

# CHIPS and Science Act Working Group Report

## Executive Summary

The **CHIPS and Science Act of 2022** and the **Inflation Reduction Act of 2022** authorized and appropriated funds for various science and technology programs. These newly created programs and provisions created new opportunities for academic researchers, including graduate students. President Seidel charged the CHIPS and Science Act Working Group to analyze both acts and identify ways that can help UW faculty and students to apply for the opportunities created by these acts. A survey of faculty conducted by the Group revealed areas of strengths at UW and what it will take to allow faculty to apply for new programs. The Group concluded that UW is poised to take advantage of upcoming programs because many recent programs and initiatives, such as the School of Computing and the Wyoming Innovation Partnership have strengthened key areas. The following areas were identified as strengths of UW.

- Computing, data science, AI and HPC
- Climate science and clean energy
- STEM education, entrepreneurship, and engagement for rural communities

The major recommendations for encouraging faculty for increasing grants activities in response to the new opportunities include:

- Incentives for allowing the faculty to prepare applications (e.g., course buyouts) and provide strategic help in making those applications highly competitive.
- Assistance in preparation of proposals for complex multidisciplinary large projects
- Training to graduate students for fellowship applications and incentives for faculty to generate applications for interdisciplinary graduate training grants.

Investments of \$2 million from UW will allow UW to increase its extramural funding through the programs created by the CHIPS and Science Act in the next three years.

## Background

On August 2, 2022, the **CHIPS and Science Act of 2022** was signed into law. This law incorporates two components: appropriations to support semiconductor industry, including some innovation and workforce development activities, and authorizations for the budgets of science agencies, including NSF, DOE, NASA, and others. It culminates extensive negotiations and grass root efforts in ensuring substantial increases in authorized budgets for the Federal Science agencies while making their programs responsive to the needs of diverse institutions, particularly those in the EPSCoR states and in low-population states. This law provides significant opportunities for university-based research and innovation efforts. The **Inflation Reduction Act of 2022** was signed into law on August 16, 2022. It is a reconciliation act aimed to reduce deficit, lower prescription drug prices, and invest in domestic clean energy production.

On October 18, 2022, President Seidel charged CHIPS and Science Act Working Group to analyze both acts and identify opportunities for UW faculty and students (Appendix 1). The group was also tasked to pinpoint actions to be taken by UW to prepare for these opportunities, develop a timeline and identify budgetary needs. The Group is composed of faculty across the University and two administrators (Dean Ahern and VP Chitnis). The working group met biweekly, starting with a primer on Federal laws

governing authorizations and appropriations and the landscape of Federal Science agencies. The subsequent meetings led to a survey for incorporating broad faculty participation. The survey results are incorporated in the report.

### **Analysis of CHIPS and Science programs (as well as IRA programs)**

The CHIPS part of the CHIPS and Science Act invests \$52.7 billion for American semiconductor research, development, manufacturing, and workforce development. The CHIPS Program Office's first funding opportunity seeks applications for projects involving the construction, expansion, or modernization of commercial facilities for the fabrication of leading-edge, current-generation, and mature-node semiconductors. This includes both front-end wafer fabrication and back-end assembly, testing, and packaging. On Feb 28, 2023, the Department of Commerce announced the first RFA for this funding.

First, the bill authorizes increased budget levels for science agencies (NSF, DOE, NIST, etc.). Annual appropriations at the authorized levels will be needed to realize the transformative potential of this act.

- The bill authorizes \$81 billion for **NSF** over five years (FY23-27), including \$20 billion for its newly formed Technology, Innovation and Partnership (TIP) Directorate. Thus, the Congress endorsed NSF's role not only as a premier basic science agency but also an innovation agency with 25% of its authorized budget dedicated to the TIP directorate.
- The bill authorizes the **Department of Energy (DOE) Office of Science** budget growth of nearly 50% over five years.
- Two programs under the **Department of Commerce** are of UW's interest. Regional Technology Hubs at \$11 billion over the life of the bill and \$1 billion for the RECOMPETE program for persistently distressed communities. There are to be 20 geographically distributed hubs, with one-third in EPSCoR states and one hub must be in low-population states.
- The authorized budget for the **National Institute of Standards and Technology** double to \$2.3 billion by FY 2027.

Second, regional innovation hubs and opportunities for rural institutions are highlighted throughout different provisions. The law authorizes regional innovation hubs at the Commerce Department as well as regional innovation engines within the NSF TIP (Technology, Innovation, and Partnerships) Directorate. When President Seidel arrived at the UW, one of his initiatives included building a coalition of high plains and great plains Universities in low-population states (WY, SD, ND, ID, and MT). These states do not have a city with a population of more than 250,000. Since they lack population hubs that traditionally spur economic development, their needs for research and economic development are unique. The coalition worked with the Federal delegations from these states to ensure a specific allocation of regional innovation hubs to low-population states. Including emphasis on rural states has resulted from this five-state collaboration.

Third, budgets dedicated for the EPSCoR states will increase because of this law. The legislation calls for the percentage of funding dedicated to EPSCoR institutions to increase **to 20% at NSF over seven years**, as well as to **10% of R&D funds out of the DOE Office of Science**. In FY 2023, the percentage of NSF funding to EPSCoR states is set at 15.5%, an increase from the current 12.6%. There is a separate provision which specifies that 16% in FY 2023, 18% in 2024 and 20% in FY 2025-29 of funding shall go to EPSCoR institutions for "scholarships (including at community colleges), graduate fellowships and traineeships, and post-doctoral awards." Both increase funding opportunities for UW proposals, faculty, and students.

## NSF Opportunities

The CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act prescribes the mission of the Directorate for Technology, Innovation, and Partnerships (TIP), establishing priority focus areas and authorizing new programs supporting technology commercialization, regional innovation, and workforce development. The new TIP Directorate will initially focus on the following technologies:

- Artificial intelligence, machine learning, autonomy, and related advances
- High performance computing, semiconductors, and advanced computer hardware and software
- Quantum information science and technology
- Robotics, automation, and advanced manufacturing
- Natural and anthropogenic disaster prevention or mitigation
- Advanced communications technology and immersive technology
- Biotechnology, medical technology, genomics, and synthetic biology
- Data storage, data management, distributed ledger technologies, and cybersecurity, including biometrics
- Advanced energy and industrial efficiency technologies, such as batteries and advanced nuclear technologies, including but not limited to for the purposes of electric generation
- Advanced materials science, including composites 2D materials, other next-generation materials, and related manufacturing technologies

The survey of the faculty showed that the current faculty is interested in and has expertise in many of these areas.

Some key TIP programs relevant to UW include:

- **Accelerating Research Translation (ART)**
  - To build capacity and infrastructure for translational research at U.S. Institutions of Higher Education.
  - A particular intent of ART is to support Institutions of Higher Education (IHEs) that want to build the necessary infrastructure to boost the overall institutional capacity to accelerate the pace and scale of translation of fundamental research outcomes into practice by supporting the development of a range of activities essential for this activity.
- **Enabling Partnerships to Increase Innovation Capacity (EPIIC)**
  - The purpose of this solicitation is to broaden participation in innovation ecosystems that advance emerging technologies (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics) by supporting capacity-building efforts at IHEs interested in growing external partnerships.
- **Regional Innovation Engines Program**
  - Galvanizing use-inspired research, technology translation and workforce development through regional coalitions.
- **Experiential Learning for Emerging and Novel Technologies (ExLENT)**
  - Supporting experiential learning opportunities that develop crucial skills needed to succeed
  - Through this new initiative, the Directorate for Education and Human Resources (EHR) and the newly established TIP Directorate seek to support experiential learning opportunities for individuals from diverse professional and educational backgrounds that will increase access to, and interest in, career pathways in emerging technology fields (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics).



The major recommendations for addressing these barriers are: 1) developing a strategy, with targeted goals, to build staffing levels in areas crucial to supporting research as indicated above, 2) identify ways to increase mentorship on campus to assist more junior faculty or faculty inexperienced in grant-writing to gain skills and confidence, 3) explore the research enterprise systems of successful near-peer and stretch-peer research institutions as a guide for improvement, and 4) look for creative ways to increase funding for research endeavors and support (broader impacts office, state funding, university funds, etc.). One idea for building staffing is to leverage existing staff in each of the various colleges; to fully capitalize on this potential, each college will need to be incentivized to deploy staff to assist faculty who are interested in pursuing extramural funding. Unfunded mandates will likely fail in this regard, so the University will need to find a way to free up resources that can be deployed to the various colleges.

### Incentives

The Working Group identified many incentives that could help faculty and research staff to participate in new activities, including interdisciplinary team science as well as use-inspired research and translation.

Table 2. Incentives for participation in applying for new opportunities

Incentives	% Respondents considering this a barrier
Graduate student funding	50
Course buy-out	42
Seed grants	42
Proposal development grants	38
Grant facilitators	33
Conference/networking travel grants	28
Grant writing workshops	16
Shared instrument facilities	11
Other	16

Comments explaining others have the following word cloud.



**Synthesis and Recommendations:** Based on the survey, the committee recognizes that there are several incentives that could encourage faculty to pursue grant funding. These include increased staffing and support for research and increased support for graduate students. Seed grants, proposal development grants, and travel grants that enable collection of pilot data, partnership development, and provide compensation for faculty time were viewed favorably. Additional faculty hires, course buy-outs and/or increased teaching faculty, competitive startup packages and competitive salaries were also all identified as needs.

The major recommendations for addressing these barriers are similar to above in terms of addressing the need for increased staffing and research support. The University of Wyoming already has several mechanisms for faculty to apply for seed grants, proposal development grants, and travels grants, so this may be an area for growth and development using current systems already in place, with increased marketing of opportunities and a centralized website. The need for increased faculty hires, departmental development, and competitive salaries is a critical issue and an area that UW has already identified as a priority and is currently working on. While many departments are struggling to hire and replace faculty who have left, this committee also recognizes the importance of cluster hires in certain interdisciplinary research areas, to start to develop areas of expertise on campus with core groups of faculty members.

**Other incentives identified by faculty:**

To enable UW and its faculty to take fully advantage of the opportunities afforded by the Chips and Science Acts will require new working together in new ways and additional support of research. The faculty will be asked what will benefit them to pursue funding. Here are some ways identified by the working group.

Needs	% Respondents
Forming teams to go after funding that further supports UW’s efforts to become an R1 university and have impact in the state	41
Catalyzing seed projects around the opportunities, utilizing funds available at the department, college, and senior admin levels	38
Developing staff and faculty hiring initiatives that will further help UW take advantage of these opportunities	34
Team building workshops that encourage development of interdisciplinary and transdisciplinary teams that will allow UW to be more competitive	33
Examining ways for UW to build its undergraduate and graduate programs to better position us for attracting students and funding them with external sources provided by CHIPS and Science programs	33
Augmenting existing or creating new research and education centers that better enable UW to be competitive for such funding	30
Development of corporate partnership, entrepreneurship, and economic development activities that will leverage CHIPS and Science programs	17
New and enhanced opportunities for partnering with national labs	15





- Education and workforce development
- Build and establish accomplishments in the center’s area to show expertise
  - List of funded grants
  - List of publications
  - List of courses in this area
  - List of collaborators
- Develop applications for the Center grants.

Some of the existing UW Centers and institutes can be augmented to address the opportunities from the CHIPs and Science Act:

- **CENTER FOR ECONOMIC GEOLOGY RESEARCH**  
The Center for Economic Geology Research (CEGR) engages in the research and development necessary to keep Wyoming at the forefront of geological CO<sub>2</sub> storage. [Learn More](#)
- **CENTER FOR ENERGY REGULATION & POLICY ANALYSIS**  
The Center for Energy Regulation and Policy Analysis (CERPA) conducts interdisciplinary energy regulation and policies analyses for the economic benefit of Wyoming. [Learn More](#)
- **CENTER FOR CARBON CAPTURE AND CONVERSION**  
The Center for Carbon Capture and Development (CCCC) is focused on supporting the future of Wyoming coal and creating economic development & diversification opportunities. [Learn More](#)
- **HYDROGEN ENERGY RESEARCH CENTER**  
The Hydrogen Energy Research Center (H<sub>2</sub>ERC) will lead applied research to identify and quantify the relative competitive advantages of Wyoming in an emerging hydrogen economy. [Learn More](#)
- **SHELL 3D VISUALIZATION CENTER**  
The Shell 3D Visualization Center (3D Viz) enables UW to develop a community of innovative visualization users seeking to enhance their teaching, research, and entrepreneurial activity. [Learn More](#)
- **NUCLEAR ENERGY RESEARCH CENTER**  
The Nuclear Energy Research Center (NERC) at the UW School of Energy Resources (SER) is focused on interdisciplinary nuclear-energy capacity building across the UW community. [Learn More](#)
- **CENTER FOR AIR QUALITY**  
The School of Energy Resources’ Center for Air Quality (CAQ) is involved in research concerning emissions from oil and gas exploration and production activities. [Learn More](#)
- **WIND ENERGY RESEARCH CENTER**  
The Wind Energy Research Center (WERC) is a collaboration with the College of Engineering and Applied Science dedicated to improving wind energy technology and its applications in Wyoming. [Learn More](#)
- **CENTER FOR PRODUCED WATER MANAGEMENT**  
The Center for Excellence in Produced Water Management provides innovative science and



engineering research for application in energy industries that are economical and sustainable. [Learn More](#)

- **CENTER FOR BIOGENIC GAS RESEARCH**

The Center for Biogenic Natural Gas Research (CBNG) develops and commercializes technologies to enhance the production of renewable, clean-burning natural gas using indigenous microorganisms. [Learn More](#)

- **DIRECT AIR CAPTURE IN WYOMING**

The Direct Air Capture (DAC) Hub is an inter-agency collaboration with the opportunity to leverage Wyoming's leadership in carbon management to support core industries & encourage economic growth. [Learn More](#)

- **SCIENCE AND MATH TEACHING CENTER**

The Science and Mathematics Teaching Center (SMTC) is devoted to excellence in preK-20 science and mathematics teaching and learning. Functioning as an interdisciplinary collaboration in Academic Affairs under Graduate Education, SMTC facilitates professional development that support educators in Wyoming and across the United States.

- **SCIENCE INSTITUTE (formed from the Science Initiative)**

The newly formed Science Institute includes centers addressing the needs of Wyoming in education and economic development. Wyoming Research Scholars Program and Science Initiative Roadshow bring research and active learning experiences to Wyoming K12 students and teachers. New centers under this institute include the Center for Controlled Environment Agriculture and the Center for Quantum Information Sciences.

- **WyGISC (Wyoming Geographic Information Science Center)**

WyGISC focuses on the development and education of geospatial information and technologies and their applications. Its mission is to advance the knowledge and application of geographic information science and technology through research, education, and service.

- **Data Science Center**

The Data Science Center will provide an academic hub for data science at UW, providing the key academic component in many data-centric activities. The center catalyzes implementation of new programs that are broadly accessible and applicable to students across disciplinary interests and champion the inclusion of data science across existing programs.

The following areas could be developed into new centers.

- Wildlife Migration
- Materials Science, particularly carbon materials
- Rural STEM Education Enrichment and Inclusivity
- Carbon management
- Rare Earth Elements
- Controlled Environment Agriculture
- Innovations in Ranching (the Ranch of the Future)
- Innovations in Mining (the Mines of the Future)

### Resources needed to help develop and sustain centers:

- Grant facilitators, broader impacts assistance
- Incentives – course buy-out, proposal development grants, conference/research travel grants. Potential new title or rank if actively involved in a center? Research requirement reduction? Flexibility in job description in other ways?
- Compile publication reports, federally funded grants reports, list of courses using keywords related to focus areas
- Templates of Bios and other docs (Current and Pending, Facilities, etc.) for different federal agencies that faculty can populate, easily update, and then pull from later – or that a grant facilitator could pull from
- Sustainability – funded by multiple federal agencies and foundations
- Assistance identifying funding sources for Centers
- Assistance obtaining funds/writing grants

### Timeline and budgetary needs for taking advantage of these opportunities.

#### Short-term Goals (1-3 yrs.):

1. Increase grant-related support – increased staff in RED, OSP, and Tech Transfer, including grant writers and facilitators and budget assistance
  - a. We are already working with TIG
2. Increased incentives for faculty – course buy-out for grant writing, increase # of GAs, seed grants and travel grants
3. Team building and ideation - Team building workshops that encourage development of interdisciplinary and transdisciplinary teams that will allow UW to be more competitive
  - a. NSF Idea Labs
  - b. Research accelerator assistance
4. Survey of Centers/Institutes and potential overlap/recombination/retirement
  - a. Areas for new Center development – themes
  - b. Process for establishing and retiring centers
  - c. Seed funds for new center development (\$200-300K/center over 2-3 years)
5. Identify research themes to address CHIPS & Science Act
  - a. Climate Research (Climate change, clean energy, alternative uses of carbon, carbon materials, materials science, natural disaster monitoring and prevention, hydrology, clean water, etc.)
  - b. Rural STEM Education (STEM education, outreach, workforce development, etc.)
  - c. Computational Sciences (AI, ML, Quantum sciences, high-performance computing, robotics, etc.)
  - d. Materials Science (materials science, clean energy, alternative uses of carbon, carbon materials, advanced manufacturing, biotechnology, etc.)
  - e. Areas included in all: DEI, Workforce development, Sexual harassment research/mediation

**Anticipated Budget:** \$1,000,000/yr (center seed grants (\$450K), incentives (\$100K), and staff (\$450K))

**Metrics for Success:** Increased number of grants submitted and awarded, increased research funding at UW, increased disciplines receiving awards

**Intermediate Goals (3-5 yrs.):**

1. Focus on faculty cluster hires around identified themes (Climate, STEM Education, Computational Science, Materials Science)
2. Graduate student support for interdisciplinary themes (5 GAs/theme)
3. Development of large Center grants, Innovation and Regional Hub proposals to support themes
  - a. Encourage and build interdisciplinary teams
4. Continue building grant-related support and staffing
5. Technology Transfer Officer that accelerates Innovation
6. Broader Impacts assistance – Identify, assist with, and build broader impacts opportunities on campus
7. Student recruiting – competitive GA stipends, targeted advertising, sign-on bonuses, training grants (NSF, NIH, etc.), workshops for national Graduate Fellowship proposals (NSF, NIH, NASA, EPA, etc.)

**Anticipated Budget:** \$2,000,000/yr (faculty cluster hires (\$1M), staffing (\$400K), increased # of GAs (\$600K))

Metrics for Success: Increased number of grants submitted and awarded, increased research funding at UW, increased disciplines receiving awards, successfully Center, Innovation Hub, or Regional Hub funding, increase in # of GAs, increase in Tech Transfers

**Long-term Goals (5-10 yrs.):**

1. Established Center, Innovation and/or Regional Hubs funded at \$15M or above
2. Workforce Development and Education Hub
  - a. STEM Engagement Office
  - b. Undergraduate Research Office
    - i. Industry Partners for Internships
3. Development of faculty hiring strategies to support increased research on campus, as well as established centers and hubs
4. Continue to build on short-term and intermediate goals

**Anticipated Budget:** \$2,000,000/yr (faculty cluster hires (\$1M), STEM Engagement Office (\$250K), Undergraduate Research Office (\$250K), Support for centers and hubs (\$500K))

Metrics for Success:

- Research expenditures at UW- goal- consistent increases over the next five years
- Research breadth at UW- goal- increased funding for non-STEM disciplines
- Large multidisciplinary grants- increased number of \$5M and above grants
- Centers and institutes- at least one extramurally funded center of at least \$15M for five-year duration


## Appendix 1. Charge from the President



October 17, 2022

**To:** Parag Chitnis, Vice President for Research and Economic Development, Co-Chair  
Jim Ahern, Vice Provost and Dean, School of Graduate Education, Co-Chair

Bryan Shader, Department Head, Electrical Engineering and Computer Science  
Shawna M. McBride, Wyoming NASA EPSCoR Director  
Charlie Zhang, Assistant Professor, Civil and Architectural Engineering  
Haibo Zhai, Associate Professor, Civil and Architectural Engineering  
Chuck Mason, Professor, Economics  
Mike Borowczak, Associate Professor, Electrical and Engineering and Computer Science  
Suresh Muknahallipatna, Professor, Electrical Engineering and Computer Science  
Jennifer Harmon, Associate Professor, Family and Consumer Sciences  
Maohong Fan, Professor, Petroleum Engineering  
Morteza Dejam, Associate Professor, Petroleum Engineering  
Faculty Senate Representative Renee Laegreid (Faculty Senate President) or her designee

**From:** Ed Seidel, President 

**Re:** CHIPS and Science Act Working Group

Per the Committee on Science, Space, and Technology, the CHIPS and Science Act “includes a historic investment to surge production of American-made semiconductors, tackle supply chain vulnerabilities to make more goods in America revitalize America’s scientific research and technological leadership and strengthens America’s economic and national security at home and aboard.” This law incorporates two components: appropriations to support the semiconductor industry and authorizations for the budgets of science and economic development agencies including NSF, EDA, NIST, NASA, and various DOE science agencies and technology offices. The law contains some appropriations, many authorizations, and several targets for investments in areas of interest to UW. Of particular note are the provisions for EPSCoR at various agencies, an increased emphasis on rural communities, and new opportunities for science and technology innovations. With recent strategic investments and initiatives at UW, we are poised to take advantage of the opportunities provided by this law and address research, education (particularly graduate education), and economic development opportunities for Wyoming. UW’s emphasis on interdisciplinary frontiers and inclusive excellence will allow us and our students to prepare for the digital future and will require us to be entrepreneurial in increasing resources for research, scholarly activities, and education. This law opens many opportunities for advancing UW’s strengths.

In addition, opportunities may arise from the recent Inflation Reduction Act (IRA), which aims to provide funding to support growth in manufacturing, clean energy vehicles, supply chains, and Native American communities, among other developments. While this is not primarily an R&D

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program, it should be examined for direct or indirect impact on the State of Wyoming through UW research, development, and innovation programs under development.

**I am convening this working group to provide a report on the following items:**

1. Deeply analyzing CHIPS and Science programs (as well as IRA programs) to identify opportunities that are of interest to UW and Wyoming;
2. Actions to be taken by UW to prepare for these opportunities, such as
  - a. forming teams to go after funding that further supports UW's efforts to become an R1 university and have impact in the state;
  - b. catalyzing seed projects around the opportunities, utilizing funds available at the department, college, and senior admin levels;
  - c. developing staff and faculty hiring initiatives that will further help UW take advantage of these opportunities;
  - d. augmenting existing or creating new research and education centers that better enable UW to be competitive for such funding;
  - e. examining ways for UW to build its undergraduate and graduate programs to better position us for attracting students and funding them with external sources provided by CHIPS and Science programs;
  - f. development of corporate partnership, entrepreneurship, and economic development activities that will leverage CHIPS and Science programs;
  - g. new and enhanced opportunities for partnering with national labs;
  - h. actions we might undertake to help ensure that Congress appropriates funds needed to fulfill the vision of CHIPS and Science;
3. Timeline and budgetary needs for taking advantage of these opportunities.

I have asked Vice President Chitnis and Dean Ahearn to facilitate this working group, and they will be in touch with additional information about the Act and its analyses. This group is to provide me preliminary recommendations by March 1, 2023. Final recommendations are due to me by May 1, 2023.

I appreciate in advance your assistance, collaboration, and input on this important topic.

cc: Kevin Carman, Provost and Executive Vice President  
Cameron Wright, Dean, College of Engineering and Physical Sciences  
Scott Beaulier, Dean, College of Business  
Barbara Rasco, Dean, College of Agriculture, Life Sciences, and Natural Resources  
Anthony Denzer, Department Head, Civil and Architectural Engineering  
Alexandre Skiba, Department Chair, Economics  
Christine Wade, Department Head, Family and Consumer Sciences  
Vamegh Rasouli, Department Head, Petroleum Engineering

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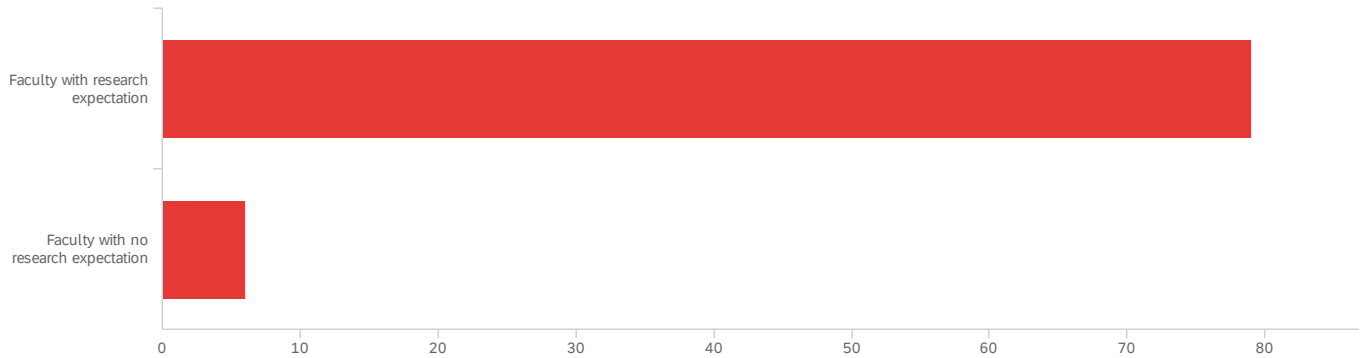
## **Appendix 2: Survey Results**

# Report 2023.03.29

CHIPS Initial Survey

March 29, 2023 9:14 AM MDT

## Q2 - Which of the following describes your faculty appointment at UW?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Which of the following describes your faculty appointment at UW?	1.00	2.00	1.07	0.26	0.07	85

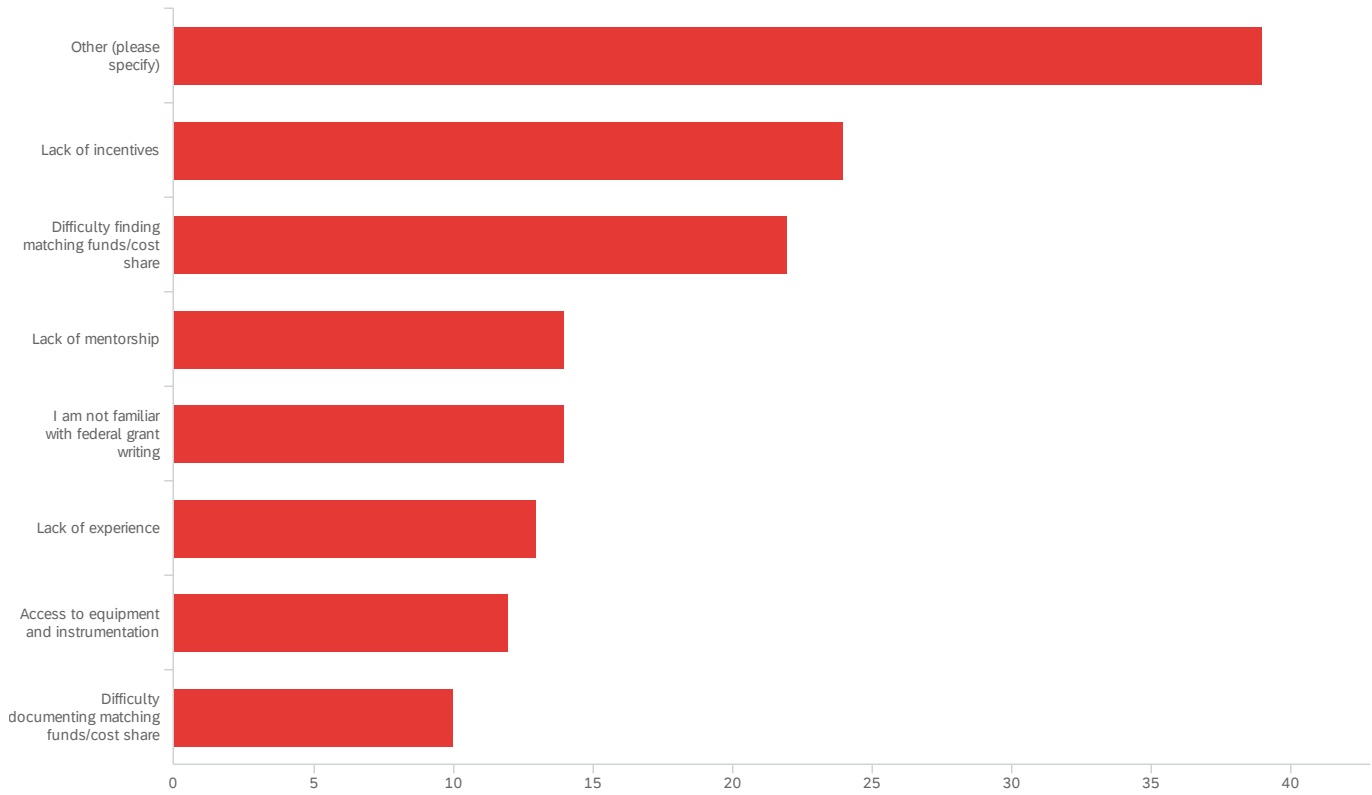
#	Field	Choice Count
1	Faculty with research expectation	92.94% 79
2	Faculty with no research expectation	7.06% 6

85

Showing rows 1 - 3 of 3



### Q3 - What barriers exist that might prevent you from thinking about or submitting a federal grant?



#	Field	Choice Count
8	Other (please specify)	26.35% 39
2	Lack of incentives	16.22% 24
5	Difficulty finding matching funds/cost share	14.86% 22
3	Lack of mentorship	9.46% 14
4	I am not familiar with federal grant writing	9.46% 14
1	Lack of experience	8.78% 13
7	Access to equipment and instrumentation	8.11% 12
6	Difficulty documenting matching funds/cost share	6.76% 10

148

Showing rows 1 - 9 of 9



Other (please specify)

Toxic Departmental Politics

Time. Pre-award help. Grant editors. A dedicated IRB (meaning not one person doing both the IRB and animal side)

Lack of preliminary results for new research directions, could be remedied by seed funding opportunities.

Lack of support from research office

Concern about the quality of research services led by Farrell Rapp

Lack of time

Poor fit between solicitation and research area

Lack of time

None

Time

lack of humanities grants

I am a non-tenure-track faculty member, and most of the resources are all calibrated for tenure-track faculty, despite the fact that a lot of us NTT faculty do considerable research and are often running programs that enhance UW's research capacity.

I work with federal agencies all the time. I won't go after large opportunities with UW as a lead since it simply does not have the infrastructure necessary to support large grants. I don't need help writing grants, it is administering them that is the problem - e.g. post-award support.

Lack of time for additional grant writing and projects

Lack of support for grant writing

difficulty knowing the grant competitions that are matched to my field and expertise. the email "blasts" we get from our college typically are sent so broadly, and so frequently, that i don't sift through them. a narrower and more tailored effort here by the colleges and/or the research office would be quite helpful. i also checked "lack of incentives" above, but probably not for the common reasons. i am disincentivized to submit big grants through uw because of a combination of our poorly-run sponsored programs office, and other minutiae (e.g., green sheets) that have proliferated as faculty have increasingly been expected to subsume the jobs that staff should be doing (and have historically done). consequently, i run my grant monies through other institutions.

time

It would be really helpful to have someone to help prepare budgets and other required forms, and check that the formatting is correct. Once money is granted, UW is slow to make funds available to researchers, and PIs are responsible for keeping track of accounting. Supporting research with the viewpoint of reducing g burden on PIs when possible would help productivity and the number of new grants submitted.

Lack of grant writing and budget assistance

No barriers

lack of administrative support

Other (please specify)

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Fed grants tend to not be given in my field

Time; Support for proposal preparation (e.g. budgeting)

Lack of Grant Writing/proposal submission supports

Time

The university of Wyoming does not have the infrastructure to support faculty, especially faculty who do not have experience with federal funding, to apply for, receive, and conduct federally funded research activities. It barely has the infrastructure to support small, unfunded projects. The IRB and those in the research office do not have the necessary skills and expertise to fill these positions and often create unfounded barriers to conducting research.

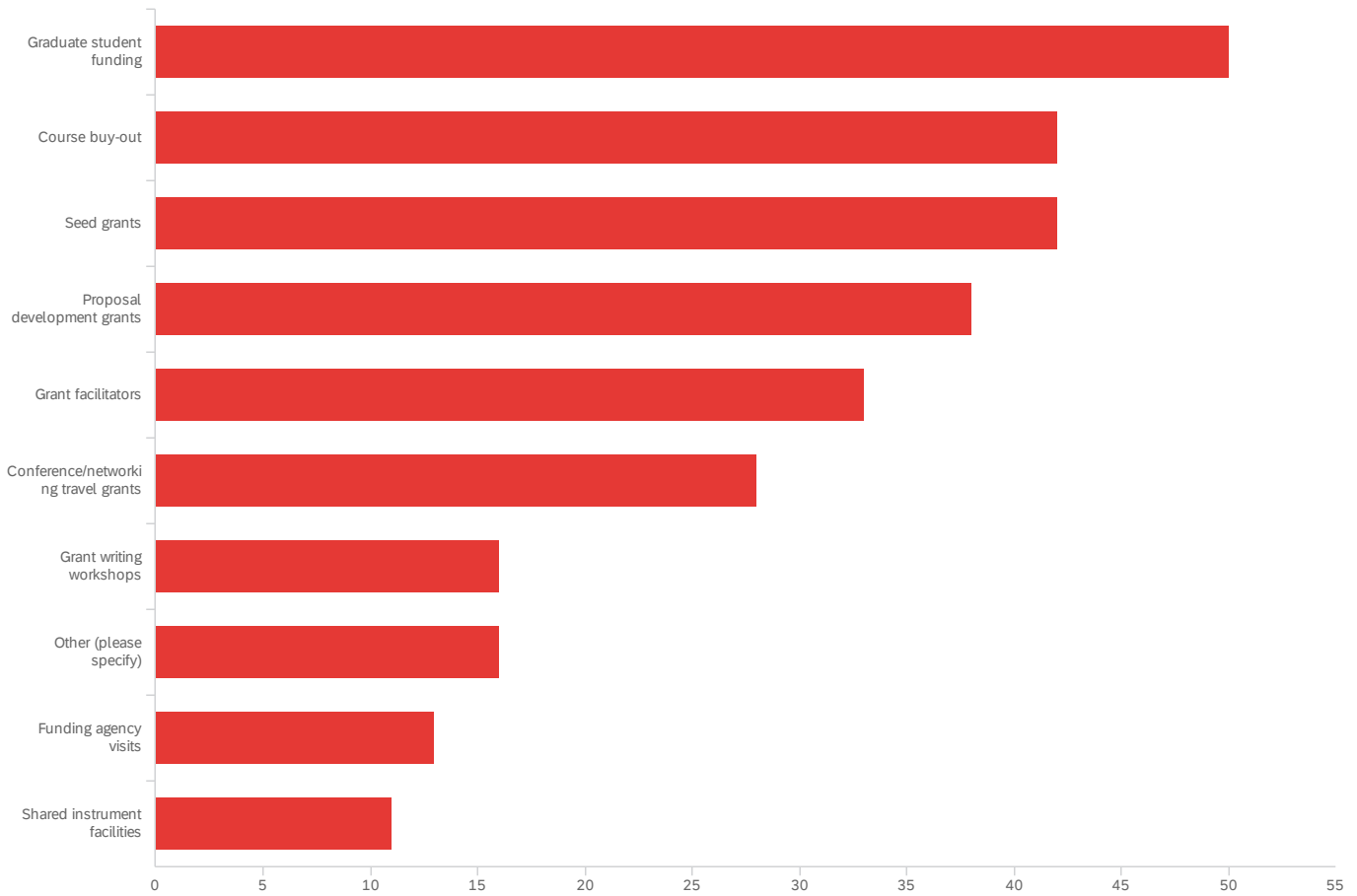
Lack of technical support to facilitate development grants

Feeling like the pre-award side of the research office is more of a barrier than a facilitator

Many grants require partnerships with other stakeholders and I have had difficulty getting community college partners to support a UW led initiative

Time given other obligations

## Q4 - What incentives might be helpful to get you more involved in grant writing?



#	Field	Choice Count	Percentage
6	Graduate student funding	50	17.30%
3	Course buy-out	42	14.53%
7	Seed grants	42	14.53%
1	Proposal development grants	38	13.15%
5	Grant facilitators	33	11.42%
2	Conference/networking travel grants	28	9.69%
4	Grant writing workshops	16	5.54%
9	Other (please specify)	16	5.54%
10	Funding agency visits	13	4.50%
8	Shared instrument facilities	11	3.81%



Other (please specify)

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Really, need more permanent resources - we're so tight that we don't have the ability to not cover all course work if there is a course buyout

Increase Faculty summer salary limits and return of some indirect cost to PIs

More people to deliver the base mission of the department

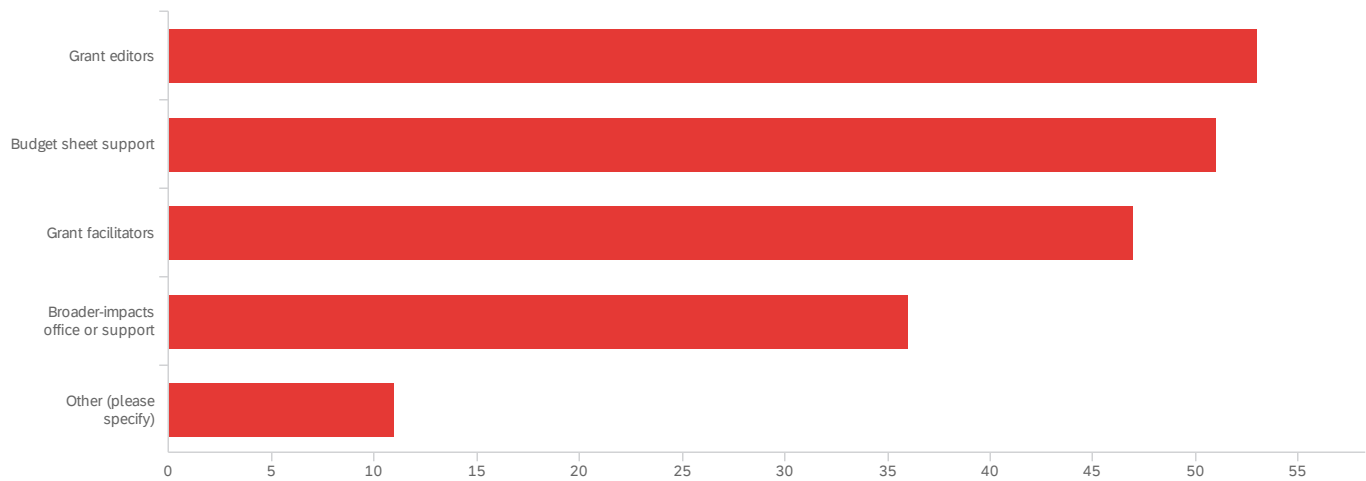
Grant writers

I'm generally skeptical of the value of proposal development/seed grants. Faculty can and should be writing proposals regardless. I would like to see more resources put towards competitive startups and shared instrumentation facilities. Well-performing departments should also be rewarded with additional hires and/or teaching positions that could support course buy-outs.

Better relationships with community college partners



## Q5 - What resources would be helpful in the grant writing process?



#	Field	Choice	Count
3	Grant editors	26.77%	53
4	Budget sheet support	25.76%	51
1	Grant facilitators	23.74%	47
2	Broader-impacts office or support	18.18%	36
5	Other (please specify)	5.56%	11
			198

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### Q5\_5\_TEXT - Other (please specify)

Other (please specify)

See above

None at this time

Funds to pay expert consultants in grant writing support and as a member of the team. UW is short in expertise in many areas and consultants need/want some form of compensation.

Accounting support, post grant receipt support (very much lacking at this point in time)

Replace leadership that does not support attracting funding

At my previous university we had an NIH excel worksheet. The FA and fringe was built in. Also we had a dedicated grant team who filled out all of the R&R forms (huge time saver)

Other (please specify)

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People who know whether/how to make grants and budgets competitive

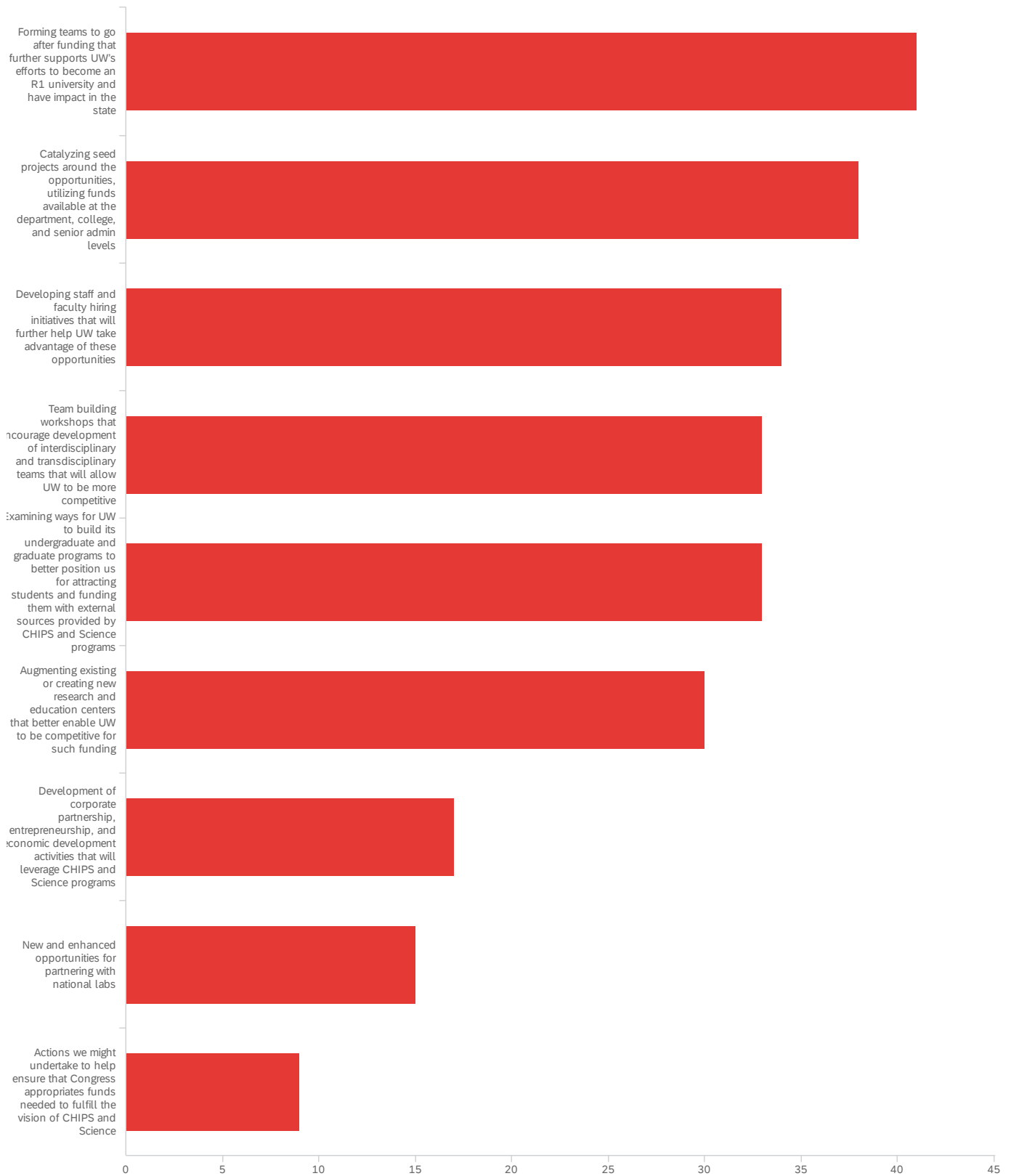
If the problems listed above were overcome, then large grant facilitators might help for very large proposals.

i don't know what a grant facilitator is. i do know that spending from grants, that i've written myself, and on which i'm taxed 26-45% overhead to (in part) pay the salaries of staff, is more difficult than i believe it ought to be.

Research idea is the key. Without idea and preliminary results, everything else is less useful.

I do not know what a grant facilitator is

Q6 - To enable UW and its faculty to take full advantage of the opportunities afforded by the Chips and Science Act will require new working together in new ways and additional support of research. Which of the following would you find most beneficial for you as you pursue funding?



#	Field	Choice Count
1	Forming teams to go after funding that further supports UW's efforts to become an R1 university and have impact in the state	16.40% 41
3	Catalyzing seed projects around the opportunities, utilizing funds available at the department, college, and senior admin levels	15.20% 38

#	Field	Choice	Count
4	Developing staff and faculty hiring initiatives that will further help UW take advantage of these opportunities	13.60%	34
2	Team building workshops that encourage development of interdisciplinary and transdisciplinary teams that will allow UW to be more competitive	13.20%	33
6	Examining ways for UW to build its undergraduate and graduate programs to better position us for attracting students and funding them with external sources provided by CHIPS and Science programs	13.20%	33
5	Augmenting existing or creating new research and education centers that better enable UW to be competitive for such funding	12.00%	30
7	Development of corporate partnership, entrepreneurship, and economic development activities that will leverage CHIPS and Science programs	6.80%	17
8	New and enhanced opportunities for partnering with national labs	6.00%	15
9	Actions we might undertake to help ensure that Congress appropriates funds needed to fulfill the vision of CHIPS and Science	3.60%	9
			250

Showing rows 1 - 10 of 10



Are there any other ways UW could better support faculty in pursuit of exte...

UW admin would do well to not marginalize and undermine actual grant-writing/seeking processes underway by unit directors who cannot be cut out of the grants for which they are applying without eliminating the success of UW receiving those grants at all (undermining those directors' expertise, authority and labor in pursuing those grants).

Providing faculty the time to invest in this incredibly time-intensive and reflective task.

As a Dept Chair I want suggest: a) Course buy-out is not helpful. b) "Funds available at the department level" do not exist.

Small animal facilities are subpar which inhibits our competitiveness. Research office and sponsored programs are still understaffed and don't have the highest levels of staff expertise; they need more support. Too many departments are one deep in too many areas which limits course releases for research successful faculty because faculty are needed in the classroom. Redundancy in expertise in departments is key to elevating the research enterprise.

Just provide quality support staff, and pay them what they're worth. We have awesome researchers that will increase grants if they just had the proper support around them. Hire good people and just get out of their way.

Have better mentorship opportunities as current supervisors are too overworked to help with this.

I cannot adequately stress what an obstacle the administration of the College of Business is to faculty participation in grants and other external funding. Our Associate Dean in particular has no interest in grants, does not understand them, and actively opposes interdisciplinary projects that could bring in additional funding. Turnover at the Department Chair level makes it impossible to know how we will be assessed. The new Dean has expressed no interest in supporting these efforts.

Faculty want to write grants. We are limited in time and ability to generate pilot data for R01 (NIH) grants. We need the paperwork streamlined. If Wyoming wants to be "R1" we need pre-award departments that complete the R&R documents. We need an excel spreadsheet that directly matches the total and modular budget forms with the FA and fringe built in (I am still using one from my previous job). A grant editor would be lovely. For the pilot data issue we really need a systematic change. We need graduate students and post docs to gather and analyze data. Ideally we would have (several) F level grant(s) to attract and fund graduate students and post docs. We need dedicated research professionals. We need a statistics core. Further, we need teaching faculty for course buy outs. R1 universities don't rely on adjuncts with high turn over. Without teaching faculty we can't buy out our courses because there is no one else to teach them. Finally, we need a dedicated IRB. This means more than one person. An IRB should be staffed with professionals who are able to evaluate proposals. Constantly sending proposals to other people around campus is not sustainable. Further, there is little consistency in the reviews. This increases time to get the applications approved. I highly doubt our IRB could complete a "Just In Time" IRB approval for more than one NIH grant per cycle.

To improve the quality of research services regarding pre- and post-award support.

Reduced teaching load and increased research load to allow more time to focus on proposals/advising.

Hire more faculty in the departments that are pursuing federal funding. We are so small in many cases that we're doing much more than our standard load in both teaching and service, leaving little bandwidth for the research pursuits that we would like. In addition, recruitment of high quality graduate students is a significant challenge that makes us less competitive in regards to other research active universities.

The biggest issue for many of us outside the sciences is time and graduate students. When we are teaching a full load because we don't have enough faculty to cover our curriculum, it makes it difficult to spend time on writing external grants. Additionally, having graduate student resources would also be necessary for undergraduate only programs to be competitive.

I've looked for years for support for broader impacts (and the like) at UW. The only thing we seem to have is the UW Science Communication Initiative. They are GREAT, but they don't even have a budget from UW, so there's a limit to what they can do to support my work (or anyone else's). They are a prime example of UW having untapped capacity and expertise that just needs to be invested in. Please don't reinvent the wheel.

Invest in the great programs that some of our faculty already have developed. Much of what is above is about "new" things, whereas most of us are drowning in our current work. We'd rather not have new things on our plates. Rather, provide us with support or other frameworks to facilitate the further development (e.g., more collaboration opportunities, more staff support, better office space, seed grants, etc.) to kick our current programs to the next level.



Are there any other ways UW could better support faculty in pursuit of exte...

Supporting areas where expertise and reputation exists already at UW while developing targeted new areas relevant to these and future opportunities would be a good strategy. Teams of these groups might be able to compete for some of these opportunities. It is always easier to leverage an existing reputation than it is to build a completely new one (though some targeted areas may be worth the investment in time and resources).

Establish a (virtual) library of past successful grant proposals to provide the faculty with examples

see above. i spend way too much time trying to navigate bureaucracies when i need to spend money from a grant, and this coincided with the shift to wyocloud. i realize that we're now stuck with wyocloud, but expecting faculty to subsume the jobs historically done by staff is a waste of uw's money, and faculty members' time. hire more staff. pay those staff well enough so that being a staff member at uw is a viable career. if well-paid staff aren't doing their jobs--which is to facilitate grants spending and management--fire them. if well-paid staff are doing their jobs, give them a transparent set of incentives (e.g., raises, etc) to keep them happy and at uw. other universities--and especially other r1 universities--have figured out how to do this.

Building semiconductor fabrication and processing infrastructure is very important for us to respond to the future opportunities for CHIPS and Science Act.

My department is constantly understaffed, with the remaining faculty expected to function in their role while covering for both other faculty and staff that have left, while increasing our research productivity. There is no support for grant preparation (help with budgets, making sure supporting documents are formatted correctly, etc), and once a grant is received, the accountants don't keep track of expenses/budgets. Support for basic grant activities would be wonderful.

Support the Grand Challenges Initiative. A huge amount of work went into that process to define topics and teams for pursuing interdisciplinary research across campus.

There are so many distracting obligations and duties, it is hard to focus on our core strengths. The best way to help would be to allow faculty to focus on a few things that we can do well.

Support for proposal preparation

More staff in the grants office...reduce the bottlenecks and transaction costs of writing grants

Streamline everything to make doing research less cumbersome. If you want to be an R1, perhaps it would be good to find out how R1s do it and then invest in infrastructure and staff that can support research.

Research support on campus has been cut to a minimal level. This directly impacts the ability of faculty to write proposals if those proposals require conceptual designs and/or simulations for proof of concept. The problem is evident now when successful awards require research support, i.e., final design, manufacturing and electronic support to implement project goals. It will get worse when advanced facilities such as high-bays, clean rooms, fabrication, etc., are needed.

We simply need more faculty. I am the only person in my role at UW and my plate is already full supporting the state and producing journal articles. I do not see any faculty increasing their time writing grants unless we make greater investments in our faculty and increase capacity. More centers are NOT the way to become competitive as they have historically further siloed our small university. We simply are not big enough to see the organizational benefits of multiple centers.

Honestly, I know they work hard, but the pre-award side of submitting external grants is punishing. It is the single most important factor for why I don't submit more than I do.

Providing better baseline support to the graduate programs which are positioned to go after this funding. Increasing baseline GRA support would enable these programs to grow and be better positioned to be competitive for these opportunities.

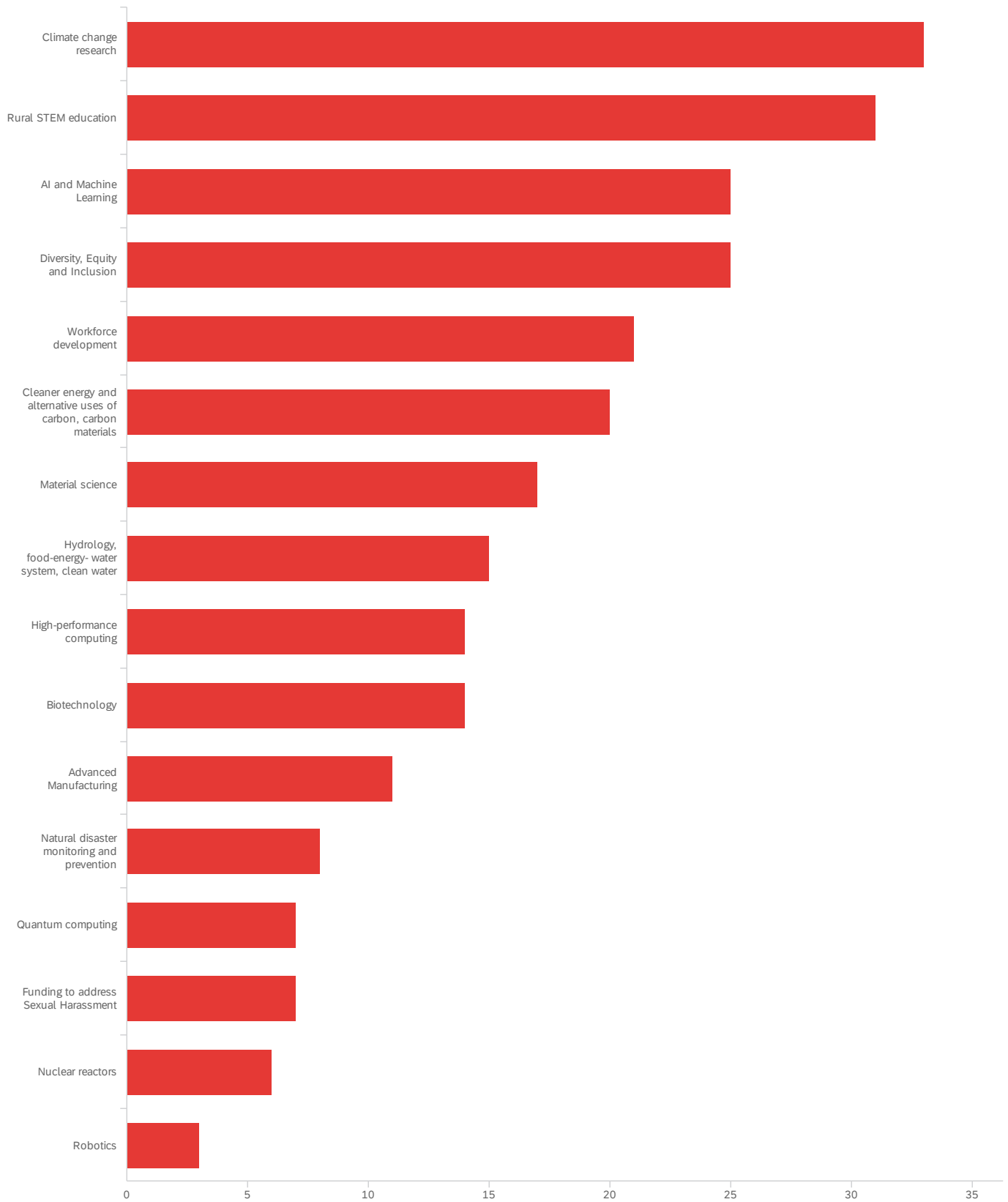
Faculty workload reduction for service and teaching

Are there any other ways UW could better support faculty in pursuit of exte...

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Reduce pre- and post-award burdens specifically on faculty and administrative tasks more generally that could be done by qualified staff. Free up faculty time to do what only they can do: the actual science (including grant-writing). This is a deep-seated institutional problem that has only gotten worse and worse.

Q8 - Early Chips and Science act funding opportunities are given below. Which of these would you be interested in pursuing funding in over the next year?



# Field

Choice Count

8 Climate change research

12.84% 33

16 Rural STEM education

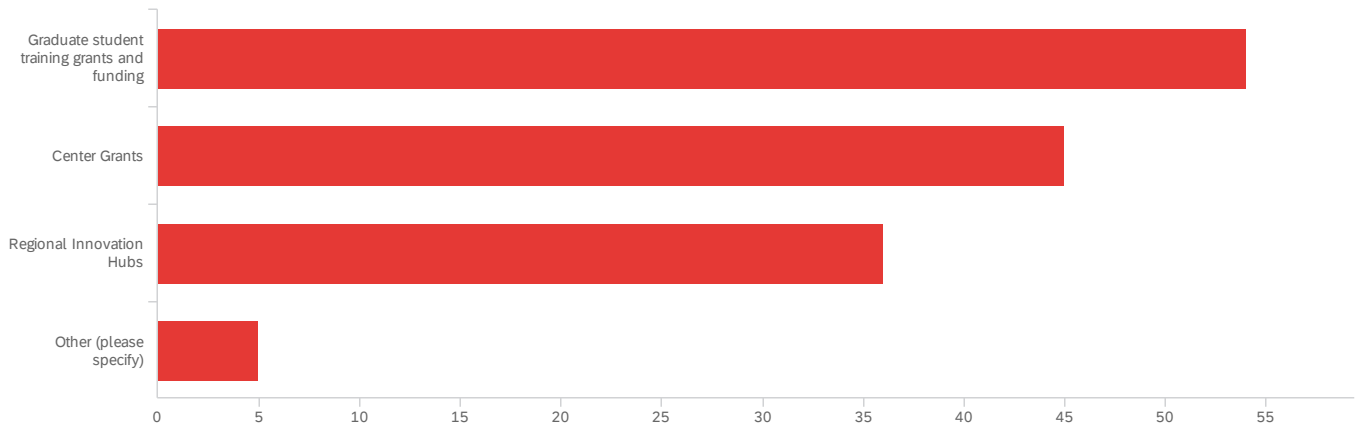
12.06% 31

#	Field	Choice	Count
1	AI and Machine Learning	9.73%	25
14	Diversity, Equity and Inclusion	9.73%	25
15	Workforce development	8.17%	21
11	Cleaner energy and alternative uses of carbon, carbon materials	7.78%	20
10	Material science	6.61%	17
12	Hydrology, food-energy- water system, clean water	5.84%	15
3	High-performance computing	5.45%	14
4	Biotechnology	5.45%	14
2	Advanced Manufacturing	4.28%	11
7	Natural disaster monitoring and prevention	3.11%	8
6	Quantum computing	2.72%	7
13	Funding to address Sexual Harassment	2.72%	7
9	Nuclear reactors	2.33%	6
5	Robotics	1.17%	3

257

Showing rows 1 - 17 of 17

## Q9 - Which of the following opportunities would you be interested in?



Data source misconfigured for this visualization.

### Q9\_4\_TEXT - Other (please specify)

Other (please specify)

discipline-based applications

NSF/NIH investigator initiated projects

The I-Corps Hub is a great opportunity.

Grants to support capacity building/programs like WySCI that can build on what we already have

Greater faculty capacity

Q10 - As part of the CHIPS and Science Act, NSF has begun the following programs.

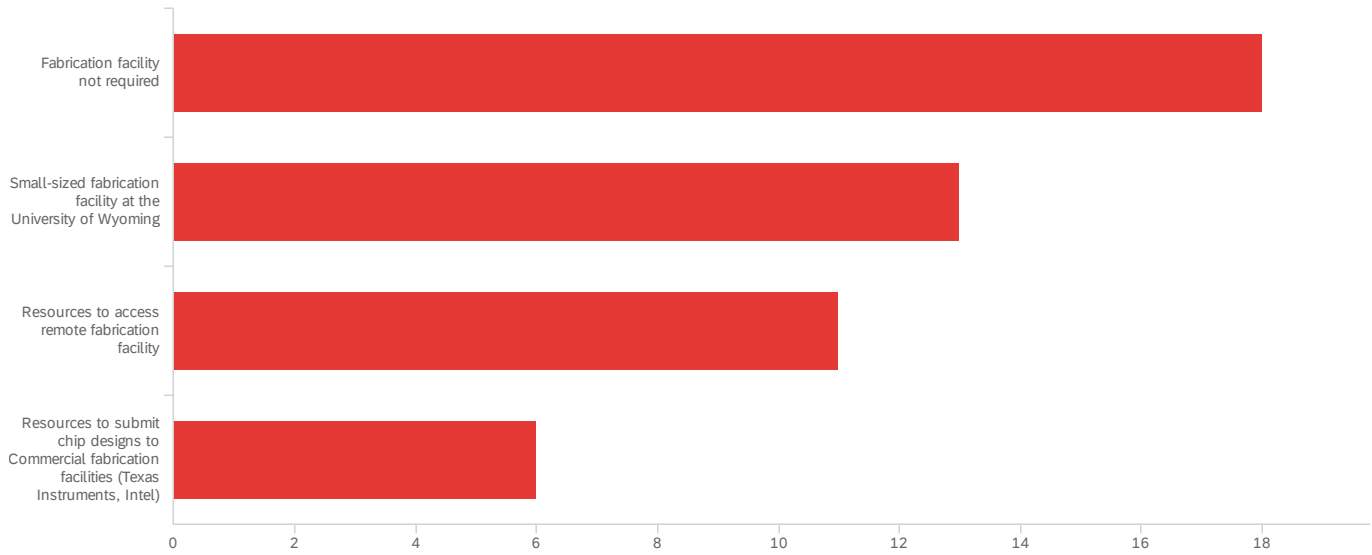
Which of these programs would you have interest in participating in or leading if UW were to apply to them?

#	Field	Choice Count
1	Accelerating Research Translation (ART) To build capacity and infrastructure for translational research at U.S. Institutions of Higher Education. A particular intent of ART is to support IHEs that want to build the necessary infrastructure to boost the overall institutional capacity to accelerate the pace and scale of translation of fundamental research outcomes into practice by supporting the development of a range of activities essential for this activity.	26.42% 28
2	Enabling Partnerships to Increase Innovation Capacity (EPIIC) The purpose of this solicitation is to broaden participation in innovation ecosystems that advance emerging technologies (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors and microelectronics) by supporting capacity-building efforts at institutions of higher education (IHEs) interested in growing external partnerships.	26.42% 28
5	Regional Innovation Engines Program Galvanizing use-inspired research, technology translation and workforce development through regional coalitions.	26.42% 28
6	Experiential Learning for Emerging and Novel Technologies (ExLENT) Supporting experiential learning opportunities that develop crucial skills needed to succeed Through this new initiative, the Directorate for Education and Human Resources (EHR) and the newly established Directorate for Technology, Innovation and Partnerships (TIP) seek to support experiential learning opportunities for individuals from diverse professional and educational backgrounds that will increase access to, and interest in, career pathways in emerging technology fields (e.g., advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics).	20.75% 22

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Showing rows 1 - 5 of 5

# Q11 - What is the semiconductor fabrication capability required to submit a proposal to the CHIPS and Science Act?



#	Field	Choice Count
1	Fabrication facility not required	37.50% 18
2	Small-sized fabrication facility at the University of Wyoming	27.08% 13
3	Resources to access remote fabrication facility	22.92% 11
4	Resources to submit chip designs to Commercial fabrication facilities (Texas Instruments, Intel)	12.50% 6

48

Showing rows 1 - 5 of 5

**End of Report**