

Advancing Interdisciplinary STEM Graduate Education in Energy and Sustainability Disciplines

Karen L. Butler-Purry, Ph.D., P.E.

*Associate Provost for Graduate and Professional Studies,
Professor of Electrical and Computer Engineering,
Texas A&M University – College Station, PI*

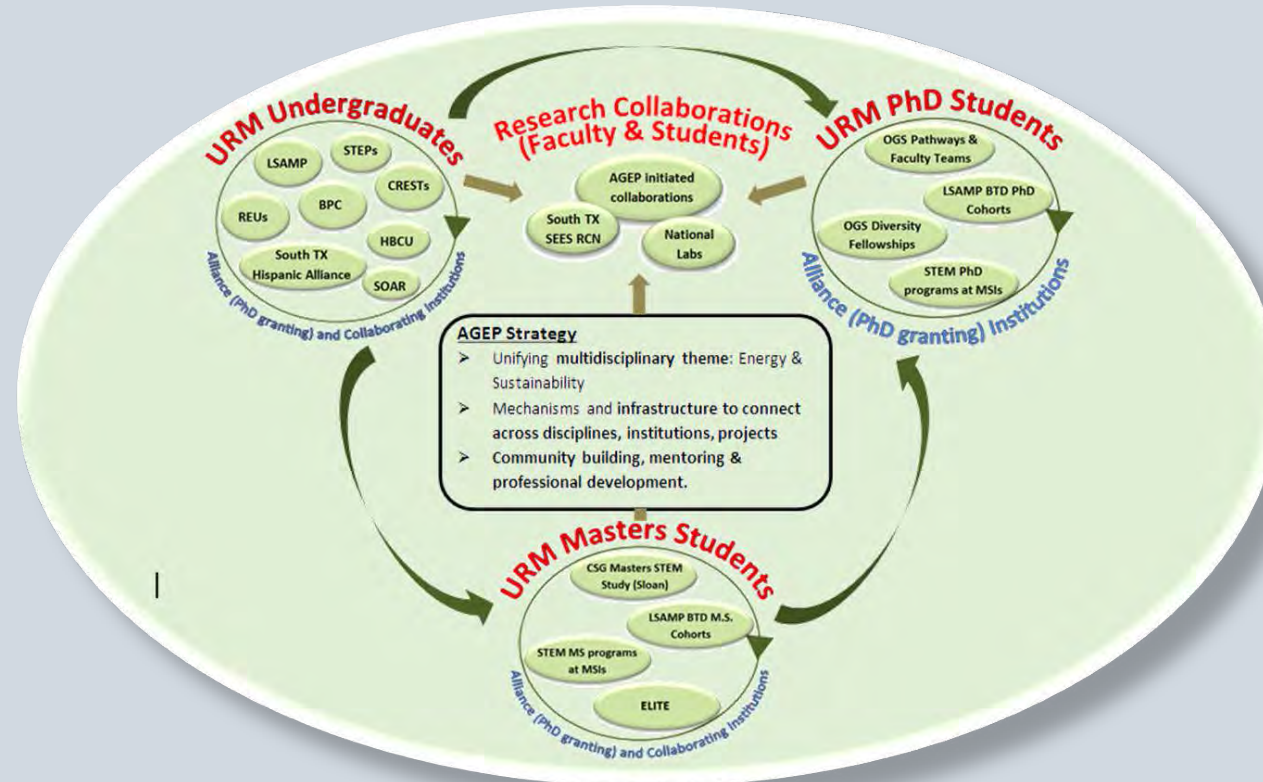
Council of Graduate Schools Annual Meeting
Washington DC
December 9th, 2017



Award #s: HRD/EHR-1308144, 1308163, 1308149, 1308080, 1308200



Develop and Institutionalize infrastructures and activities that connect students and faculty across existing programs





Project Objectives

Increase the number of underrepresented minorities (URMs) entering STEM doctoral degree programs at the AGEP Alliance PhD-granting institutions

Reduce the average time to degree for the TAMUS AGEP Alliance URM STEM doctoral students, and

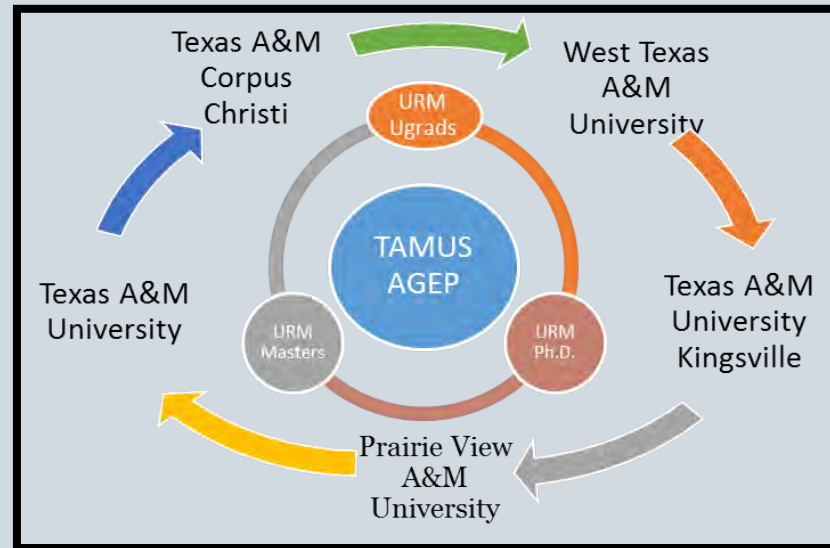
Provide the AGEP Alliance students with the preparation necessary to compete for faculty positions and *increase* the number of URMs transitioning from STEM PhD programs to faculty or competitive postdoctoral positions

*Foster TAMUS faculty research collaborations to support Alliance-wide collaborations with undergraduate, master's, and Ph.D. student researchers that will result in an **Increase** in the number of URM STEM doctoral research dissertations co-advised by faculty from at least 2 partner institutions*



Alliance and Collaborating Institutions

To support underrepresented minority students working to complete their doctorates in energy and sustainability and/or STEM related fields; subsequently transitioning to competitive postdoctoral and/or faculty positions.



With 6 additional collaborating institutions:

Texas A&M International University

Texas A&M – San Antonio

Texas A&M – Texarkana

Tarleton State University

Texas A&M Commerce

Texas A&M – Central Texas



Social Science Research -- Dr. Adrienne Carter-Sowell, Assistant Prof. of Psychology and Africana Studies

Research component focuses on empirical questions related to feelings of inclusion of URM STEM graduate students at each of the Alliance institutions in both experimental and applied settings.

Research explores answers to TWO questions:

1) What effect does experiencing isolation or ostracism have on the productivity and progress of URM STEM graduate students and their intentions to continue to the professoriate?

2) What factors (e.g., institutional, interpersonal, individual) promote or mediate against URM STEM students' experiencing feelings of isolation or ostracism?



Social Science Research – Early Findings

1. The more included the graduate student participants feel on their campuses, the more satisfaction they feel overall and with their designated departments
2. The more included the graduate student participants feel on their campuses, the less burnout and negative thinking occurs by the students
3. Perceived social inclusion by graduate student participants positively impacts scientific self-esteem of these students
4. Feeling out of the loop did not have a significant relationship with scientific self-efficacy of graduate student participants, however, scientific self-efficacy decreased as perceived experiences of chronic ostracism increased



TAMUS-AGEP has engaged a total of **117 URM graduate students** from across 42 STEM disciplines

- 26 TAMUS AGEP students from across the alliance have graduated (20 master's; 6 doctoral students).
- Six master's graduates transitioned into a STEM Ph.D. program
- Six Ph.D. Graduates - 2 in Academia (*Adjunct Professor and Tenure Track Assistant Professor*)



Major Accomplishments

- Created community and support for AGEP students at individual institutions and across Alliance institutions
 - Annual TAMUS AGEP conferences
 - Social media communications
- Provided academic support and professional development for AGEP students to complete degrees



Summer Fellowship & Research Funding Application Lab

- Partnered with the TAMUS LSAMP Bridge-to-Doctorate (BTD) program
- The workshop topics cover: application components, essential tips for writing strong and captivating personal statements, and elements identified that could weaken or strengthen an application
- Faculty mentor reviews and provides feedback on application materials until submittal

Students have been awarded fellowships, such as:

- Ford Foundation Dissertation Fellowship
- AAUW American Dissertation Fellowship
- NSF Graduate Research Fellowship





Writing Initiatives/Peer Writing Groups

- GOAL: to encourage students to write weekly and focus on master's/dissertation proposals, thesis/dissertations, and scholarly publications
- Students are paired up and serve as writing accountability partners. Support and assistance is provided from peers





TAMUS AGEP Research and Network Development Conferences

**1st Annual E&S AGEP
Conference (Spring 2014)**



April 26, 2014

**2nd Annual E&S AGEP
Conference (Fall 2014)**



November 21, 2014

**3rd Annual E&S AGEP
Conference (Fall 2015)**



October 22-23, 2015

Presented the necessary skills and preparation needed for doctoral students to compete for faculty positions and to provide master's students with skills needed to pursue a doctoral degree.



TAMUS AGEP Research and Network Development Conferences

4th Annual AGEP Conference (Fall 2016)
November 3-4, 2016 / Prairie View A&M University





AGEP Ambassadors

- Ambassadors support prospective, new, and current AGEP students by assisting at AGEP events and informing potential participants of AGEP opportunities in their respective department
- Total of **9 AGEP Ambassadors** over three years





Professional Development

- Offer programs, seminars, and workshops focused on training and professional development
- Collaborations with
 - TAMU Center for Teaching Excellence (CTE)
 - NSF funded – TAMU Center for Integration of Research, Teaching and Learning (TAMU@CIRTL)
 - West Texas A&M University Graduate School – Professional Skills Development Workshop Series
 - USDA Cultivar Career Preparation Institute
 - The Texas A&M University Sloan Program for Exemplary Mentoring-Mentoring for Success in Research and Leadership (Sloan PEM)
 - Texas A&M University-University Writing Center (UWC)





Professional Development (continued)

The Southern Regional Education Board (SREB): Compact for Faculty Diversity Institute on Teaching and Mentoring:

- SREB participants met to share experiences, insights, and survival tips, as well as building professional and personal relationships.
- SREB scholars received information on college teaching, mentoring, research, and grant writing from nationally recognized experts and professionals.



TAMUS AGEP Mini Grant

7 TAMUS-AGEP students received a Mini-grant award (up to \$7K) to seed innovative collaborative research projects.

University	Major	Faculty Co-Mentor	Faculty Co-Mentor
TAMUCS	Wildlife and Fisheries Sciences, Masters student	Dr. Luis Hurtado, TAMUCS	Dr. Lee Smee, TAMUCC
TAMUK	Environmental Engineering, Ph.D. student	Dr. Lee Clapp, TAMUK	Dr. Phillipe Tossot, TAMUCC
TAMUK	Environmental Engineering, Ph.D. student	Dr. Lee Clapp, TAMUK	Dr. Dorina Murgulet, TAMUCC
TAMUCS	Plant Breeding, Ph.D. student	Dr. Carlos Fernandez, TAMUCS	Dr. Eliezer Louzada, TAMUK
TAMUCS	Biological & Agricultural Engineering, Ph.D. student	Dr. Sergio Capareda, TAMUCS	Dr. Ruby Stevens-Morgan, PVAMU
TAMUCS	Toxicology, Ph.D. student	Dr. Robert Chapkin, TAMUCS	Dr. Yi Li, TAMUK
TAMUK	Environmental Engineering, Ph.D. student	Dr. Jennifer Ren, TAMUK Dr. David Ramirez, TAMUK	Dr. Guillermo Dominguez, TAMIU; Dr. Juan Hinojosa, TAMIU
TAMUK	Environmental Engineering, Ph.D. student	Dr. Lee Clapp, TAMUK	Dr. Dorina Murgulet, TAMUCC



QUESTIONS/DISCUSSION