



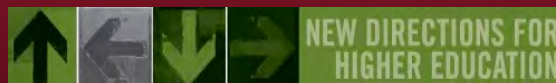
## A STEM graduate education model for American Indians and Alaska Natives (AI/AN)

Lisa M. Gloss, Graduate School dean  
Washington State University

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## Goals

- Highlight AGEP findings and activities
  - Alliance of eight universities
- Provide resources for future review



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# Washington State University

- R1 Land Grant institution
- Five physical campuses + global campus
- >3,300 graduate students enrolled system wide
- 46 doctoral programs & 67 master's programs



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## Pullman campus located on:

Ancestral grounds of the Palus  
(Palouse) people

Ceded lands of the Nimípuu  
(Nez Perce) Tribe



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## The NSF AGEP-T proposal

- Alliances for Graduate Education and the Professoriate – Transformation
  - PNW-COSMOS
- Funded from 2014 thru 2019
- Goal: Develop, Implement, and Study a culturally congruent STEM graduate education and academic STEM career preparation model that supports American Indian/Alaska Native (AI/AN) students who enroll in and complete STEM graduate programs



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## PNW-COSMOS Alliance

- Pacific Northwest Circle of Success: Mentoring Opportunities in STEM
- <https://pnwcosmos.org/>
- The Camas plant in logo
  - Native to PNW & Plateau regions
  - Growth requires vibrant community
  - Bulb is important food source



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## PNW-COSMOS



- Four alliance lead institutions
  - Washington State University
    - Lori Carris, former associate dean
  - Montana State University
    - Karlene Hoo (former dean) & Sweeney Windchief
  - University of Idaho
    - Jerry McMurty, dean
  - University of Montana
    - Blakely Brown, professor, Health & Human Performance

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## PNW-COSMOS



- Four partnering institutions
  - Heritage University (Toppenish, WA)
    - Jessica Black, Director of Center for Indigenous Health, Culture & Environment
  - Montana Tech (Butte, MT)
    - Beverly Hartline, Graduate School dean, Vice Chancellor for Research
  - Northwest Indian College (Bellingham, WA)
    - Emma Norman, Chair, Native Environmental Science
  - Salish Kootenai College (Pablo, MT)
    - Co Carew, COSMOS Coordinator

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## Why focus the AGEP on AI/AN?

- Constitute 0.7% of U.S. population  
National Center for Science and Engineering Statistics, 2019
- Earned only 0.4% STEM doctorates for U.S. citizens & permanent residents  
NSF Survey of Earned Doctorates, 2016
- Only 0.17% of T/TT faculty in top 100 research universities; only 38 T/TT STEM faculty  
Towns, M.H. (2010) *Journal of College Science Teaching*. 39(4), 8.  
Nelson, Brammer & Rhoads, H. (2007). A national analysis of minorities in science and engineering faculties at research universities. Diversity in Science Association & University of Oklahoma.
- In past decade, most under-represented populations have made gains in degrees awarded and professoriate positions, but AI/AN statistics have been remained flat or decreased.

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## Value of increasing AI/AN STEM scholars

- Improved ethnographic proximity
- Graduates are influential advocates in their community
- Unique perspective in STEM fields = new insights
  - TEK (Traditional Ecological Knowledge)



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## Particularities beyond the URM delineation

- Institutional disregard for unique indigenous identity formation & conceptualization of relationships
- Unique values (shared across multiple indigenous groups)
  - Being a good relative
  - Being responsible to the community
  - Reciprocal sharing of knowledge
  - Sharing knowledge with upcoming generations



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## Take home message on solutions

- Train the faculty – the focus of the AGEP activities
  - Recruiting students is only the start (*e.g.* REU program).
  - Student services that provide a welcoming environment, sensitive to cultural differences, is a core necessity, but not sufficient.
  - Faculty mentoring is essential to close the loop.
- Each institution has unique culture and history
- There needs to be an institutional leader to act as a champion and point of connection.



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## Major resource

- Compendium authored by PNW-COSMOS leaders

New Directions for Higher Education:

Volume Fall 2019, Issue 187

“Indigenous Communities and Access to Graduate Degrees in STEM”

Editors: Karlene Hoo & Sweeney Windchief

Available at Wiley Online Library



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## The Indigenous Mentoring Program

- Collective of dedicated faculty and administrators to address the lack of Indigenous mentors in STEM
- Replicate extended family structures within the culture of STEM graduate programs
- Familiarize faculty with on-campus services
- Consider faculty visits to home communities – upon invitation
- Support indigenous identities and scientific methodologies, not assimilate.
  - Importance of story, conversation and relationships

Blakely Brown, Barbara Komlos  
Chapter 6



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## The Indigenous Mentoring Program

- The IMP is not a canned program. Transferability?
- The IMP is a resource for institutions to adapt to address the cultural divide between STEM faculty and their AI/AN graduate students

Blakely Brown, Barbara Komlos  
Chapter 6



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## Institutional change recommendations

- More than resource allocation and piece-meal programs
- Decolonize higher education
  - Culturally sensitive curriculum
  - Recognize and value Indigenous scientific knowledge
- Provide a place for community building
  - E.g., WSU Plateau Center
  - Special Assistant to Director, Zoe Higheagle Strong

Mills *et al* Chapter 7



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## Institutional change recommendations

- Research mentors can reframe projects to reflect relevance to the indigenous community.
- Reconsider academic policies about the expertise to serve on a graduate student's committee.
- Consider retaining and promoting your own graduates
- Examine and remove barriers to indigenous research by indigenous researchers
  - E.g. MOU, Tribal Liaison Officer and Tribal Research Protocols



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## Institutional change recommendations

- Make the graduate training experience relevant and include professional development.
  - Many AI/AN are also first generation students
  - Identify advocates at various levels of administration
- Provide the opportunities for personal and community connections, including an extended community.
- Support interdisciplinary programs that tackle applied research questions
  - E.g., natural resource management, health and wellness, and educational issues – all with connections to policy development



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## Resources

<https://pnwcosmos.org/>



"Indigenous Communities and Access to Graduate Degrees in STEM"

Fall 2019, Issue 187

