



MONTANA
UNIVERSITY SYSTEM

MUS Research and Economic Development

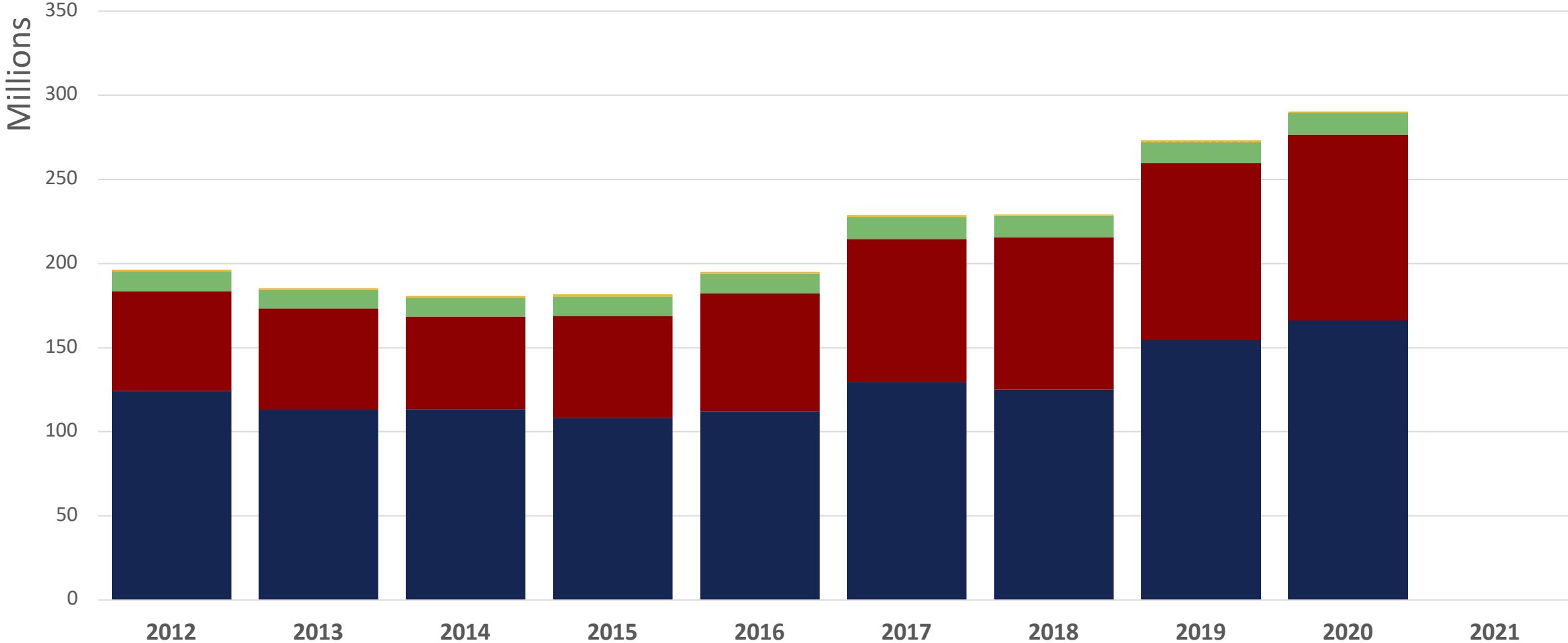
November 2021



OCHE – Academic, Research, and Student Affairs

Research Expenditures

(SOURCE: National Science Foundation HERD survey; values in nominal \$)



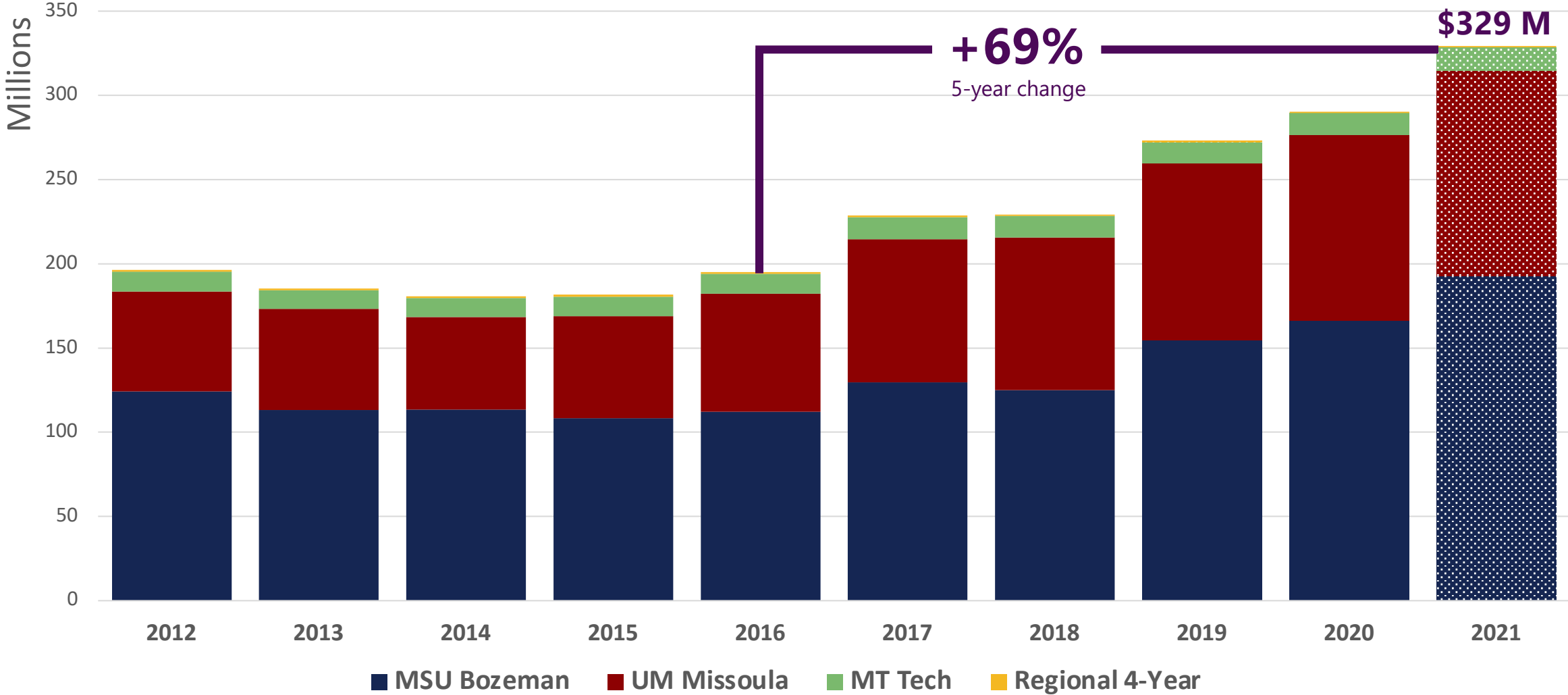
■ MSU Bozeman ■ UM Missoula ■ MT Tech ■ Regional 4-Year



OCHE – Academic, Research, and Student Affairs

Research Expenditures

(SOURCE: National Science Foundation HERD survey; values in nominal \$)





**Peter Buerhaus (NAM)
Cathy Whitlock (NAS)**



Alex Adams elected to National Academy of Medicine

[See Strategic Plan metric and action updates here](#)

choosing promise

Research Grand Challenges

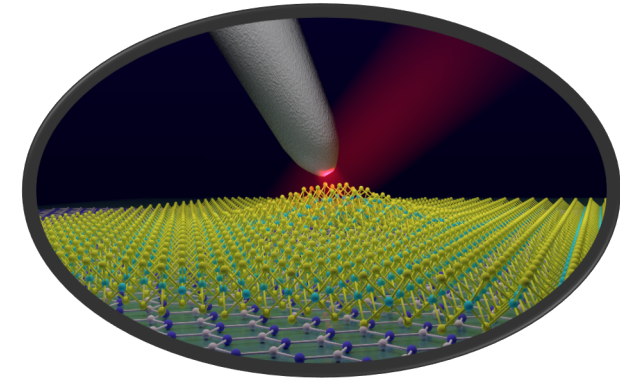
1. Promoting wellness in our communities
2. Caring for our environment
3. Food and fuel security
4. Securing the future of Montana

Goal 2.2 Expand interdisciplinary scholarship

- **Goal 2.2.1 Metrics and Actions.** *Montana State University will secure at least one new interdisciplinary training grant or center grant for each Grand Challenge area by 2024.*

Securing the future of Montana

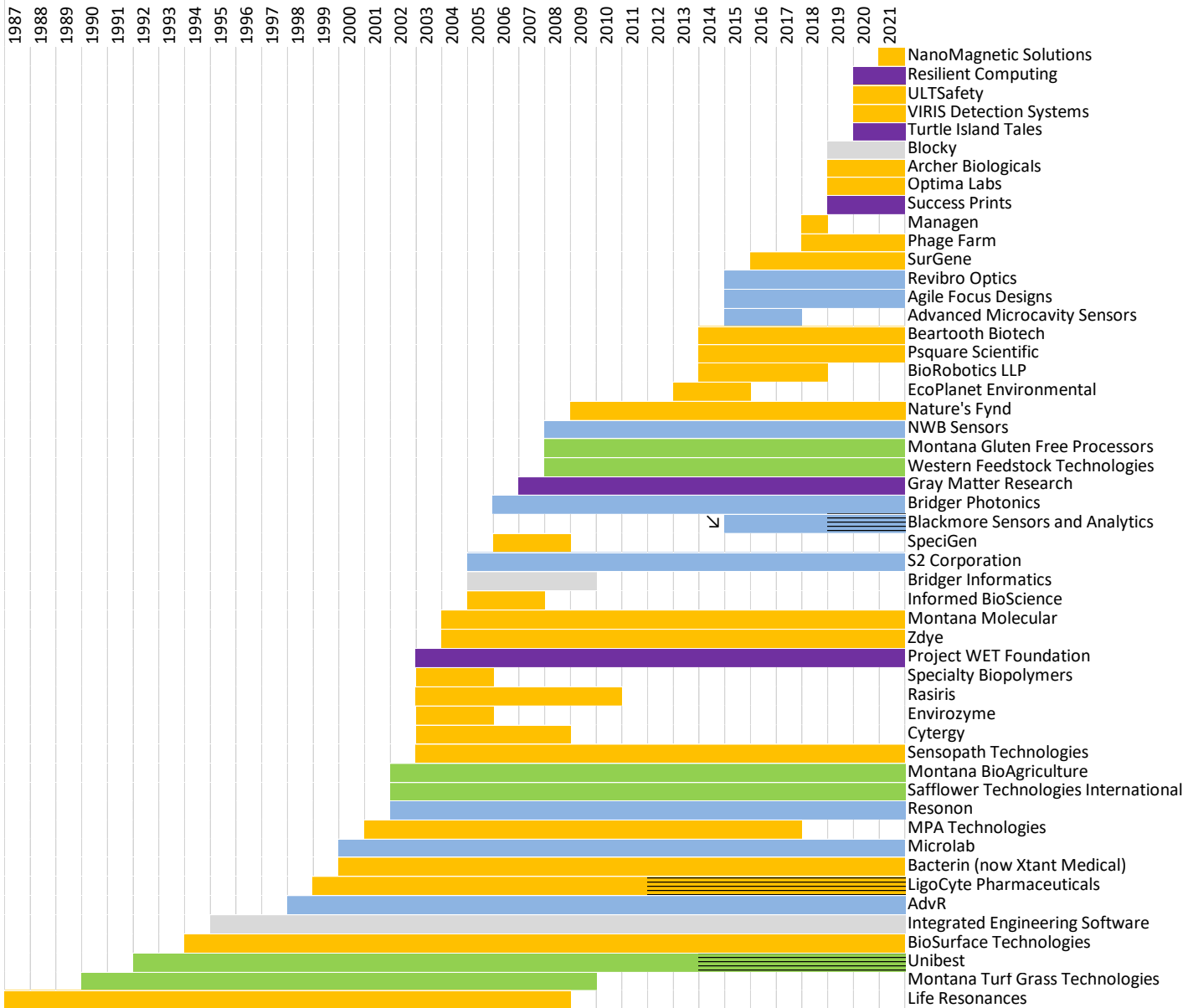
**\$20M NSF MonArk Quantum
Foundry**



Caring for our environment

**\$3M NSF Research Traineeship
(NRT) program**





Montana State University Startup Companies

- Biotech
- Optics/Photonics
- Agriculture
- Software
- Other
- Acquired

50 Companies

297 Intellectual Property Licenses in effect at the close of FY21

Graduate Education

2,173

Fall 2021 Grad Students
- *Record enrollment* -

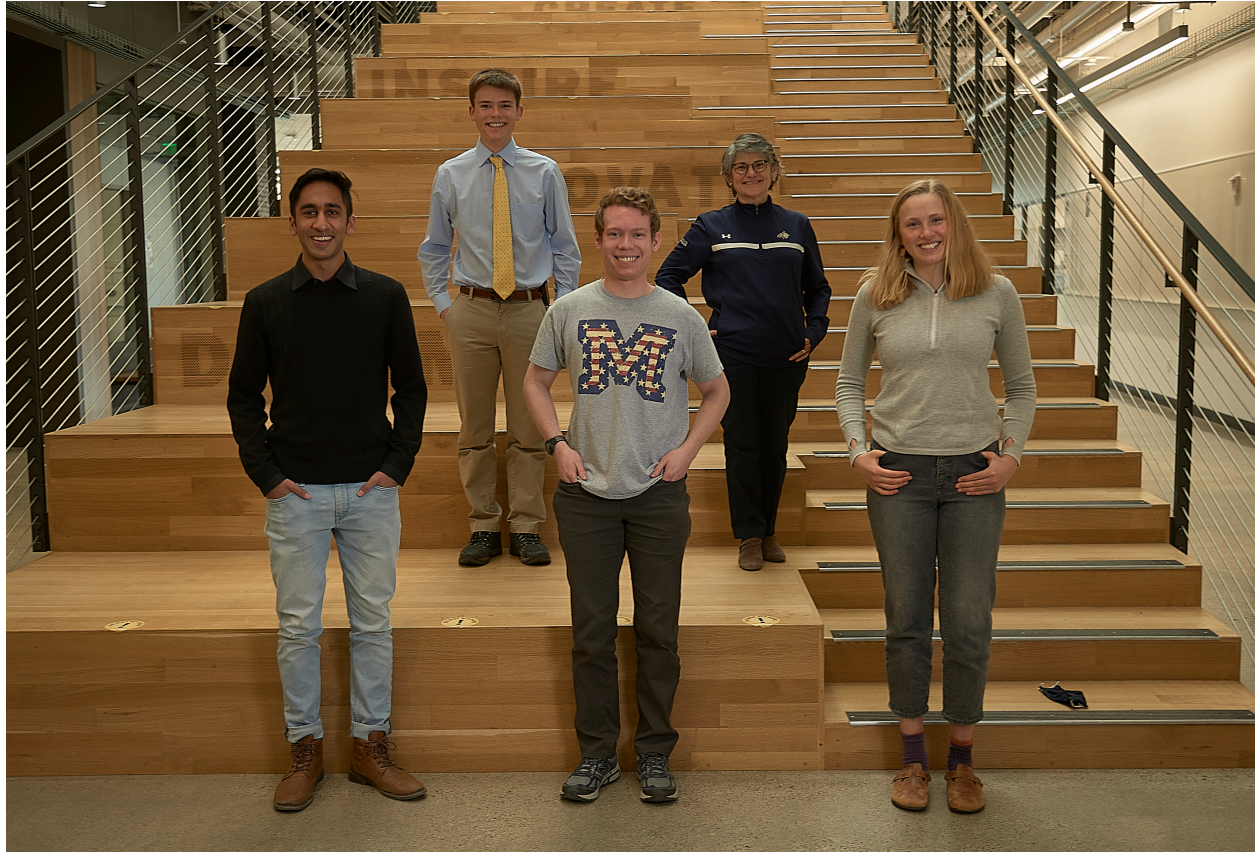
12

Prestigious NSF & NASA
Graduate Fellowships

108

AI/AN Graduate
Students

Goldwater Undergraduate Research Scholars



School	Scholar Count
Harvard University, MA	104
Princeton University, NJ	99
Stanford University, CA	95
Duke University, NC	90
University of Chicago, IL	89
California Institute of Technology, CA	86
University of Michigan-Ann Arbor, MI	85
University of Illinois at Urbana-Champaign, IL	84
Pennsylvania State University-Main Campus, PA	83
Montana State University, MT	82
Johns Hopkins University, MD	81
Massachusetts Institute of Technology, MA	81
Washington University in St Louis, MO	80
Yale University, CT	79
Kansas State University, KS	78
University of Wisconsin-Madison, WI	77
Cornell University, NY	76

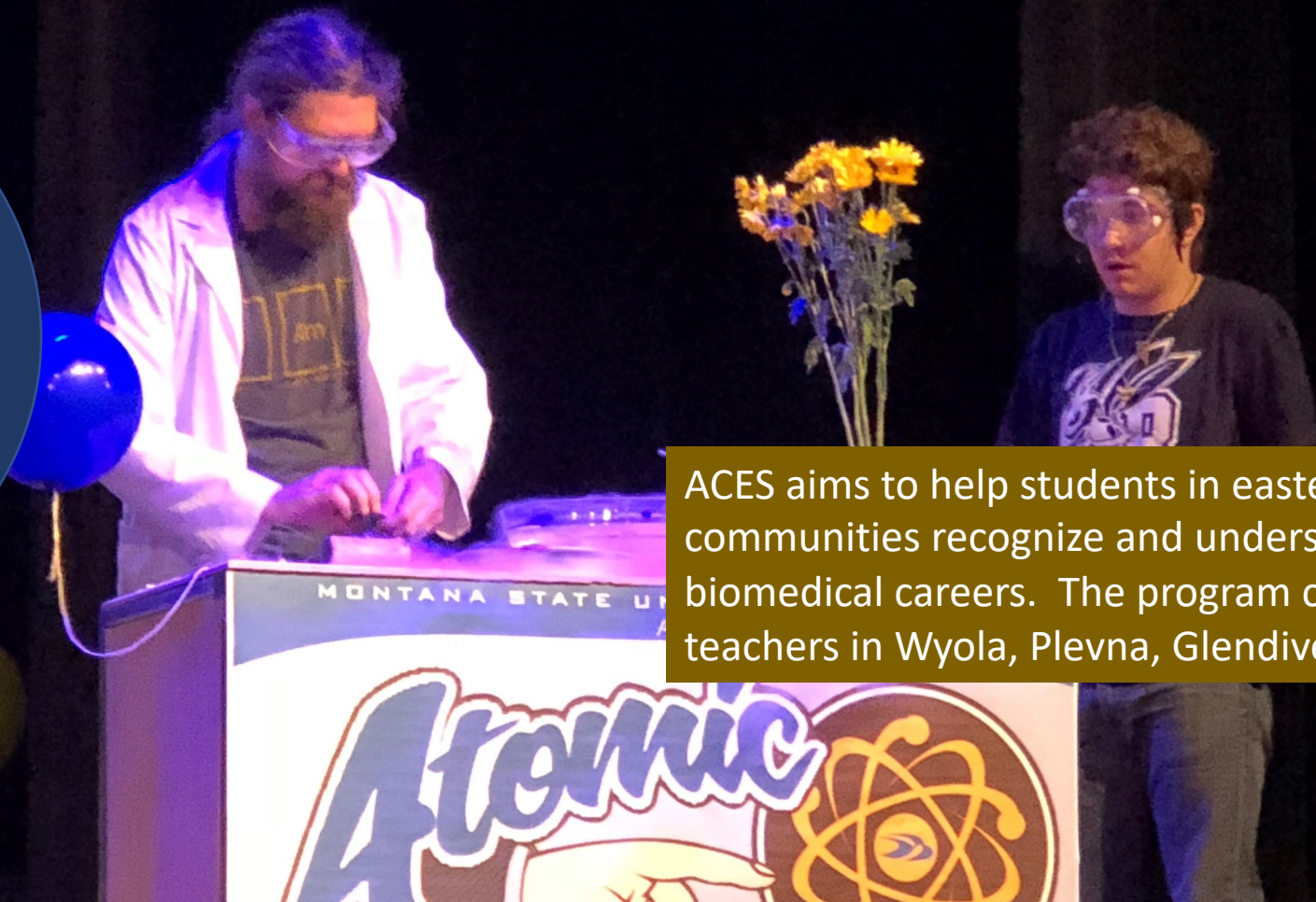
MSU Faculty Mentors: Blake Wiedenheft (2), John Sheppard, Ron June

MSU Billings – Authentic Community Engagement in Science (ACES)

PI – Dr. Matt Queen (Chemistry)

\$1.2M

5-yr NIH Grant
NIH Science Education
Partnership Award



ACES aims to help students in eastern Montana communities recognize and understand the pathways to biomedical careers. The program collaborates with rural teachers in Wyola, Plevna, Glendive, Poplar, Frazier

By The Numbers

2,883

Fall 2021,
Grad/Professional
Enrollment
- **Record
Enrollment** -

32.5%

Mountain
Campus Students
are Graduate/
Professional

114

AI/AN Graduate
Students

Graduate Enrollment



Student Scholarships

- UM ranks 11th of all public institutions and 24th among all institutions for Rhodes Scholarship recipients.
- UM leads the nation in Udall Scholarship recipients. 61 UM students have been awarded this prestigious honor for their commitment to the environment, tribal policy, or Native health care.



Rank	Institution	Number of Rhodes Scholarships 1904-2018
1	Harvard University	362
2	Yale University	245
3	Princeton University	210
4	Stanford University	102
5	U.S. Military Academy	93
6	Dartmouth College	63
7	Brown University	55
8	University of Virginia	53
9	University of Chicago	51
10	U.S. Naval Academy	47
11	Massachusetts Institute of	47
12	University of North Carolina	44
13	Duke University	43
14	U.S. Air Force Academy	39
15	University of Washington	37
16	Williams College	35
17	University of Wisconsin	32
18	Reed College	32
19	Cornell University	31
20	Washington University in St.	29
21	University of Texas at Austin	29
22	University of Oklahoma	28
23	Swarthmore College	28
24	University of Montana	27
25	University of Michigan	27
26	University of Kansas	27
27	Columbia University	27

Economic & Workforce Development

Accelerate Your Workforce

- Build Your Talent Pipeline
- Develop & Retain Your Existing Employees
- Hire Student Talent (internships & graduates)

Example Programs

- ATG Cognizant: AIM Higher bootcamp. 150+ high paying new jobs
- Construction company: Project Management Leadership Workshop
- Glacier Country Tourism: Customer Service Essentials training and badges

Accelerate Your Business

- Startup & Business Advice & Coaching
- Accessing Government & Global Markets
- Accessing Funding

Example Programs

- Missoula PTAC: Helped businesses secure >\$25m in government contracts in last 12 months
- SBA Women's Business Center: free coaching for female business owners in Missoula, Great Falls & Fort Belknap

Accelerate Your Career

- Career Entry Pathways
- Career Switcher Bootcamps
- Career Advancement Skills Training

Example Programs

- Montana Code School: entry path for coding careers
- Job Site Ready: entry level training for construction jobs
- MT Cyber Hub: Addressing the acute need for cyber skills

Accelerate MT – Current Activities

- State Funding to UM - \$1.5m for Accelerate MT and \$1.5m for Cyber Montana
- Employer Partnerships:
 - Delivery
 - Aim Higher Cohort 6
 - Submittable
 - Dep't of Revenue
 - Prospects:
 - Banking
 - Namchak Foundation
 - Glacier Country Tourism (train the trainer)
 - Construction
 - CDL
- Montana Code School (20 current, +9 incoming for Fall programs), Data Engineering? SaaS Sales?
- Women's Entrepreneurship & Leadership Lab (W.E.L.L.)
 - Re-brand (from PYP) launch
 - Director Hire - Ashley Metesh-McCoy

Accelerate MT Priorities

- Website and marketing launch
- Hiring
 - Programs Development Director (Interim) - includes MonTEC Administrative duties
 - WBC Advisors
 - Cyber?
 - Business Development (Eastern Montana)?
 - Marketing?
- State Funding (\$1.5m)
- Workforce program rollout
 - Cyber Montana
 - Construction
 - Healthcare
 - Manufacturing
 - Tech
- Grant pursuit:
 - EDA ARPA – Good Jobs Challenge
 - Philanthropic Matching (W.E.L.L. Native Women Launch)

Montana Tech – Commercializing Montana developed anti-viral technologies

Project Lead: Dr. Jack Skinner



The Montana firm Alpha Technology has licensed an antiviral additive developed by Dr. Jack Skinner and Dr. Jessica Andriola. Alpha Tech has also licensed an on-demand wound care technology developed at Montana Tech that enables safe delivery of drug-activated fiber bandages deposited directly onto wound sites.

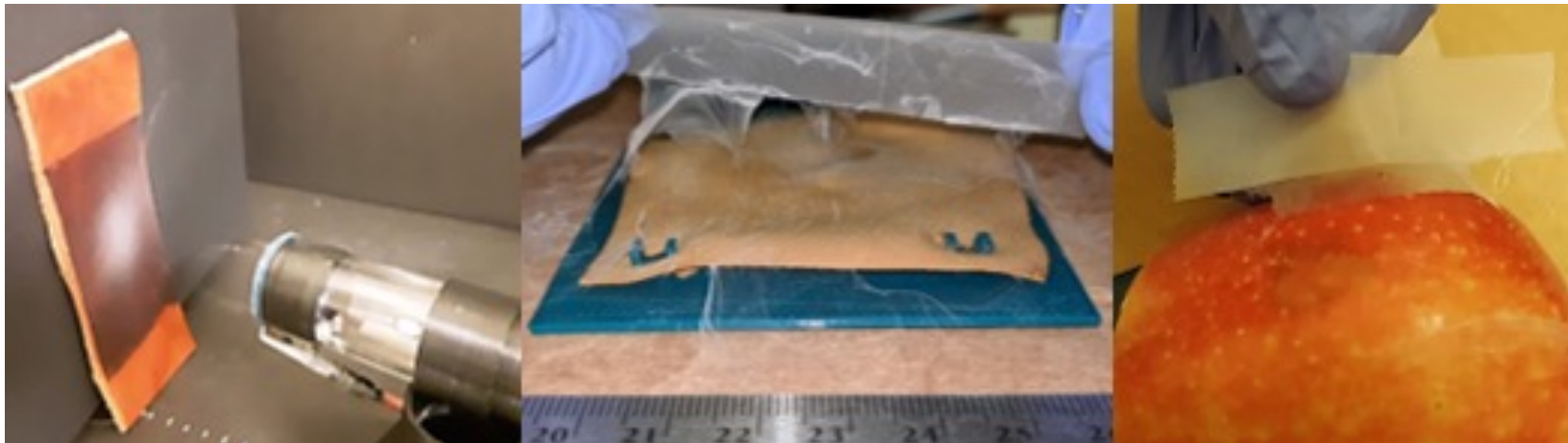


Figure: Example of a Montana Tech Invention Licensed by Alpha Tech. “Fiber Creation and Deposition on Arbitrary Surfaces With Gas-Modified Electrospinning”.



What is on the horizon?



What is on the horizon?

Renewed Federal Investment in Innovation



- ❖ The US Innovation and Competition Act, which has passed the Senate, would create a new Tech Directorate at the National Science Foundation and fund regional “Technology Hubs” to drive new innovation economies



- ❖ Current Federal appropriations propose to expand the Experimental Program to Stimulate Competitive Research (EPSCoR) by as much as 20% across multiple agencies



To be competitive for once-in-a-generation federal R&D opportunities, we must show how Montana research links to and builds:

- Our educational opportunities
- Montana's economic development
- Key state priorities



2022 Focus

1. Build up our nation-leading undergraduate research
2. Address recruitment and retention risks for highly productive research faculty
3. Communicate how central research can be to Montana's economic and workforce development goals

