

R1/RESEARCH WORKING GROUP FINAL REPORT



EXECUTIVE SUMMARY

The R1/Research Working Group convened in the first half of 2020 to examine the landscape of research and graduate education at the University of Idaho with the objective of identifying actions to be taken that would improve the research culture at the university and incentivize greater research and doctoral degree productivity. These actions would positively impact the university and increase the delivery and quality of the university's research, educational, and outreach missions. These actions would produce measurable improvements in research output and graduate degree completion, consistent with the university's objective of moving toward an "R1" (Doctoral Universities – Very High Research Activity) classification in the Carnegie Classification of Institutions of Higher Education.

The Working Group emphasized the importance of creating a long term, robust culture for research and graduate education, signaling clear institutional support and prioritization of research and graduate education, insisting on accountability for results, and investing in mechanisms to incentivize and germinate research. The Working Group recognizes that the university has historically, and currently, falls short in achievement in each of these areas and explored some of the causes for these shortcomings. The Working Group emphasized that specific actions and investments outlined in this plan must be accompanied by clear and consistent messaging from university leadership about the importance of research and graduate education (messaging that must align with observable actions taken to prioritize research and graduate education) and real accountability for deans, department chairs, and faculty to deliver on the university's research and graduate education expectations.

The plan supported by the Working Group emphasizes investment in three areas: (1) support for post-doctoral scholars, (2) support for graduate students, and (3) reallocation of F&A funds collected from sponsored projects. The plan proposed by the Working Group consists of the following actions:

- Immediate investment in post-doctoral fellowships (\$2 million of an indicative \$3 million base investment plan) – rapidly expanding post-doctoral scholars is the primary mechanism supported by the Working Group;
- Immediate investment in graduate education to maintain historical levels of graduate student support with direct investment into Research Assistantships (\$1 million of an indicative \$3 million base investment plan);
- Immediate reallocation of some existing Teaching Assistantships to prioritize support for vibrant graduate programs in departments with robust externally funded research productivity and productive doctoral programs;
- Immediate commitment to change allocation of F&A funds growth over 2019 baseline to 50% retained centrally and 50% reinvested in research;
- An Advancement initiative to increase endowed graduate fellowships across the university (leveraging university investments for match);
- An Advancement initiative to raise up to \$88 million in endowed undergraduate scholarships (or up to \$24.5 million in expendable undergraduate scholarship funds) to change the allocation of F&A by providing alternate revenue for up to \$3.5 million of annual undergraduate scholarships currently funded by F&A retained centrally;
- A clear commitment to accountability by investing in more productive programs and divesting from programs that do not meet expectations.

CONTEXT

Comprehensive research universities provide essential contributions to societies by:

- Generating economic impact through their research activities, including a high-skilled workforce attracted to direct work at the research institutions and supporting businesses;

- Production of new knowledge and new technologies that generates spin-off economic activity and new businesses;
- Production of a trained workforce, including advanced professional and technical workforce;
- Providing a center of education, innovation, culture, arts, sports, and other amenities;
- Providing accessible, high-quality higher education.

All of these contributions are amplified in the case of land grant research universities due to their state-wide mission and presence and their mission of practical, applied research with impact on industry, business, and society.

Research and graduate education are inextricably linked. Many graduate degrees require original research and scholarly productivity. Vibrant research groups are centered around individual professors or groups of professors surrounded by graduate students, undergraduate researchers, and post-doctoral scholars. It is these graduate students and post-doctoral scholars that provide much of the energy, new ideas, interpersonal collaboration, and hands-on work that advances the collective efforts of the research group, the department, and the university. Vibrant research groups result in vibrant graduate programs and vibrant graduate programs support vibrant research groups.

Research is not an activity separate from education. Excellent researchers are more engaged in their field and involved in creating new knowledge and new technologies. Students who learn from these practitioners are learning the state-of-the-art, they're learning how to innovate, and they learn material that is not yet in textbooks. Excellent researchers are high performers that generally demonstrate high performance in their instructional responsibilities, just as in their research responsibilities. Active programs in research and graduate education generate opportunities for undergraduate research and create a venue for research and instructional interactions between undergraduates, graduate students, and post-doctoral scholars that simply do not exist outside of research universities; these opportunities result in graduates with greater in-depth knowledge in their field, more hands-on skills and experience, and greater analytical capacity than they would otherwise have.

For these reasons, the University of Idaho must cultivate the best possible climate for research productivity and excellence. Any investment or action taken to elevate the scope, quantity, and

quality of research at the university will result in good outcomes, by generating new knowledge, putting new technologies into practice, and creating student opportunities. With sufficient expansion of productivity in research and graduate education, the University of Idaho, currently a top-tier R2 university, could be reclassified as an R1 university. Any steps in that direction will indicate improvement in the university's research climate and improved opportunities for student success.

THE R1/RESEARCH WORKING GROUP'S CHARGE FROM PRESIDENT GREEN

The task for this Working Group is to propose a pathway, or a set of alternative pathways for U of I to improve its research productivity sufficient to be classified as an R1 university. The committee should explore all alternatives, including research incentivization, institutional support, faculty role statement and expectations, graduate educational programs and priorities, and any other pertinent areas. The Working Group is asked to develop specific, actionable recommendations and determine the cost and recommended resource levels of those recommendations. The Working Group is not asked to address the feasibility or desirability of attaining R1 classification (although the proposed roadmaps should be feasible if properly resourced) or identify how the recommended actions would be resourced.

— Delivered by President Green to Working Group on 28 January 2020

PROCESS

The Working Group convened in January 2020 and completed its work over the span of spring semester, meeting three times.

The initial meeting on 28 January was focused on information gathering and sharing. The group heard about the Carnegie Classification, U of I's research performance and planning, U of I's graduate education performance and planning, and expectations around research and graduate education at the university. The group heard presentations on these topics from the VPRED, Dean of COGS, and the Vice Provost.

The Working Group followed up on this meeting with information requests regarding external research funding by faculty and department and a number of other areas.

The second meeting, on 25 February, focused on small group discussions and report-out of specific strategies and tactics for improving the research climate and productivity at the university. The Working Group focused its efforts on three questions: (1) which Carnegie metrics can the U of I most effectively address? (2) what specific actions or investments can materially improve these metrics? (3) how can the research culture and climate at U of I be improved?

Following the 25 February meeting, the chair, working with subsets of the Working Group, compiled a set of mechanisms favored by the Working Group as most impactful and estimated the scale of investments and actions required to materially impact the U of I Carnegie ranking. These tools and actions were combined into a series of indicative scenarios for the Working Group to consider and shared with the Working Group for review and evaluation in advance of the 3rd meeting. The chair and the executive sponsor reviewed progress and initial results with President Green a week prior to the third meeting of the Working Group.

The third meeting, on 10 April, reviewed the potential tools and investments identified to improve U of I's performance in research and graduate education and discussed which combinations of actions would yield the best results and have greatest impact. President Green participated in the third meeting, offering feedback, and he further instructed the group to consider a base case \$3 million ongoing annual investment and to specifically indicate an action plan for that scale of investment. President Green emphasized the importance of maximizing results of investment to improve in key Carnegie metrics and continue toward achieving the unambiguous goal of attaining an R1 classification. The meeting ended with a clear set of priorities and investments favored by the Working Group – the plan outlined in this whitepaper.

Following the third meeting in April, the chair and executive sponsor completed follow-up engagements with the Provost, VP of Advancement, and VP and AVP of Finance and Administration to seek feedback on and support for the Working Group's recommendations and drafted this whitepaper.

WORKING GROUP PARTICIPANTS

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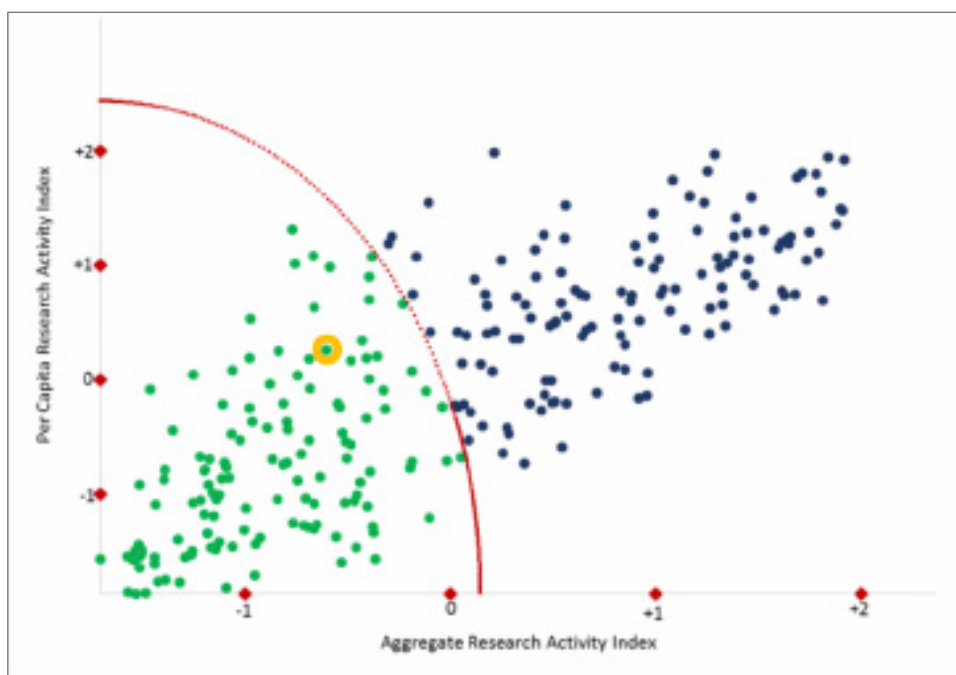
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THE CARNEGIE CLASSIFICATION

The Carnegie Classification of Institutions of Higher Education, housed at Indiana University, classifies the landscape of higher education. The University of Idaho is classified as a Doctoral University because it awards more than 20 research/scholarship doctoral degrees (if annual production of research/scholarship doctoral degrees is below 20, a university is classified as a Master's University). Because the U of I has

more than \$5 million in research expenditures (2019 expenditures were \$113 million) it would be classified as either R1 (Doctoral Universities – Very High Research Activity) or R2 (Doctoral Universities – High Research Activity) based on its performance relative to 260 other Carnegie Doctoral Research Universities. The University of Idaho is currently classified as R2: Doctoral Universities – High Research Activity.

FIGURE 1. 2018 Carnegie Classification of Doctoral Research Institutions (<https://carnegieclassifications.iu.edu/>). Green points are R2 institutions, with U of I circled in gold. Blue points are R1 institutions. Horizontal axis is based on university-wide metrics of quantity of research and doctoral degree productivity. Vertical axis is based on same metrics divided by population of faculty (per-capita faculty measure of productivity).



The classification of Doctoral Research Universities into R1 and R2 is a result of a comparison of the universities on criteria that measure the quantity of research productivity, doctoral research degree completion, and workforce characteristics, including faculty size and quantity of non-faculty researchers with Ph.Ds. The specific metrics used in the most recent classification are research expenditures, research/scholarship doctoral degrees completed, and non-faculty researchers with Ph.Ds. These metrics are measured for science and engineering, social science, and humanities fields and are measured on both total university and per-faculty basis.

The Carnegie Classification methodology has changed in the past, including changing metrics, and could change in the future. The next classification is planned for 2021.

SPECIFIC ACTIONS TO IMPACT RESEARCH AT UNIVERSITY OF IDAHO

The Working Group had wide-ranging discussions about tools and approaches to improve the quality and quantity of research and graduate education at the university. These approaches ranged from actions that would immediately impact U of I performance on Carnegie metrics, to strategies to improve climate, incentivization, and accountability that would certainly create a better research climate and culture but would have a less direct or less material or less immediate impact on Carnegie metrics. Over the course of this process, the Working Group increasingly focused on the most directly impactful strategies to increase research and graduate degree production – these approaches are reflected in this whitepaper. Other tools and approaches with merit, but that were not

included in the high-priority, high-impact strategies are listed in the Appendix, many of which can be implemented to complement the university-wide strategy recommended here.

The tools and approaches discussed by the Working Group centered on addressing some of the main challenges and obstacles to increasing research and graduate education at the university:

- Perceived lack of incentivization and value placed on research by university leadership from peers and department chairs to deans, senior-most university leadership, and the State Board of Education;
- Perceived lack of reward or accountability (and in some cases perceived disincentivization) for research and graduate education in faculty tenure and promotion decisions and changes in employee compensation;

- Lack of adequate base funding in departments to run vibrant graduate programs (specifically, not enough TA or other graduate support to allow admission of sufficient graduate cohorts on the expectation of achieving some research funding while maintaining a safety net for graduate student support);
- Lack of organizational capability to increase grant proposal submissions, execute additional research, and increase graduate student advising;
- Limited major external partnerships, joint programs, and industry engagements.

As the result of the second meeting of the Working Group, and in preparation for the third meeting, the Working Group focused on a number of high-impact, priority tools or approaches. These tools or approaches were identified as being the most effective for resulting in a material change in the U of I Carnegie Classification and form the building blocks for a strategy that would consist of implementation of a combination of these tools, described in Table 1.

TABLE 1. High-impact tools or approaches to consider incorporating into final strategy recommendation.

Tool or Approach	Description	Priority
New Post-Doctoral Fellowships	Institute Vandal Post-Doctoral Fellows program; award fellowships based on total research expenditures, successful completion of doctoral degrees, and leverage opportunities	1
TA Reallocation	Reallocate a portion of university-funded TAs to PIs and departments with vibrant research programs (measured by research expenditures and graduate student completion) needing flexible support	2
New Graduate Research Fellowships/Assistantships	Fund new Research Assistantships and Vandal Graduate Fellows program, allocated based on research expenditures, successful completion of doctoral degrees, and leverage opportunities	2
Reallocate F&A Funds	Decrease the percentage of funds retained by central to fund non-research activities, and increase the percentage of funds returned to colleges, departments, PIs, and VPRED	3
Strategic Initiatives Fund	Create a university-level fund to launch new major cross-college initiatives	4
ORED RISE Investments	Create a permanent funding mechanism for existing RISE grant program (Research, Infrastructure, and Scholarly Excellence)	4
Research and Faculty Development Staffing	Increase staffing in Research and Faculty Development Team, either centrally or distributed in colleges	5
Graduate Studies Staffing	Increase staffing in COGS to accommodate increased graduate student and post-doctoral scholar population	5

RECOMMENDED STRATEGY

The strategy recommended by the Working Group includes components that combine (1) immediate investment of new ongoing annual funding; (2) immediate changes to existing resource allocation; (3) fundraising to enable expansion of investments over time. The strategy depicted in Figure 2 is based on an indicative \$3 million initial investment of new annual ongoing funding, although this amount could be expanded or contracted based on available funding.

The strategy the Working Group supports emphasizes investment in these three areas: (1) support for post-doctoral scholars, (2) support for graduate students, and (3) reallocation of F&A funds. Specifically, this proposed strategy for U of I to achieve R1 status consists of the following actions:



FIGURE 2. The three components of the recommended strategy for U of I to achieve R1 classification. These are post-doctoral scholar support, graduate student support, and F&A funds reallocation to researchers, with leadership and faculty accountability for execution and desired results.

- *The primary mechanism supported by the Working Group* is the immediate investment in post-doctoral fellowships (\$2 million of an indicative \$3 million base investment plan) to rapidly expand the numbers of post-doctoral scholars;
- Immediate investment in graduate education to maintain historical levels of graduate student support, with direct investment into Research Assistantships (\$1 million of an indicative \$3 million base investment plan);
- Immediate reallocation of some existing Teaching Assistantships to prioritize support for vibrant graduate programs in departments with robust externally funded research productivity and productive doctoral programs;
- Immediate commitment to change allocation of F&A funds growth over 2019 baseline to 50% central – 50% reinvestment in research;
- An Advancement initiative to increase endowed graduate fellowships across the university (leveraging university investments for match);

- An Advancement initiative to raise up to \$88 million in endowed undergraduate scholarships (or up to \$24.5 million in expendable undergraduate scholarship funds) to change the allocation of F&A funds by providing alternate revenue for up to \$3.5 million of annual undergraduate scholarships currently funded by F&A funds retained centrally;
- A clear commitment to accountability by investing in more productive research and graduate degree programs and divesting from programs that do not meet expectations.

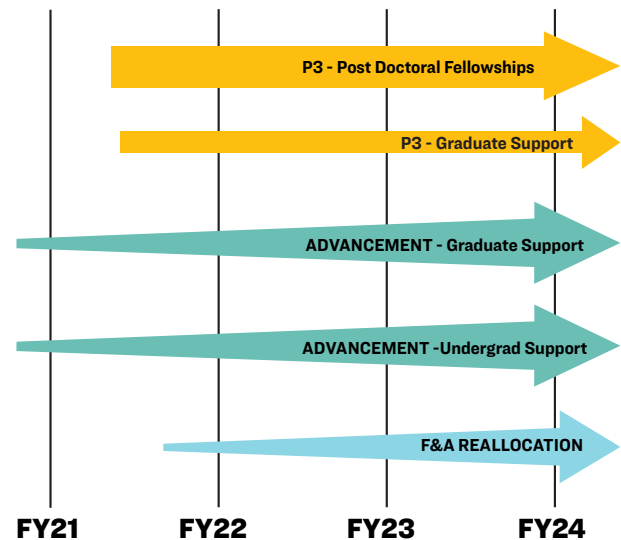


FIGURE 3. Indicative funding streams for the recommended R1 Working Group strategy. Arrow size indicates the scale of investment. Yellow arrows represent the initial investment (an indicative P3 investment of \$3 million in new ongoing annual funding is the base case). Green arrows represent money raised through Advancement. The blue arrow shows revenue invested in research from F&A reallocation.

The focus on post-doctoral scholar funding as the primary mechanism (over focus on funding for doctoral education) results from the Working Group's conclusion that funding post-doctoral scholars was most expeditious and that funding post-doctoral scholars have good potential to improve graduate education through increased mentorship and grantsmanship, in conjunction with faculty. In particular, post-doctoral scholar funding was concluded to be most expeditious because post-doctoral scholars were in a position to have immediate impact on research productivity, were relatively cost-efficient, and because investments in post-doctoral scholars would be directly considered in two Carnegie metrics: research expenditures and number of non-faculty researchers with doctoral degrees.

Achieving the expected results of these investments will be critical to advancing toward an R1 classification. As a result, accountability for performance and results will be essential. Further, to achieve the maximum impact of these investments, it is essential that these investments be aggressively leveraged with granting

agencies, industry, national labs, and other potential partners to secure additional funding and investments.

The Working Group's recommendations to plan for the implementation of these investments are outlined in Table 2.

TABLE 2. Implementation Recommendations.

Recommended Action	Implementation Considerations
Post-Doctoral Fellowships	- A small committee led by the VPRED and including key deans and the Provost should develop a mechanism to allocate Post-Doctoral Fellowships where they will result in the greatest increase in research expenditures and graduate degree completion; Some part of the process or allocation should include an open call for proposals from faculty - These investments should be leveraged by providing them as matching positions for major grants or using them as a promised match to entice major gifts - Allocation should consider strategies to focus on areas of excellence or strength for greater impact, and consider opportunities like key partnerships and unique assets
Investment in Graduate Research Assistantships	- A small committee led by the VPRED and the COGS Dean, and including key deans and the provost should develop the mechanism to allocate these new assistantships to areas that will support vibrant, externally funded research/scholarship doctoral degree programs; some part of this process or allocation should include an open call for proposals from the faculty - Advancement should use these new assistantships as enticements to solicit additional Graduate Research Fellowships by offering these as a match (e.g., offering to provide a second named graduate fellowship for any donor who endows 1 fellowship, or even offering a 2:1 fellowship match)
Reallocation of Existing Graduate Teaching Assistantships	- A small committee led by the VPRED and the COGS Dean, and including key deans and the provost should re-examine the allocation of teaching assistantships and investigate how more teaching assistantships can be allocated to departments where they are needed to support vibrant graduate programs that successfully produce research/scholarship doctoral degrees and externally-funded research programs - The committee should remain cognizant of the important role that TAs play in delivering the instructional mission of the university, but should explore opportunities to replace TAs in departments with high instructional loads, but low Ph.D. production with instructors (even reallocating some TA funding toward instructors to allow remaining TAs to be focused on vibrant graduate programs)
Reallocation of F&A Funds Growth Above Baseline	A strong communication plan should be implemented to make this a clear and concrete statement of support for research from the President's and Provost's offices indicating the potential for future F&A funds reallocation with initial success
Advancement Campaign for New Graduate Research Fellowships	- Advancement should use the new university-funded positions as enticements to solicit additional Graduate Research Fellowships by offering these as a match (e.g., offering to provide a second named graduate fellowship for any donor who endows 1 fellowship, or even offering a 2:1 fellowship match) - These could be named fellowships for donors, or fund a prestigious university fellowship program
Advancement Campaign for either an \$88 million endowment or \$24.5 million in expendable gifts for undergraduate scholarships (to allow F&A reallocation)	- The endowment would replace the current \$3.5 million spent annually on undergraduate scholarships from F&A funds, allowing a 40:60 central: returned F&A split to be implemented with no loss in level of undergraduate support; the same could be achieved for a seven year commitment with \$24.5 million in expendable undergraduate scholarship funds; a lesser annual investment in undergraduate scholarships could still allow a lesser reallocation of F&A funds - At the time of this investment and reallocation of the F&A, the distribution of the returned F&A funds between college, department, PI, and VPRED would need to be determined
Commitment to Accountability	A small committee led by the VPRED and Provost and including key deans should develop strategies to ensure that expectations are in place to accompany new investments allocated to each unit and that researchers, departments, and colleges are accountable for executing as planned on the investments and delivering results; accountability should include concrete mechanisms like tenure and promotions, CEC, and divestment

SUMMARY

This proposed strategy takes definitive steps to address the obstacles to improved research and graduate productivity with concrete actions and investments. The three-pronged approach -- support for post-doctoral scholars, support for graduate students, and reallocation of F&A funds -- sends a clear message of support for research and graduate education and provides the tangible resources to incentivize the right impactful activities and enable success. By making the initial investment (an

indicative annual \$3 million investment), launching advancement efforts, changing the F&A fund distribution policy, and expecting accountability, this plan unites the President, Provost, Vice President for Advancement, Vice President for Finance and Administration, and Vice President for Research and Economic Development in clear support and concrete action to improve research and graduate education at the University of Idaho.

APPENDIX: ADDITIONAL ACTIONS

The Working Group identified and discussed a number of concrete actions that could improve the climate and culture for research and graduate education at the University of Idaho. Many of these suggestions can be implemented at any organizational level (i.e., departments, programs, or individuals could control many of these without broader university action) and with limited investment. While these are not major pillars of this Working Group's plan to drive to R1, they are important ideas and suggestions that should be considered and implemented where possible as the university develops its research culture and emphasis on research excellence.

1. Reevaluate teaching buyout policies and design these to meet educational mission requirements while enabling greater capacity for research and graduate education
2. Reevaluate faculty teaching loads, allowing for differential teaching loads depending on faculty research expectations and productivity
3. Improve graduate student and post-doctoral recruitment and retention by leveraging unique resources (Idaho natural environment, proximity to national laboratories, industry connections, etc)
4. Focus on partnerships with industry by increasing industry connections at all levels and developing focused capacity in Corporate and Foundation Relations or another office to develop corporate connections and expand "high-touch" research and educational relationships
5. Look for opportunities for strategic focus, including cluster hires and areas for emerging funding priority
6. Look for opportunities for cross-disciplinary synergy, particularly in areas that can combine science and engineering with social sciences and humanities
7. Increase focus on research productivity and potential when hiring and promoting faculty
8. Increase social events and other opportunities for researchers to interact within the university and with external researchers, thought leaders, and experts. Increase informal social events, add a virtual (or actual) faculty club, support seminar series, and topical events.
9. Increase expectations for faculty to advise graduate students to completion and complete significant, externally funded research; hold faculty accountable in CEC and tenure and promotion
10. Hold department chairs, deans, and departments accountable for meeting expectations for graduate degree completion and research productivity
11. Develop comprehensive plans for research infrastructure construction, maintenance, and support
12. Organize activities around big themes or grand challenges
13. Consider offering graduate minors
14. Examine expansion of programs that offer research/ scholarship doctoral degrees, particularly in the humanities and social sciences
15. Increase quality and access to mentoring for faculty to meet expectations
16. Focus on developing internal undergraduate-to-Ph.D. pipelines or MS-to-Ph.D. pipelines
17. Explore potential for shared post-doctoral scholars, possibly incentivize with access to resources like space in IRIC
18. Undergraduate class in writing graduate fellowships (perhaps through the honors college)
19. Involve industry and government in graduate committees and education where appropriate, perhaps through a Fellow-Mentor-Advisor program (a funded graduate fellow with a traditional faculty advisor and an additional industry mentor)
20. Bonuses or incentives for grantsmanship and graduate education
21. Provide pathways for self-funded research faculty
22. Design leadership incentives and metrics to align with R1 goal
23. Take advantage of university's smaller size to increase cross-disciplinary research connections
24. Allow different roles and expectations for different faculty
25. Remove administrative obstacles to research and graduate education, concentrate on developing culture to enable necessary activities and agreements
26. Increase events to convene important discussions with external stakeholder and communicate U of I research
27. Develop programs and strategies that take advantage of unique characteristics of Idaho
28. Explicitly include research productivity in program prioritization
29. Improve research computing infrastructure and funding sustainability
30. Reconceptualize program clusters, consider new departmental, college, or school organizations around research problems or themes
31. Create a post-doctoral support system, including university membership in National Postdoctoral Association