Research-Based, Interdisciplinary Multicultural Scholars Program at Oregon State University Has a High Graduation Rate of Minority and/or First-Generation Students in a STEM Major

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The Program

Goals of our USDA-NIFA Multicultural Scholars Program (MSP) are to recruit, retain, mentor and graduate Multicultural Scholars to meet national needs for STEM students and professionals in Agriculture/Natural Resource/Food Sciences. We provide Scholars with four elements critical for retaining minority students in sciences: (1) an outstanding research experience, (2) effective academic and personal mentoring, (3) professional development opportunities, and (4) significant financial support.

1. MSP scholars major in BioResource Research, an interdisciplinary major in College of Agricultural Sciences requiring a 14-credit research project.
2. For mentoring, along with faculty research mentors, we use Cost-of-Education funds to provide scholarships to upper-division students to act as Peer Mentors.
3. Additional peer mentoring and professional development opportunities come from required membership in MANRRS (Minorities in Agriculture, Natural Resources, and Related Sciences), and an internship.
4. Scholarship support is provided by 3 USDA-NIFA Multicultural Scholars Grants.

BioResource Research majors take a challenging biosciences curriculum, choose an option (area of concentration) and research mentor, take upper-division courses in their option, do a research project, and complete a thesis and final seminar.

Opportunities:
- Animal Reproduction and Development
- Applied Genetics
- Bioproducts and Bioenergy
- Biotechnology
- Climate and Biosystems Modeling
- Environmental Chemistry
- Food Quality
- Genomics/Bioinformatics
- Pest Biology and Management
- Plant Growth and Development
- Sustainable Ecosystems
- Toxicology
- Water Resources

Examples of research projects MSP graduates have completed:
- Food Quality Thesis: The Storage of Grain and Aging of Flour, and Their Effects on Flour Functionality
- Toxicology Thesis: Toxicological Investigations of Two Poisonous Plants, Tansy Ragwort (Senecio jacobaea) and Summer Dandelion (Hypochaeris radicata)

MSP Student Success.

We compared the 6-year graduation rate of the 2009 cohort of MSP scholars with 6-year graduation rates from comparator groups (Figure 1). Both our graduation rate and our rate of retention and graduation in a STEM major compared favorably with rates for OSU students, OSU minority students*, US, and US URM students**.

Figure 2: Characteristics of all 3 cohorts of the Multicultural Scholars (n = 20) and MSP Mentors (n = 10) - gender, race, ethnicity, family educational background. In comparison, the population in Oregon comprises 2% Black/African Americans, 1.8% Native Americans, 12.2% Latinos, and 4.0% Asians.

*identifier **four participant combines Latino/Asian/Pacific Islander

Figure 3: Percentage of all MSP Scholars and Mentors (n = 30) to participate in selected Experiential Learning and Professional Development activities. By graduation, all will have completed a significant research project, required in their major.

Assessment

Our assessment plan documents measurable outcomes in the areas of personal well-being, professional well-being, and programmatic evaluation and support. Outcomes were chosen based on research relating to the recruitment, retention, support and development of undergraduate minority students, and focused on meeting the ACC STEM metrics. Since 2011, MSP scholars have been assessed twice yearly using both a survey, in which they rate a series of statements in each of the areas on a one-to-six scale, and personal interviews. Initial survey results comparing our three cohorts (n = 20) revealed higher mean values in seven research constructs in the more advanced cohorts (Figure 4). Differences in three theme areas, ethnic identity, educational encouragement, and undergraduate research, were also strongly supported by qualitative data.

Ethnic identity showed a steady increase based on amount of time in the MSP program. MSP students are required to participate in MANRRS and attend the national MANRRS conference, excellent opportunities to continue to develop their personal ethnic identities.

Educational encouragement is partially measured by student perceptions of faculty support. Students in the MSP program consistently identified the program advisor as supporting their academic success, personal development and social belonging.

A unique aspect of this MSP program is the strong focus on rigorous undergraduate research. Older MSP students were more confident and perceived themselves as more knowledgeable in undergraduate research.

Educational Encouragement: “I really didn’t understand the impact of how cool it was to be an MSP student, I just knew it was a scholarship but I had no idea that it was going to get me involved with a research mentor and funding for trip to convention and then funding for a research internship experience. It really kind of made me love OSU.”

Figure 1. Six-year Graduation and STEM Retention Rates of 2009 MSP Scholars Compared to OSU and National Rates

Figure 2. MSP Scholars and Mentors

Figure 3. MSP Experiential Learning

Figure 4. MSP Cohort Comparison of Evaluation Constructs

Ethnic Identity Development: “MANRRS just opens up your eyes... and allows you to think in so many different ways to expand your mind.”