Increasing Success of Underrepresented STEM PhDs

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CGS Annual Meeting
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Overview of Texas A&M University

- Land-, sea-, and space-grant status
- More than $700 million in research expenditures
- 237 graduate degrees, including 17 degrees from 9 interdisciplinary programs
- More than 2,700 faculty, including recipients of the Nobel Prize, National Medal of Science, as well as members of the National Academies
Graduate and Professional Student Enrollment

• TAMU (Main Campus) Fall 2013 Graduate Enrollment – Total – 10,022
  - Doctoral 4,684
  - Master’s 5,338
  - 3,958 (39%) international graduate students from 130 countries
  - 1,744 (17%) minority graduate students (African-American, Hispanic, Asian-American, American Indian)

• TAMU (Main Campus) 2012-2013 Graduate Degrees Awarded
  - Doctoral 726
  - Master’s 2,221
Doctoral Program Totals
(as defined by CGS DIMAC project)

- STEM Programs
  - 49 Departments
  - 62 Programs

- Other Programs
  - 17 Departments
  - 20 Programs
Institutional Commitment

• University Diversity fellowship
  – Stipend
  – Departmental assistantship
  – Tuition & fees

• Targeted Recruitment and Campus visits
Best Practices

- Faculty-led small cohort-based programs
- Programs address lack of resources, support, and mentoring
- Also address social, cultural, and interpersonal factors that impact goals and persistence of URM students in STEM
### Example TAMU Faculty Cohort Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Targeted Populations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tx A&amp;M System LSAMP Bridges to Doctorate</td>
<td>URM Master’s and PhD STEM students</td>
</tr>
<tr>
<td>Sloan Minority PhD Programs</td>
<td>URM PhD students (Colleges of Engr &amp; Ag/Life Sci)</td>
</tr>
<tr>
<td>Hispanic Leaders in Ag &amp; Environment</td>
<td>URM Master’s and PhD students</td>
</tr>
<tr>
<td>IGERT: Applied Biodiversity Science – Bridging Ecology, Culture, and Governance for Effective Conservation in the Americas&quot;</td>
<td>PhD students</td>
</tr>
<tr>
<td>S-STEM (2)</td>
<td>Science &amp; Engr UGs</td>
</tr>
<tr>
<td>REU sites (16)</td>
<td>TAMU &amp; non-TAMU UGs</td>
</tr>
</tbody>
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Hispanic Leaders in Agriculture and the Environment (HLAE)

Goal:
Increase number of Hispanic leaders in governmental and non-governmental organizations, colleges and universities, and private industries related to “agriculture and the environment”

Faculty:
College of Ag & Life Science

Note: Program inclusive of all students with experience and interest in reaching U.S. Hispanic populations.

(courtesy of Dr. Manuel Pina)
Biomedical Engineering Dept.
Sloan Minority PhD Program

• Three URM students each year (2008-2012). Total of 15 Sloan scholars, 11 since 2008
• Other recruitment tools for URM outreach include:
  • GRE Search Service database, Graduate Invitational, Individual campus visits
• Current enrollment: 113 graduate students
  • 87 Ph.D. students 17 URM students
• Estimated Ph.D. graduates (since 1977): 16 URM (105 total)
• Former URM Ph.D. students received positions in industry and academia, working as post-doctoral students for both domestic and international universities as well as researchers & lecturers
• Multiple students have received recognition from the National Science Foundation as GRFP Fellows and Honorable Mention winners
• Students have been leaders of organizations including Society of Photo-optical Instrumentation Engineers (SPIE) and Graduate Student Council

(courtesy of Dr. Gerald Cote')
Texas A&M System LSAMP Bridge to Doctorate

• TAMUS LSAMP -- Since 1992 -- increase number of URM students participating in STEM fields

• LSAMP Bridge to Doctorate Program -- TAMU
  – Colleges of Ag/Life Sciences, Engineering, GeoSciences, Science
  – Nurtured 2 years as a cohort community
  – Academic & personal development activities
  – Social support to sustain commitment
  – 103 BD fellows, 19 received PhD, 51 currently pursuing PhD

• BD fellows feedback
  – Diversity of disciplines and the relationships they formed with each other
  – Financial support provided by program
  – First year seminars and insight they gave them into the PhD experience
  – Opportunity to present at seminars to develop skills
  – Being a role model for other students

• Participant quote: “I was skeptical about getting a PhD, but BTD has really pushed me to get it. I have met so many that have done it, and this lets me know that getting the PhD is the right choice”
Texas A&M System AGEP  
(started Sept. 2013)

Development of an interdisciplinary, shared academic and social community
Social Science Research
Dr. A. Carter-Sowell, Asst. Professor, Psychology and Africana Studies

• Goals
  – Examine the impact of experiences of exclusion on the success of URM STEM graduate students
  – Recommend ways to promote retention through strategies that promote inclusion

• Example research questions
  – Do URM STEM graduate students experience their campus differently than their majority peers?
  – 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?
  – What factors promote or mitigate against URM STEM students experiencing feelings of isolation or ostracism?
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