Arkansas Louis Stokes Alliance for Minority Participation

Value Added=Labor
Income+Other Property
Income+Indirect Business
Taxes

Labor Income=Employee
Compensation+Proprietor's
Income

ALSA under Stem	Direct Impact	Indirect Impact	Induced Impacts	Annual Total Impacts
Output Value	\$ 3,500,000	\$ 124,012	\$ 1,585,993	\$ 5,210,005
Employment	50	1	16	67
Value Added	\$ 2,721,681	\$ 59,370	\$ 854,134	\$ 3,635,185
Labor Income	\$ 2,401,861	\$ 35,594	\$ 470,365	\$ 2,907,820
Employee Compensation	\$ 2,384,712	\$ 28,899	\$ 415,053	\$ 2,828,664
Proprietor's Income	\$ 17,149	\$ 6,695	\$ 55,312	\$ 79,156
Other Property Type Income	\$ 304,250	\$ 19,131	\$ 289,762	\$ 613,143
Indirect Business Taxes	\$ 15,570	\$ 4,646	\$ 94,006	\$ 114,222

Estimated based on 2007
Arkansas Data

Estimated by the IMPLAN
Model and Data set built by
University of Minnesota

68% of project money (\$3.5
M) is assumed to be paid by
employee's compensation

EMPLOYMENT

One job was created in the lead alliance office for a Research Project Analyst.

STUDENT IMPACT

Cohorts I, II and III by Race by Gender By STEM Major

Count of GENDER Row Labels	Column Labels				
	Cohort I	Cohort II	Cohort III	Grand Total	
Black		36	59	56	151
Female		20	29	23	72
Biology		10	16	10	36
Chemistry		2	5	5	12
Computer Science		3	3	1	7
Engineering		4	3	3	10
Mathematics		1	2		3
Physics				1	1
Undeclared				3	3
Male		16	30	33	79
Biology		1	6	5	12
Chemistry		1	3	4	8
Computer Science		4	9	7	20
Engineering		6	11	12	29
Mathematics		3	1		4
Physics		1		1	2
Undeclared				4	4
Hispanic		4	3	5	12
Female		1	1	1	3
Biology		1	1		2
Mathematics				1	1
Male		3	2	4	9
Biology			1	1	2
Biology and Chemistry				1	1
Computer Science		1			1
Engineering		1	1	1	3
Mathematics		1			1
Undeclared				1	1
Native American			1		1
Female			1		1
Engineering			1		1
Unknown			2	1	3
Female				1	1
Biology				1	1
Male			2		2
Engineering			2		2
Grand Total		40	65	62	167

Student Impact

(CONTINUED)

Institution	Revised Cohort I	# Retained After 1st	% Retained	# Retained After 2nd	% Retained After 2nd	Comments
ASUJ	6	5	83.3%	6	100.0%	*One Student Retained through National Student Exchange
PSC	12	3	25.0%	0	0.0%	
PTC	1	0	0.0%	0	0.0%	
SEARK	5	2	40.0%	3	60.0%	*One Student Retained as Transfer to ASUJ AY 2010-11
UAF	12	8	66.7%	8	66.7%	
UALR	5	4	80.0%	2	40.0%	
UAM	4	1	25.0%	1	25.0%	
UAPB	16	13	81.3%	13	81.3%	
TOTAL	61	36	59.0%	33	54.1%	

Institution	Cohort II 2009-10	# Retained After 1st Year		Cohort III 2010-11	Transfers Between ARK-LSAMP	
		# Retained	% Retained		Cohort III 2010-11	Cohort III 2010-11 Total
ASUJ	7	4	57.1%	9	1	10
PSC	9	2	22.2%	6		6
PTC	5	1	20.0%	4		4
SEARK	1	0	0.0%	2	-1	1
UAF	12	5	41.7%	8	1	9
UALR	13	10	76.9%	10		10
UAM	3	2	66.7%	5		5
UAPB	15	11	73.3%	15	-1	14
TOTAL	65	35	53.8%	59	0	59

Institution	Total Cohorts I, II & III	# Graduates	Transfers Between ARK-LSAMP Institutions	Total Participants	# Retained beginning of Fall 2010 Semester	% Retained	# Retained as of beginning of Spring 2011 Semester	% Retained
ASUJ	22		1	23	20	87.0%	20	87.0%
PSC	27			27	8	29.6%	7	25.9%
PTC	10	1		9	5	55.6%	4	44.4%
SEARK	8		-1	7	4	57.1%	4	57.1%
UAF	32		1	33	22	66.7%	22	66.7%
UALR	28			28	22	78.6%	22	78.6%
UAM	12			12	9	75.0%	8	66.7%
UAPB	46		-1	45	38	84.4%	38	84.4%
TOTAL	185	1	0	184	128	69.6%	125	67.9%



Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) *Leadership*



Dr. Mary E. Benjamin
Principal Investigator
University of Arkansas at Pine Bluff



Dr. Charles R. Colen, Jr.
Co-Principal Investigator
University of Arkansas at Pine Bluff



**ARK-LSAMP Executive Board College
Chancellors and Presidents**



**ARK-LSAMP
Coordinating Council**



Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) *Coordinating Council*



Dr. Anissa E. Buckner
Project Director
University of Arkansas at Pine Bluff



K. D. Haywood-Withers, MBA
Research Project Analyst
University of Arkansas at Pine Bluff



Dr. Andrew Sustich
Arkansas State University



Dr. Frank James
Philander Smith College



Dr. Ben Rains
Pulaski Technical College



Dr. Kaleybra Morehead
Southeast Arkansas College



Mr. Thomas "T.C." Carter, III
University of Arkansas,
Fayetteville



Dr. Janet Lanza
University of Arkansas
at Little Rock



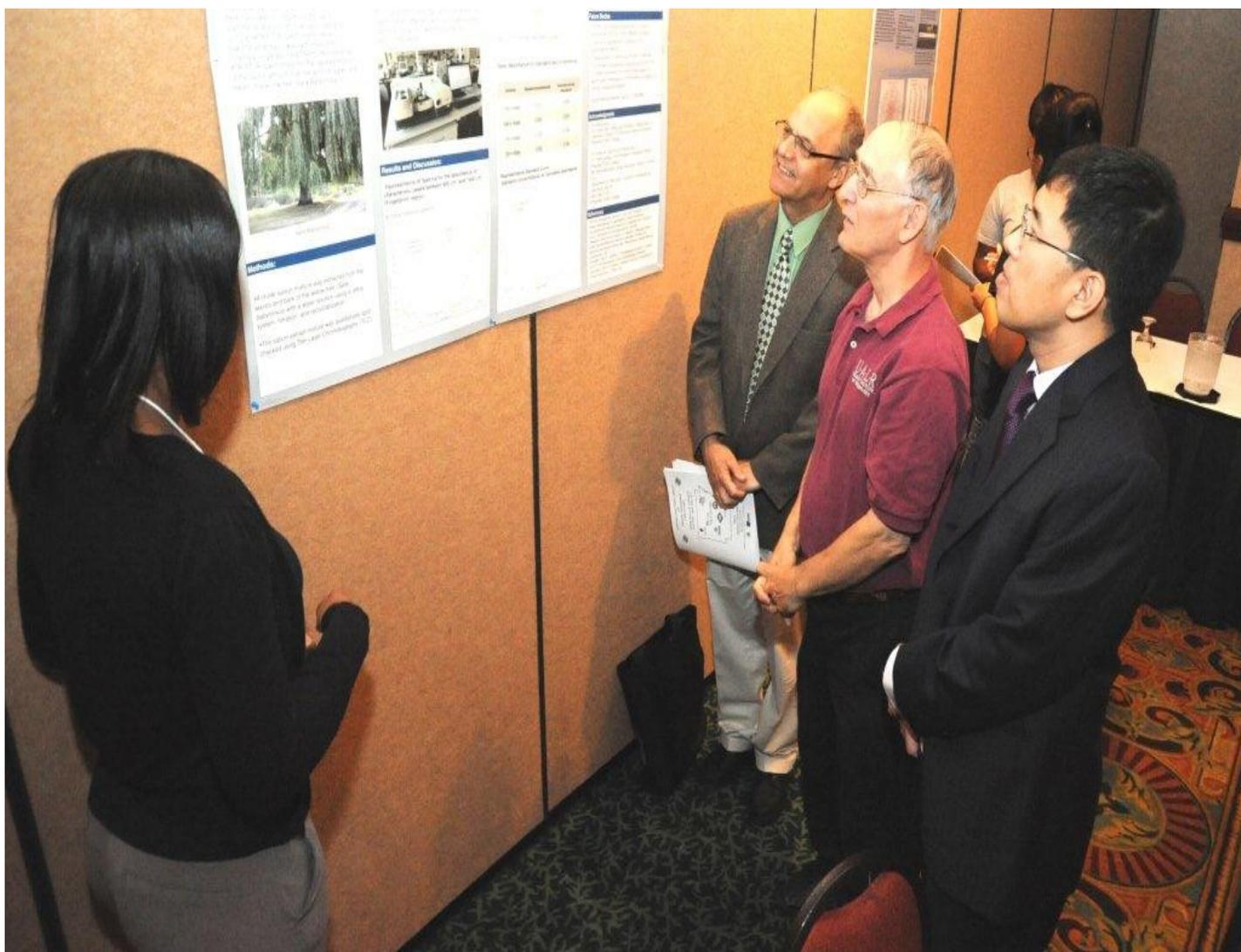
Dr. Jim Winter
University of Arkansas
at Little Rock



Dr. Marvin Fawley
University of Arkansas at
Monticello

ANNUAL RESEARCH SYMPOSIUM

The third ARK-LSAMP Spring Research Conference was held at the Embassy Suites Hotel in West Little Rock, AR on April 29-30, 2011. The ARK-LSAMP students benefit from interactions with Chancellors, Presidents and other administration officials of member institutions as well as ARK-LSAMP faculty and staff. Students were invited to do both oral and poster presentations over their summer research experiences. There were fifteen student poster presentations. The conference speaker was Dr. Sederick Rice from the University of Arkansas at Pine Bluff. The banquet speaker was Chancellor Lawrence A. Davis, Jr.-Chancellor of the University of Arkansas at Pine Bluff. Students also benefited from information given by Dr. Ellis Benjamin (Arkansas State University campus coordinator) on how to put together an effective research presentation.



Student presents her research and findings to (r to l, Dr. Frank I. Hahn, Dr. Jim Winter, and Dr. Saba)

EXPECTED OUTCOMES

Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) became operational in July 2008. Housed and managed at the University of Arkansas at Pine Bluff, the project has involved eight institutions, including two-year colleges and major PhD granting research universities in the state of Arkansas. This coalition of well qualified and diverse degree granting institutions has focused on the overall goal of increasing the number of underrepresented minority (URM) students earning baccalaureate degrees in science, technology, engineering and mathematics through measurable objectives and a set of well planned activities. The objectives were developed on basic principles of increasing the pool of URM students in STEM, supporting them for retention and graduation, and mentoring them to successfully enter graduate school and pursue a research career in STEM. ARK-LSAMP has created a strong collaborative environment for a set of geographically, demographically diverse institutions with different missions, to lead to synergic outcomes and efficiency increasing the number of URM students studying in an enriched academic and research environment to enter STEM graduate programs and careers.

Transparency, constant communication, and follow up have contributed to the development of a strong network of stakeholders in URM STEM development across the participating institutions. For the first time, faculty and administrators with a strong belief and interest in increasing the success of URM students in ARK-LSAMP have had a forum of communication, discussion, and learning from each other. While in the past, each institution may have had some activity with the hope of its impacts adding to the number of URM STEM graduates, this is the first time in the state of Arkansas all these activities and the interested parties have come together to share their experiences, frustration, and successful approaches. The main elements of this growing synergic collaboration have been a strong commitment to diffusion of information across stakeholders by regular face-to-face meetings, conference call meetings, advisory and evaluation meetings. We believe that generating and maintaining this dynamic forum is an important accomplishment.

An important by-product of the collaboration developed through ARK-LSAMP has been increasing the active involvement of the higher level administration of the participating institutions in the program. As the lead institution, the University of Arkansas at Pine Bluff has had firsthand experience from active involvement of the administrative leaders in effective delivery of their URM-STEM related development programs (e.g. HBCU-UP). Sharing these experiences and best practices has encouraged and increased the role of campus leaders in the participating institutions to follow up of the ARK-LSAMP activities and engagement with the URM student. This model of involvement of the higher administration who became stakeholders is growing and benefiting the overall implementation of the program.

The ARK-LSAMP collaboration and demonstration of increasing involvement of faculty and administrative leaders of the participating institutions has created recognition for the initiative by state agencies interested in and involved in development of the STEM workforce. Through this recognition we have been able to expand our community of support for the STEM initiative and receive other support for expansion of our activities. An example is the awarding by the Arkansas Science and Technology Authority of funding for stipends to sophomore-senior ARK-LSAMP students. The development of a strong communication for the program through press releases, web-based communications, and visits between the agencies and our participating institutions continues to expand our network of stakeholders outside of the participating institution. We think this is a major accomplishment and its component should be considered as best practices for other similar programs.

Among more specific accomplishments is our strong commitment to formative evaluation and attention to the effectiveness of the activities. While we have designed our activities based on the literature and logical models, we have installed and committed ourselves to formative evaluation and using the results of the formative

Expected Outcomes

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evaluation for making correction in our activities. This commitment has significantly improved the effectiveness of our activities leading to success in the attainment of related objectives.

A major specific accomplishment of the ARK-LSAMP has been establishing and expanding the Pre-First Year Summer Institute. This six-week, well planned summer program brings together up to 70 pre-freshman students admitted to the participating institutions for the fall. These participants share an interest in pursuing their degree in a STEM discipline.

During the six-week institute, the ARK-LSAMP students solidify their interest in STEM by sharing their ideas, interacting with STEM research and role models, and increasing their confidence in their pre-requisite knowledge for STEM by participating in learning activities and practice. About 210 pre-freshman students have participated in the Pre-First Year Summer Institute and then matriculated at the participating institutions. Pre- and Post-survey data from these participants have shown strong improvement in their pre-requisite STEM knowledge, motivation and desire to pursue a STEM degree and readiness for the first-time freshman experience. A great majority of the participants report that they have learned about this program from their counselors, STEM teachers at high school and other community members. These reports suggest the existence of a strong reputation and respect for this activity in the communities from which the students come. We consider the Pre-First Year Summer Institute a major accomplishment. The success of this activity has involved organized and advance planning, recruitment of support personnel with strong interest in promotion of the URM in STEM, and an established curriculum.

ARK-LSAMP has supported an Annual Spring Conference. This 1 1/2 day conference in April has brought together STEM students and faculty from the participating alliance institutions to share their research and interest together. During the last three years an annual average of 55 students and 22 faculty members from the participating institutions have attended the conference. The faculty presentations and the students' oral and poster presentations have been a great source of learning for the participating students. Freshman and sophomore participants in ARK-LSAMP have been exposed to role models and interacted with students and faculty from other institutions.

The Annual Spring Conference activity has become a popular event among the STEM students in the participating institutions, an event which gives them their first professional experience, access to knowledge about summer research and internship activities in other institutions, and opportunities to learn about graduate STEM programs from faculty in the participating research institutions. We believe the Annual Research Conference will have a lasting effect and continue as a self-sustained conference for STEM.

ARK-LSAMP has expanded to a Faculty- Mentor Student-Advocate (FM-SA) program, tested originally at the University of Arkansas in Pine Bluff, to other participating institutions. The foundation of this program is engaging freshman and sophomore STEM students through faculty mentorship and peer advocates. This program has helped the participating students learn ways to successfully navigate academic programs and procedures. Gradually, this program has increased the number of faculty members who get involved in mentoring students. In addition, the pool of peers among upper level classes who are interested in working with first-time freshmen in STEM is increasing. The level of this accomplishment varies across the participating institutions. However, the program is spreading across the STEM departments, particularly those which have become interested in diversifying their student body. We expect this initiative to grow as we continue with ARK-LSAMP.

Expected Outcomes

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A continuous flow of STEM rising sophomore and junior students attending summer research internships is considered very important for successful placement of the students in graduate school. The program has been working to build and expand this flow. However, most of the summer research experiences of the participating students have been within the research intensive institutions and laboratories in the State. We expect to increase the participation in out-of state research institutions through support from faculty-peer mentors by adding emphasis in the Summer Institute and the Annual Spring Conference, and through the Guest Lecture Series on each campus.

Our accomplishments with respect to increasing the pool of undergraduate STEM majors varied across the participating institutions. On average, we have increased the pool of the URM STEM majors for the participating institutions. Our objective has been to increase the pool by an average of 10 percent every year. We believe with the expansion of the recruiting model involving collaboration with recruitment offices, STEM URM alumni in the community, and URM STEM teachers, we will be able to attain our expected objective of recruitment.

Retention of the STEM first-time freshmen has increased to 80 percent at some institutions. Not all institutions have reached that level of retention for URM STEM first time freshman. This variation is partially related to the history, experience and preparation of different participating institutions for retaining URM students. As we implement the component and related activities of LSAMP across the institutions, we expect that our overall retention accomplishments to become more impressive.

As we start the fourth year of the program, we expect a significant increase in the number of students who graduate and enter STEM graduate programs. This is due to the increasing size of the cohort of the ARK-LSAMP participating students.

