Student engagement critical to closing the achievement gap for BIPOC students in Oregon State University’s College of Agricultural Sciences

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Oregon State University = PWI

Data from OSU Institutional Research Office

PWI (Predominately White Institution) = ≥ 50% White students
OSU undergoing increase in enrollment of BIPOC students...

Data from OSU Institutional Research Office
Oregon undergoing rapid increase in BIPOC college-age residents (esp. Latinx)

<table>
<thead>
<tr>
<th>Year</th>
<th>American Indian / Alaska Native</th>
<th>Asian / Pacific Islander</th>
<th>Black / African American</th>
<th>Hispanic / Latino</th>
<th>White</th>
<th>Multi-Racial</th>
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<tbody>
<tr>
<td>2008-2009</td>
<td>2.01</td>
<td>4.75</td>
<td>2.93</td>
<td>17.25</td>
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<td>2009-2010</td>
<td>1.93</td>
<td>4.62</td>
<td>2.76</td>
<td>19.56</td>
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<td>2010-2011</td>
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<td>4.64</td>
<td>2.6</td>
<td>20.51</td>
<td>66.31</td>
<td>4.1</td>
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<td>2011-2012</td>
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<td>4.58</td>
<td>2.53</td>
<td>21.04</td>
<td>65.33</td>
<td>4.71</td>
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<tr>
<td>2012-2013</td>
<td>1.7</td>
<td>4.6</td>
<td>2.48</td>
<td>21.53</td>
<td>64.71</td>
<td>4.98</td>
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<td>2013-2014</td>
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<td>4.63</td>
<td>2.42</td>
<td>21.99</td>
<td>64.15</td>
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<td>2014-2015</td>
<td>1.52</td>
<td>4.63</td>
<td>2.4</td>
<td>22.4</td>
<td>63.62</td>
<td>5.45</td>
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<tr>
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<td>4.64</td>
<td>2.38</td>
<td>22.45</td>
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<tr>
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<td>4.7</td>
<td>2.36</td>
<td>22.64</td>
<td>62.97</td>
<td>5.91</td>
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<tr>
<td>2017-2018</td>
<td>1.33</td>
<td>4.75</td>
<td>2.33</td>
<td>23.05</td>
<td>62.41</td>
<td>6.14</td>
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<td>2018-2019</td>
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<td>4.75</td>
<td>2.29</td>
<td>23.41</td>
<td>61.92</td>
<td>6.38</td>
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<td>23.73</td>
<td>61.49</td>
<td>6.57</td>
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<td>4.83</td>
<td>2.32</td>
<td>24.44</td>
<td>60.35</td>
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<tr>
<td>2021-2022</td>
<td>1.15</td>
<td>4.81</td>
<td>2.30</td>
<td>24.97</td>
<td>59.67</td>
<td>7.09</td>
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<tr>
<td>% change</td>
<td>-0.86</td>
<td>0.06</td>
<td>-0.63</td>
<td>7.72</td>
<td>-8.73</td>
<td>4.23</td>
</tr>
</tbody>
</table>

#s in table are percentages

Data from Oregon.gov (Fall membership reports for Oregon public school districts)
...but retention and graduation rates of BIPOC students are low = achievement gap

Data from OSU Institutional Research Office
These trends are particularly strong in the College of Ag Sci

Data from OSU Institutional Research Office
These trends are particularly strong in the College of Ag Sci
College of Ag Sci trends reflective of field of agriculture

• According to USDA agricultural census:
  - 95.4% farmers are White
  - 3.3% farmers are Latinx
  - 1.7% farmers are American Indian or Alaskan Native
  - 1.3% farmers are Black

• Potential reasons for this:
  - Systemic exclusion of BIPOC folks in land ownership and generational wealth
  - BIPOC families potentially hesitant for children to pursue Ag degrees
The U.S. needs Ag graduates

- Most pressing problems facing the world today –
  - Food and water availability
  - Sustainable energy
  - Population health
  - Environmental degradation
  - Climate change


↑ BIPOC proportion of OR population + BIPOC achievement gap in College of Ag Sci = ↓ trained Ag graduates
USDA NIFA Multicultural Scholars Program (MSP)

• **Goal** = ↑ diversity of food and agricultural workforce

• **Action** = provides $$ to support diverse students as they complete bachelor’s degrees in Food, Agriculture, Natural Resources, Human (FANH) Sciences via scholarships, mentorship, and experiential learning opportunities
OSU College of Ag Sci MSP in BRR

2009, 2011, 2013, 2016, 2018
5 grants ($200,000 each, $1M total)

**Goal:** Recruit, retain and graduate 25-30 BIPOC/FGLI students ready for careers in FANH

Open to all BIPOC/FGLI students

Restricted to students in BioResource Research (BRR) major

**Outcomes:** 45 MSP graduates, plus 18 near-peer, mentors = > 2X impact!
## MSP in BRR - cohorts by the numbers

<table>
<thead>
<tr>
<th></th>
<th>2009 complete</th>
<th>2011 complete</th>
<th>2013 complete</th>
<th>2016 complete</th>
<th>2018 in progress</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>19</td>
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<td>Female</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>26</td>
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<tr>
<td>African American/Black</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>5</td>
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<tr>
<td>Native Am./Pac. Is./Native Alaskan</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Asian*</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>8*</td>
</tr>
<tr>
<td>Latinx/Hispanic</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>White</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Low SES**</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>31</td>
</tr>
</tbody>
</table>

*6 of 8 Vietnamese – Chinese, Korean and Japanese on par or exceed White counterparts, S.E. Asian communities (Laotian, Cambodian, Hmong and Vietnamese significantly lag behind in academic performance and graduation).**

**Pell-eligible and/or HS participation in free or reduced-lunches.
BRR - “The Research major”

13 Research Options:
- Applied Genetics
- Animal Repro. & Dev.
- Bioproducts & Bioenergy
- Biotechnology
- Climate & Biosystems Modeling
- Food Quality
- Plant Growth & Dev.
- Pest Biology & Mgmt
- Genomics/Bioinformatics
- Environmental Chemistry
- Sustainable Ecosystems
- Toxicology
- Water Resources
**Our Mission** at MANRRS is to promote academic and professional advancement by empowering minorities in agriculture, natural resources, and related sciences.

**Our Mission** - SACNAS is an inclusive organization dedicated to fostering the success of Chicanos/Hispanics and Native Americans, from college students to professionals, in attaining advanced degrees, careers, and positions of leadership in STEM.
National MANRRS Research Awards 2022
MSP in BRR – engagement structure

Included in BRR major:
• Strong, relevant STEM curriculum (100% participation)
• Research engagement (100% participation)

Included in MANRRS & SACNAS:
• Leadership training (80% participation)
• Community service opportunities (100% participation)
• Professional development (100% participation)
MSP in BRR – engagement structure

Additional engagement-opportunities:

• **Service-learning/study abroad** (>50% participation - Puerto Rico, Guam, Honduras, Spain, S. Africa, Ecuador, Mexico, France, London, Vietnam, India)
MSP in BRR – outcomes

Bio-Resource Research

Pell Eligible 46%
Not Pell 54%

Bio-Resource Research

White 41%
Asian 3%
Black 3%
Indian 2%
Two- or more 13%
Hispanic 38%

Graphics contributed by R. Mata Gonzalez
MSP in BRR – outcomes

• GPA:
  - 2.67- 4.0
  - Includes two National Goldwater Scholars and one Udall

• Graduation rates:
  - 95% overall
  - 91% in STEM
  - 82% in BioResource Research
  (compared to 68% all CAS and 54% URM in CAS)

• Post-graduation:
  - 50% acceptance into graduate/professional schools
  - Employment similar to BRR at nearly 100% within 3 mo.s
2009 Cohort – Previously, Nat. Council for Air and Stream Improv., Inc. Currently, Packaging Corp. of America - Environmental Specialist

2011 Cohort – Previously, Kerr Fruit Concentrates, Food Scientist at Campbell Soup Co., Currently, Herbalife New Product Development

2018 Cohort – BS 2023 – OSU’s Center for Small Farms and Community Food Systems

2013 Cohort - current Pharmacy Resident
Oregon State University sees record fall enrollment

That includes a 14% increase in students enrolled in its online ‘Ecampus’

Oregon’s biggest university continues to get bigger.

Oregon State University announced Tuesday it has a record number of students enrolled this fall. That means it continues to be the state’s largest university, with 34,108 students enrolled this fall – a more than 2% increase from last year.

The record enrollment includes students at OSU’s main campus in Corvallis, as well as other locations throughout Oregon, and its online Ecampus program.

“Oregon State University is fully energized and enjoying significant momentum with students back on our campuses in Corvallis and Bend, and engaged in learning across the world in our top-ranked online degree programs,” Becky Johnson, OSU’s interim president, said in a statement.

OSU saw a 5.2% increase in students of color this fall compared to last year and a 1.3% increase in transfer students.

Oregon State’s online Ecampus program has seen a substantial increase — 14% this fall on top of an 18% increase last year. OSU has grown by more than 8,500 students over the past decade because of the Ecampus program, according to the university.
MSP w/ CAMP students

• CAMP = College Assistance Migrant Program
• Federally funded, DOE program (US Citizens, required for program)

• **CAMP students are most marginalized community in U.S.**
  • 32% of students in first 5 MSPs were CAMP
  • ⅓ - ½ of MANRRS and SACNAS leaders are CAMP students

**2021 in progress**
• 1 grant ($200,000)
• 5 students/20 years of scholarship support
• Restricted to CAMP students
• Open to all majors in College of Ag Sci
Translating earlier MSP successes to CAMP MSP

Engagement components:
• peer-mentoring
• leadership training
• research/internship opportunities
• service learning/study abroad
• community service involvement
• professional development

Leverage and expand existing engagement systems offered by College of Ag Sci
Academic Programs Office:
Leadership Academy
Leadership Minor
CAS Ambassador Program
Sigma Alpha Sorority & Farmhouse Fraternity
MANRRS & SACNAS

Minorities in Agriculture, Natural Resources, and Related Sciences
Society For Advancement of Chicanos/Hispanics and Native Americans in Science
Undergraduate Research/Internships

• Three funded programs
  - Beginning Undergraduate Research Support Program
  - Continuing Researcher Support Program
  - Branch Experiment Station Research Internships

• E.R. Jackman Internship Support Program

• Student Engagement Coordinator to work individually with students
Career Advising/Professional Development

- **Career Development Center** – Assistant Director of Career Development for College of Ag Sciences
- **College of Ag Sci Career Fair** every fall (35+ employers)
- Collaborations with NRCS, USFW, and other **federal agencies**
- Continued opportunities with **MANRRS and SACNAS** Chapters
30+ student clubs & organizations

CAS Club
Leadership Team

Student Industry Tour

Ag & Natural Resources Day

Leadership Development

Explore what you know/don't know

Hands on experience

Community
INTERNATIONAL OPPORTUNITIES

Wageningen University, Netherlands
#1 Institution in the WORLD in Ag & Forestry

Lincoln University, New Zealand
Fall/Summer or Winter/Spring

Faculty Led Short Term Offerings
Exploring World Agriculture Class - AGRI 438
International Internships

Funding - Global Experience Fund
Transitioning MSP successes to broader student population

OSU’s Strategic Plan 4.0:
• Increase BIPOC/FGLI graduation rates
• Every undergraduate student will have at least 1 experiential learning opportunity before graduation

What’s it going to take?
WHAT DOES IT TAKE TO CLOSE THE ACHIEVEMENT GAP IN STEM? TURNS OUT, IT'S <$25,000 PER STUDENT...

Higher Education USDA NIFA Multicultural Scholars Program (MSP)

• USDA National Institute of Food and Agriculture (NIFA) Multicultural Scholars Program (MSP) six successful grants (2009, 2011, 2013, 2016, 2018 and 2021). A brief summary for the completed five cohorts (each award ~$200,000; each cohort N>8) has generated overall 6-year graduation rates of OSU 54% for STEM, major graduation rate OSU 38% US STEM, graduation rate BRR's minority enrollment exceeds 30%, (higher than comparator group); high overall enrollment rate than OSU 24% and CAS 12%, a greater increase than can be attributed to the MSP, suggesting that building a cohort of multicultural students is enhancing BRR's ability to attract and retain multicultural students despite the rigorous STEM curriculum, leadership and professional development, and high bar for research, thesis and seminar requirements.

This work is supported by the USDA NIFA Higher Education MSP, grant no. 2018-38413-28145-1015949, from the U.S. Department of Agriculture, National Institute of Food and Agriculture.