



UNDERGRADUATE RESEARCH & SCHOLARLY ACTIVITY

Undergraduate research is a high-impact practice that enhances student engagement, retention, completion, and success.

URSA Activities

- URSA Student Project Awards**
 Funding for original research and creative scholarly projects pairing undergraduates with faculty mentors at all UAF campuses.
- URSA Student Travel Awards**
 Funding for travel by undergraduates to support or present their original research.
- URSA Mentoring Awards**
 Funding for mentors (faculty, postdoctoral researchers, graduate students) to enhance or develop opportunities for undergraduate research, especially recurring opportunities.
- Curriculum Support and Development**
 Development of curricular opportunities for undergraduate research through creation of URSA courses and assistance developing departmental courses such as the Museum Research Apprenticeship Program (MRAP).
- UAF Research and Creative Activity Day**
 An annual celebration and presentation of research by undergraduate students at UAF.

URSA Impact

- Presentations by undergraduates of their research at national and international meetings.
- Publications co-authored by undergraduates in peer-reviewed professional journals.
- Acceptance of UAF baccalaureate graduates to top graduate programs, professional schools and employment locally and nationally.

Selected Performance Indicators

UAF undergraduates enrolled in 1 or more research courses

	FALL	SPRING	SUMMER	TOTAL
AY2012	137	210	15	362
AY2013	148	186	31	365
AY2014	134	205	31	370
AY2015	127	226	55	408
AY2016	107	217	47	371
AY2017*	298	338	28	664
AY2018	279	305	11	595

*The significant increase in research courses reflects a change in the research course designation process.

URSA Student Awards

AY2012	32 awards	\$93,491
AY2013	45 awards	\$107,967
AY2014	60 awards	\$147,931
AY2015	67 awards	\$176,076
AY2016	62 awards	\$149,627
AY2017	70 awards	\$146,452
AY2018	130 awards	\$192,215

URSA Mentoring Awards

AY2012	5	\$16,391
AY2013	8 aw.	\$31,938
AY2014	10 aw.	\$35,203
AY2015	15 awards	\$78,016
AY2016	15 awards	\$69,235
AY2017	13 awards	\$89,400
AY2018	19 awards	\$93,368

URSA Innovative Technology and Education (ITE) Awards

AY2015	11 awards	\$65,687
AY2016	7 awards	\$58,777
AY2017	10 awards	\$55,150
AY2018	9 awards	\$53,198

All URSA student and mentoring awards derive from UAF's reinvestment of 1% ICR into student research. ITE awards derive from 20% of the student technology fee.



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University of Alaska Fairbanks
Undergraduate Research and Scholarly Activity (URSA)
Annual Report AY 2017-18

The mission of the University of Alaska Fairbanks (UAF) office of Undergraduate Research and Scholarly Activity (URSA), which was established in 2011, is to support, develop, and institutionalize UAF's diverse and robust undergraduate research and scholarly activity programs. This activity refers to student-faculty collaboration in the creation of discipline-specific and interdisciplinary knowledge. The primary means by which URSA fulfills its mission are as follows:

1. Provide funding for undergraduate students and faculty who collaborate on research and creative projects and activities;
2. Serve as a clearinghouse for projects that offer undergraduate students and faculty opportunities to collaborate in research or creative projects and activities;
3. Assist UAF faculty and staff who strive to create or maintain undergraduate research and creative scholarly programs;
4. Create regular events that serve as venues for students to present their research and creative projects and activities;
5. Catalog and archive UAF undergraduate student participation in research and creative projects, as well as the outcomes and products of those projects; and
6. Facilitate UAF undergraduate student recruitment and retention initiatives through program-specific initiatives.

Through these programs and initiatives, URSA aims to improve skills in critical thinking, creative problem solving, communication, and methods of inquiry and to engender a culture of life-long learning for all students, as well as enhance preparation and education of undergraduates who will fill the needs of Alaska's 21st century workforce and society. URSA is UAF's resource for the development and promotion of experiential learning activities that engage undergraduate students, regardless of discipline, in support of UAF's goal to be a leading student-oriented research university. Based on the 2016 National Survey of Student Engagement (NSSE) for High-Impact Practices, UAF seniors scored higher than peer institutions on "working with a faculty member on a research project". In this age of ever-increasing information and access to that information, research literacy is a required competence for the entire populace, not just UAF students. Thus, offering opportunities for undergraduate students to participate in research and creative scholarship is a noted best practice in higher education. Building on existing efforts and capacities, URSA attracts, retains, and enables UAF students to pursue varying levels of research and scholarly activity engagement from independent study investigations to senior theses including scholarly exhibits and presentations, performances, or research endeavors.

University of Alaska Fairbanks
Undergraduate Research and Scholarly Activity (URSA)
Major Accomplishments

1. URSA Administration
 - a. Trent Sutton, UAF Department of Fisheries, continues as the URSA Director (18% of time year-round).
 - b. Kate Pendleton continues to serve as the full-time URSA Coordinator during the academic year and half-time during the summer.
 - c. The URSA Faculty Advisory Board was expanded to include the following UAF faculty: Brian Hemphill and Charles Mason from College of Liberal Arts (CLA), Nicole Cundiff and Josh Lupinek from School of Management (SOM), Carie Green and JoAnne Healy from School of Education (SOE), Steffi Ickert-Bond and Kris Hundertmark from College of Natural Science and Mathematics (CNSM), Sunwoo Kim and Sveta Stuefer from College of Engineering and Mines (CEM), David Valentine and David Verbyla from School of Natural Resources and Extension (SNRE), Andrew Seitz from College of Fisheries and Ocean Sciences (CFOS), Anshul Pandaya from College of Rural and Community Development (CRCD), and Alexandra Fitts, UAF Vice-Provost.
 - d. An URSA Student Advisory Board was created in 2017, which included the following UAF undergraduates: Pomi Chafin from School of Management (SOM), Luke Rogers from College of Natural Science and Mathematics (CNSM), Cynthia Nelson from College of Fisheries and Ocean Sciences (CFOS), Jessica Herzog from School of Natural Resources and Extension (SNRE), Maria Jacobson-Panozo from College of Rural and Community Development (CRCD), Jessica Obermiller from College of Liberal Arts (CLA), Elizabeth Smith from School of Education (SOE), and Katie Aikens from College of Engineering and Mines (CEM).
 - e. The URSA Review Panel included the following UAF faculty: Andrea Bersamin, Wendy Croskrey, Elaine Drew, Devin Drown, Greg Finstad, Alexandra Fitts, Javier Fochessato, Jennifer Guerard, Brian Hemphill, Falk Huettman, Sun Woo Kim, Ilana Kingsley, Ellen Lopez, Charles Mason, Amy May, Ryan Oliver, Josh Reuther, Andrew Seitz, Dave Verbyla, Peter Webley, and Peter Westley.
2. Funding Awards
 - a. The total amount of funding awarded by URSA in FY2017-18 were \$338,770 (140 awards total).
 - b. A total of \$285,571 was allocated during AY2017-18 for undergraduate student projects (fall/spring projects and Summer Undergraduate Research projects), undergraduate student travel, Research and Creative Activity Day awards, and mentoring awards. The funding for these awards are derived from UAF's reinvestment of 1% ICR into undergraduate student research and creative activity. Funding was allocated as follows:
 - i. Fall and Spring Undergraduate Project Awards (28 awards [62 applicants] totaling \$65,069)
 - ii. Undergraduate Student Travel Awards (31 awards [59 applicants] totaling \$50,484)
 - iii. Summer Undergraduate Research Project Awards (15 awards [30 applicants] totaling \$71,137)
 - iv. Mentoring Awards (22 awards [59 applicants] totaling \$93,868)
 - v. Research and Creative Activity Day Awards (28 awards [142 applicants] totaling \$7,000)
 - c. Innovative Technology and Equipment (ITE) Awards (9 awards [31 applicants] totaling \$53,199). The ITE Awards represented a funding line (former UAF Technology Advisory Board [TAB] funds) through URSA starting in 2015, which was used to support equipment and associated software in support of undergraduate and graduate education and research at UAF. These funds are derived from 20% of the student technology fee.

3. Clearinghouse for Undergraduate Student Opportunities
 - a. URSA continues to serve as UAF's clearinghouse for undergraduate student opportunities to engage in unique projects conducting research or creative scholarly activities. However, the process is informal (reliant on passive communication) and thus quantifying URSA's role as clearinghouse or student-faculty matchmaker is difficult because URSA is not a student program; rather, URSA is an embodiment of UAF's institutional support for undergraduate student and faculty collaboration in research and creative projects.
 - b. Fourteen UAF students enrolled URSA and MRAP (Museum Research Apprenticeship Program) courses during AY2017-18 (see 5. Curriculum Development below).
 - c. One hundred thirty UAF students received URSA funding in support of research or creative scholarship during the fall, spring, and summer of AY2017-18, and an additional 265 students applied but did not receive funding (395 total applicants). Some of these students may have been matched with their project either directly by URSA or indirectly through URSA's request for proposals. In addition, walk-in students seeking advice with respect to identifying research opportunities and/or mentors are frequent in the URSA office (weekly at a minimum and daily in the weeks at the beginning of a semester and around an URSA application deadline date). URSA has not tracked or followed up with these ad hoc advisees because they do not all apply for funding and, as a result, are not entered into the database.
4. Student Tracking and Project Cataloging
 - a. The URSA database currently has 2,235 UAF undergraduates that have been involved in research and creative activity since its creation in 2012.
 - b. The 2013-2014 UAF accreditation report stated that 41% of UAF undergraduate students have participated in an academic research experience over the course of their baccalaureate studies. Further, the 2,235 students in the URSA database support that quantification of undergraduate student participation in research. Not included in the accreditation documents and not yet included in the URSA database are undergraduate students who are employed as research assistants. URSA has been working with UAF Human Resources and the UAF Office of Planning, Analysis, and Institutional Research (PAIR) to identify a means to include such students in the database.
 - c. An online version of UAF Research and Creative Activity Day has been created within the Institutional Repository, which is a joint effort of URSA and Library Sciences Staff.
<https://scholarworks.alaska.edu/>.
 - d. Gary Hagestead in the Office of PAIR continued to work on streamlining the process of populating the URSA database to allow for more detailed and comprehensive tracking and reporting of undergraduate student research and creative scholarly activities. Gary retired as of May 1, 2018 and Derek Bastille of the Office of Management and Budget has taken over some of his duties. URSA worked with the UAF Deans to identify research-focused undergraduate courses in their respective academic programs to generate more accurate and comprehensive data on the involvement of undergraduates in research and creative activities at UAF.
5. Curriculum Development
 - a. URSA (Undergraduate Research and Scholarly Activity) courses offered in AY2017-18
 - i. URSA 388 Undergraduate Research and Scholarly Activity I (Instructor: Trent Sutton; Enrollment: 2 students)
 - ii. URSA 488 Undergraduate Research and Creative Scholarship II (Instructor: Trent Sutton; Enrollment: 2 students)
 - b. MRAP (Museum Research Apprentice Program) courses offered in AY2017-18
 - i. MRAP 288 Museum Research Apprenticeship I (Instructor: Joshua Reuther; Enrollment: 2 students, Kevin Winker: Enrollment: 4 students)

- ii. MRAP 488 Museum Research Apprenticeship II (Instructors: Joshua Reuther; Enrollment: 2 students, Link Olson; Enrollment 1 student)
6. Research and Creative Activity Day
- a. The UAF Research and Creative Activity Day was held on 10 April 2018; a total of 142 UAF undergraduate students presented or hosted displays at the event.
 - b. Dean's Choice Awards (\$250 per student per school/college, up to five students per school/college) were given for each college or school; the awardees and their poster title for each college/school were as follows:
 - i. College of Engineering and Mines (CEM) – Kimber Harnar (Soil Freezing and Wetting Curves: Their Relationship to the Clausius-Clapeyron Equation); Brandt Lomen (Pseudo-Sun Instrument); Ryan Stonebraker, Collin Lasley, and Tristan VanCise (Calamine: A Virtual Reality Programming Language); Duncan Fisher, Levi Purdy, and Michael Radotich (UAF/AIAA Design/Build/Fly); Ross Boling, Evan Denty, Bong Chon, and Ryan Goldfuss (Design of an Isolating Aircraft Cabin Air Curtain for a Safer Air Environment).
 - ii. College of Liberal Arts (CLA) – Saran Manriquez (Bright Ideas: Professional Lighting Using Everyday Objects); Colleen Mertes (Challenging Male Sexual Dominance and Asserting Female Sexuality Through Rugby Songs); Kevin Huo, Jason Kells, and Fionna Fadum (Health and Wellness for UAF Students Living on Campus: Resources, Gaps, and Recommendations); Alexandra Brown-Ardnt, Sabrina Austin, and Didar Baumgartner (Attitude Matters: Unique Factors that Contribute to Healthy Aging in Residents of Central Alaska).
 - iii. College of Natural Science and Mathematics (CNSM) – Tracy Asicksik (Development of High Spatial Resolution Imagery for the Cities of Dillingham, Ekuk, and Naknek, Alaska Using Structure-From-Motion Software); Jeremy Thomas (Transient Activity Patterns in Coupled Neuron Networks); Elise Stacy (Exploring the Population Dynamics of American Marten in Interior Alaska); Mackenzie Jenkins (Neurochemical Pathways in the Brainstem Involved in A1 Adenosine Receptor Agonist-Induced Hibernation in the Arctic Ground Squirrel); Diane Murph (Dietary Associations With Carbon-13 in Breath).
 - iv. School of Education (SOE) – Shayle Liaban (Young Children's Drawings of Outdoor Adventures in Rural Alaska).
 - v. College of Fisheries and Ocean Sciences (CFOS) – Maximillian Erickson and Tibor Dorsaz (The Design and Construction of an Intermittent-Flow Respirometer); Alyx Hoover and Diedra Neeley (Viability of Using RADseq to Resolve Polychaete Phylogeny- A Pilot Study); Noah Khalsa (eDNA Mapping of Juvenile Chinook Salmon Overwintering Distributions); Cynthia Nelson (Alaska Juvenile Salmon Response to a Visual Stimuli); Joseph Spencer (Growth and Diet Characteristics of Northern Pike in Native and Invasive Habitats).
 - vi. School of Natural Resources and Extension (SNRE) – David Rhodes (Interpretive Trail of the T-Field Exotic Tree Plantation); Roger Ridenour (The Arctic Biosphere Container); Kimberly Diamond (Cost-Benefit Analysis of Commuting Methods in Alaska: Drive or Ride?); Hannah Gerrish and Max Newton (Mapping Dall Sheep Habitat Changes with NDVI in Gates of the Arctic National Park and Preserve).
 - vii. College of Community and Rural Development (CRCRD) – Maria Jacobsen-Panozo (Shifting Focus- Indigenous Land Claims in Bolivia).
 - viii. School of Management (SOM) Lufti Lena (University of Alaska Fairbanks Student Investment Fund); Corey LePore and Alex Springer (Ocean Acidification Fast Fact Research).

7. Student Highlights:

- a. Evan Denty, Bong Chon, Ross Boling, and Ryan Goldfuss (CEM – Mechanical Engineering) researched the design of a novel aircraft passenger-seat ventilation system that uses an innovative air curtain to aid in isolating breathing air between passengers to significantly reduce the potential spread of airborne pathogens and thereby reducing the potential for a pandemic.
- b. Tristan Van Cise, Ryan Stonebraker, and Collin Lasley (CEM - Computer science) worked on a program called Calamine, a platform centered on motion-based programming using virtual reality. Traditionally, programming adopts a static nature; one sits in a chair and types. With Calamine, the goal is to remedy this inherent lack of physical activity and usher in a new development medium for those interested in learning code.
- c. Tibor Dorsaz (CFOS - Fisheries) reared juvenile Broad Whitefish under multiple water temperatures to quantify physiological parameters such as length or metabolic rate to predict growth responses of this crucial subsistence fish species in the face of climate change.
- d. Rose Crelli (CLA - Music) attended the 14-day intensive Marrowstone Festival to better understand the preparation process for a career with a major Symphony Orchestra by participating in rehearsals and concerts, observing masterclasses, and receiving private lessons.
- e. Krystina Stobinski's (CLA - Psychology) designed a project to qualitatively explore the relationship between students with math anxiety, their professors, and university math programs. Outcomes will include betterment of University math programs as well as increased student confidence and academic success.
- f. Emily Dreher's (CLA - Anthropology) project used critical discourse analysis to compare representations of two sporting events in which human and animal athletes compete together: dog mushing and horse racing. Social and mass media coverage of significant horse and sled dog races was examined to see how sport enthusiasts and critics constitute animals-as-athletes.
- g. Colleen Mertes's (CLA - Linguistics) project analyzed rugby songs. The songs, notable for bawdy lyrics, are sung at “socials.” Her aim was to understand how women rugby players negotiate singing phallogentric and misogynistic lyrics. She drew from linguistic anthropology research on swearing, stereotypes about gendered speech, and linguistic meaning in communities of practice.
- h. Trevor Grams's (CNSM - Geoscience) project involved the creation of an unmanned aerial system which was used to develop a 3-D model of snow depth variability across micro-terrain features after snow and wind events in Thompson Pass, Alaska. The model was displayed in EPSCoR’s virtual reality and assisted with avalanche education efforts by the Eastern Alaska Range Avalanche Center.
- i. Elise Stacy (CNSM - Biology) presented her research at the New Mexico National Wildlife Society Meeting. Stacy said, “Presenting my research in front of a broader audience will push me out of my comfort zone when it comes to presenting my research. Presenting to a larger, unfamiliar and more critical audience was good practice and will push me to work on my presenting skills and feel confident in my research.”
- j. James Campbell's (CNSM - Chemistry) project involved iron and copper aerosols which pose serious health risks. Using air samples collected every hour throughout the summer, he analyzed the concentrations for trends which were compared to other data collected during the winter.
- k. Jeremy Thomas's (CNSM - Physics) project involved spontaneous switching between differently ordered activity patterns is observed in coupled neuron networks. Transient activity at the network and system level has underlying mechanisms that are relatively unknown. Numerical simulations and statistical methods determined the types of pattern switching, the associated time scales, sensitivity, and dependence on network coupling.
- l. Cole Berner's (SOM - Business Administration) project “Conduct Secondary Data Analysis Research Using the Pareto Principle examined whether an NBA team’s top 20% of players, in terms of salary, usage percentage, and simple game score, produced 80% of the team’s production, as well as if approaching the 80/20 rule correlates with regular season win percentage.

8. Mentor Highlights:

- a. Elaine Drew (CLA – Anthropology) mentored three undergraduate students in a socio-behavioral health study about student health and wellness on UAF campus. The funding supported materials for student training, data collection, and analysis as well as student stipends.
- b. Claudia Ihl (Northwest Campus – Science) and a student investigated the foraging and habitat choices of urban Muskoxen during summer to better understanding why they are in Nome and how their presence near houses and dog yards could be discouraged. Muskoxen within Nome city limits have killed many dogs and their presence is causing much anxiety to local residents.
- c. Andres Lopez (CFOS – Fisheries) mentored three undergraduate students as they conducted the first genome-wide survey of genetic diversity for Alaskan populations of Lake Trout. Activities included training and direct experience with advanced molecular biology techniques.
- d. Brandon Boylan (CLA – Political Science) mentored the UAF Model UN team, which was comprised of undergraduate students from diverse disciplines across UAF, as they competed in the National Model United Nations (NMUN) conference in New York in March 2018.
- e. Abel Bult-Ito (CNSM – Biology) mentored undergraduate students in his study of spontaneously compulsive-like Mice. This funded allowed the group to confirm dFBr effects in females and strengthen their full patent application which was submitted in March 2017.
- f. Angela Gastaldi (CFOS – Fisheries) and her two mentored students performed a pilot study to test the viability of using RADseq, a form of next-generation sequencing, on polychaete worms.
- g. Duncan Green (CFOS – Fisheries) and two undergraduate students designed, built, and tested a respirometer used for measuring oxygen consumption rates of fishes. In addition to exposure to the design and fabrication process, the undergraduate students gained experience in laboratory methods.
- h. Daisy Huang (CEM – Mechanical Engineering) mentored two undergraduate students who tested the frictional properties of sled runners under varying controlled conditions. Iditarod musher Ken Anderson provided guidance. Testing was both in a laboratory setting and on actual sleds on natural snow, under different loading and speeds.
- i. Lawrence Itela (CNSM – Chemistry) mentored an undergraduate student who studied the degradation of the antiretroviral compounds (nevirapine, lamivudine, and zidovudine) via photolysis under ambient environmental conditions. The project provided a training model for the introduction of photochemical research while helping elucidate on the kinetics and mechanisms of photo-degradation of these drugs in nature.
- j. Sunwoo Kim (CEM – Mechanical Engineering) mentored two undergraduate students to develop phase-changing heat transfer devices to make it possible to utilize renewable or waste energy and to minimize carbon footprint from the existing carbon-based energy systems in Alaska. The goal was to develop a device for dry cabin dwellers. The heat transfer device was tested and the results showed that a cabin dweller can save about 35% of heating wood by storing the heat from the stove during the evening time and locally using the stored heat during the night.
- k. Kendall Mills (CNSM – Biology) mentored an undergraduate student that identified the genes responsible for melanistic pelage color in two species of Marmots to determine if microbial degradation is selecting for darker pelage in either species. This will help us understand if endangered Vancouver Island Marmots can be genetically rescued by melanistic Hoary Marmots.
- l. Elisabeth Nadin (CNSM – Geology) recruited an undergraduate student to help build structure sandboxes that are used to show how faults form and develop over time. These were used in Structural Geology labs and to develop undergraduate research projects that are relevant to Alaskan geology.

- m. Scott Oliver (CNSM – Chemistry) mentored an undergraduate student to establish a baseline of muscle contractile function, protein expression, and mRNA expression of Rat muscle exposed to normal and hypothermic conditions.
- n. Jen Peterson (CLA – Psychology) mentored three undergraduate students as they learned about the diversity of the growing senior Alaskan population. The students presented their work at the At the Western Psychological Association meeting in Portland, Oregon, where they met other researchers conducting aging work.
- o. Dani Sheppard (CLA – Psychology) took eight undergraduate student researchers from the UAF Nature Lab to present their research the Western Psychological Association meeting in Portland, Oregon.
- p. Renate Wackerbauer (CNSM – Physics) mentored an undergraduate student exploring a complex system which consists of non-trivially interacting parts such that the entire system is more than the sum of its parts. The student computationally and theoretically explored emergent complex behaviors in neuronal networks, such as spontaneous, system-intrinsic switching between wave propagation and irregular neuron activity in dynamical disease.
- q. Erin Whitney (CEM – ACEP/INE) mentored a student to develop their facility with monitoring and analyzing the performance of a new bifacial solar photovoltaic test installation currently being installed on the UAF Experimental Farm.
- r. Sveta Yamin-Pasternak (CLA – Anthropology) mentored five undergraduate students in the creation of an interactive multimedia exhibition on Indigenous cuisines of the Bering Strait. The exhibition was open in conjunction with the Festival of Native Arts in March 2018. Building on the learning outcomes enabled by the URSA mentoring award, Yamin-Pasternak began developing a new multi-year project that will be based in another region of Alaska and will use similar collaborative approaches that integrate art and science and involve a collaborative participatory exhibition.
- s. Junqing Zhang (CEM – Mechanical Engineering) mentored two undergraduate students as they learned about corrosion damage. The group worked to develop a new polymer nanocomposite coating on magnesium alloy and tested the corrosion protection effect.

University of Alaska Fairbanks
Undergraduate Research and Scholarly Activity (URSA)
AY 2018-19 Challenges and Goals

1. Continue to raise the profile of undergraduate research and scholarly activity at UAF.

A fundamental aspect of URSA's mission is to ensure that UAF students, faculty, and staff are aware of the opportunities available for undergraduate research and creative scholarly activities. To accomplish this goal, there remains an increased efforts to promote URSA funding opportunities via email (e.g., directed emails to each college/school, UAF-sponsored communications such as The Cornerstone), strategically placed announcements throughout campus, presence and participation in UAF events (e.g., Inside Out, New Student Orientation, We Are CLA, UA Scholars night, etc.), periodic, directed communications with the Deans of the various colleges/schools, revision to the URSA website, attendance and participation in UA and UAF administrative meetings (e.g., Board of Regents, Provost Council, Dean's Council, etc.), and completion of an annual report each year. URSA will also be developing additional means of raising its profile, including student profile postcards, student-mentor videos for display on the URSA website, and meeting with UAF administrators, faculty, and staff during regularly scheduled meetings (e.g., Recruitment Admissions Meeting, Coordinator Meeting, URSA Faculty and Student Advisory Board Meetings, etc.) and impromptu meetings (e.g., Deans, student focus groups, etc.). The ultimate goal of these efforts is to not only better inform the UAF community on URSA's mission and activities, but to also raise awareness and interest for undergraduate research (as well as research in general) at UAF. To facilitate this goal, URSA will print posters for any undergraduate student presenting their research or creative activity at a workshop, meeting, or conference, regardless of their source of funding. In addition, URSA also has dozens of portable display boards for exhibiting posters which are available for any research event taking place on the UAF campus. From the UAF perspective, URSA serves as a student engagement tool; as such, promoting and showcasing undergraduate research and creative scholarship should be a key component of all UAF student events recruitment and retention events since UAF is the leading research institution in the UA system. Ultimately, these efforts will not only yield an increase in the percentage of undergraduates involved in research and creative scholarship at UAF, but will also diversify the types of scholarly activities funded by URSA across the UAF colleges/schools.

2. Improve student tracking, project cataloging, and outcome assessment of URSA-sponsored and non-URSA-sponsored research. An important data need at UAF requires that URSA obtain and make available accurate numbers of students and mentors engaged in undergraduate research and creative activities. Collecting comprehensive data is a challenge, especially for those students who are engaged in research and creative activities by virtue of holding a position as a student research assistant. The URSA Coordinator works closely with the Office of PAIR (Planning, Analysis, and Institutional Research), UAF Human Resources, and other undergraduate funding initiatives at UAF (e.g., BLaST [Biomedical Learning and Student Training], Honor's Program, RAHI [Rural Alaska Honors Institute], etc.) on student research participation to facilitate the collection of these data. It is also important to track those projects that are funded by URSA, funded by other units, or not funded at all, and to provide this information to the UAF Chancellor and Provost, other administrators in the UAF Provost's Office, and the Deans of the various UAF colleges/schools for informational purposes. Further, student projects in research and creative scholarship are diverse in discipline, which translates to diversity in mode and medium. URSA will work with the Library Sciences faculty to meet the challenge of archiving all projects in undergraduate research and scholarly activity, as well as making these archived documents available to be used as tools in recruitment, marketing, and development. The URSA staff will work with staff members in the Office of Admissions, Communications and Marketing, and Development to act as a resource for

sharing exciting stories that can be used for promotional purposes. In addition to all of this is the need to conduct outcome assessment to determine whether URSA is making a difference in enhancing the educational experience for UAF undergraduates. Part of the challenge here is identifying not only products (e.g., presentations, displays, publications, etc.) generated by students while they are enrolled at UAF but also identifying these same products once students have graduated from the university. Another component to this is tracking where URSA-funded students end up following graduation (e.g., graduate school, professional school, etc.).

3. **Continue to rely on the URSA Advisory Boards and Review Panels** as active resources to develop and enhance current and future opportunities and initiatives as well as provide direction for the URSA mission. The current structure is that one group of faculty assists with general planning (the URSA Faculty Advisory Board) and a separate group of faculty (and some staff and student members) reviews student and faculty mentor applications (the URSA Review Panel). Members of both groups may provide feedback on the operation of URSA as well as bring forward new ideas, initiatives, and concerns related to the URSA mission. In terms of the specific structure and primary responsibilities of these two groups, we have the following: (1) the Faculty Advisory Board consists of two faculty members from each academic college/school at UAF and meets once each semester to discuss policy initiatives and opportunities related to URSA; and (2) the Review Panel meets in accordance with the various due dates of the undergraduate student project, undergraduate student travel, mentor, and ITE requests for proposals and will primarily be responsible for reviewing the submitted proposals (note that there is no limit to the number of individuals that can participate on a review panel). However, both groups are essential for disseminating URSA information and increasing the understanding of URSA funding policies and processes for all interested faculty, staff, and students at UAF. A new addition this past AY was the creation of a Student Advisory Board that also met once each semester to discuss policy initiatives and opportunities from the student perspective. The Student Advisory Board consisted of one student representative from each school or college, and the feedback that these individuals contributed was unique in providing the student perspective and perception on the implementation of URSA policies and programs.
4. **Continue to make UAF Research and Creative Activity Day (formerly known as UAF Research Day) the showcase event for undergraduate research and scholarly activity** at UAF. Based on feedback, UAF Research and Creative Activity Day will once again have a shortened duration (relative to events prior to 2016) and a fast-paced award's ceremony to maintain engagement of all participants and attendees. To accommodate the increased number of student participants, more space will be reserved for the 2019 event to allow more poster display boards and space for faculty, staff, students, and other visitors to view the posters. In addition, we will continue to expand Research and Creative Activity Day to include more than just traditional research and scholarly activity posters, but also to more broadly include other forms of visual and interactive displays. This was accomplished at the 2018 UAF Research and Creative Activity Day and was well received; as a result, expanding these types of displays will diversify and enhance research day at future events. The UAF administration, as well as local members of the UA Board of Regents, will again be notified early during the fall 2018 semester to save the date for the 2019 event (09 April 2019) so that they can attend UAF Research and Creative Activity Day. This event was held two weeks earlier than it has been held previously, which reflected feedback from UAF administrators, faculty, and staff. Comments in 2018 were very favorable for the new date.
5. **Explore opportunities to expand URSA funding initiatives**, which will include developing a mechanism for undergraduate research and creative activity at rural UAF campuses, expanding funding availability for undergraduate student grants focusing on global change in the Center for Global Change and Arctic System Research, and consideration of the development of separate URSA-supported internship, capstone, and community-based learning programs. An additional initiative is to discuss and

identify additional funding via private donors and grantsmanship as funding resources potentially begin to decline during the current UAF budget crisis.

6. **Increase the number of students enrolled in URSA-sponsored courses:** URSA 388 Undergraduate Research and Creative Scholarship I, URSA 488 Undergraduate Research and Creative Scholarship II 488, and MRAP (Museum Research Apprenticeship Program) 288 and 488. Historically, enrollment in these courses has been low (5-20 students per year), which is in large part due to a general lack of awareness that these opportunities exist. There is tremendous opportunity here to have more students participate in these courses.
7. **Provide assistance for undergraduate students** to help them prepare for research and scholarly projects at UAF, which will include how to identify project ideas and mentors, write competitive proposals, and prepare posters for presentation purposes.
8. **Enhance the student-mentor experience** at UAF by developing and adopting guidelines, policies, and expectations for both students and mentors. This could result in the development of a student-mentor contract with clear expectations for both individuals (the student and mentor) engaged in research and creative activities. Along with this would be the development of a workshop/expert panel of successful mentors at UAF who would provide the panel audience an opportunity to ask questions and receive feedback on mentoring practices that have and have not worked for them. An outcome of this workshop/panel would be a “best practices” document that URSA can then provide to faculty mentors for guiding their mentoring experience. Another aspect of enhancing the student-mentor experience will be to continue to solicit feedback from students regarding interactions/experiences with their mentor and from mentors regarding their interactions/experiences with their student(s). This feedback will be used to help URSA identify and address potential problem areas as well as highlight positive aspects of the student-mentor relationship.
9. **Continue to assess the impact and outcomes** associated with URSA relative to student’s success at UAF. Although URSA has been in place since 2012, a comprehensive outcomes assessment has not been completed on this program. During 2018, the Director and Coordinator of URSA examined metrics used by undergraduate research programs at other universities to identify the appropriate measures for measuring URSA outcomes. Both individuals also attended the 2018 Biennial Council on Undergraduate Research (CUR) Conference in Arlington, Virginia, which had a two and a half day series of sessions on assessing student outcomes in undergraduate research programs. Based on the information learned at that conference, URSA personnel will be implementing an outcomes assessment program during 2018-2019 to not only assess URSA-funded students relative to the remainder of the UAF student population but to also assess the annual Research and Creative Activity (RCA) Day event.

Table 1. The number of URSA applications (student project, student travel, mentoring, and ITE combined), awards, and awarded dollars for each college/school for AY2017-2018. The dollar amount awarded also includes awards to students for UAF Research and Creative Activity Day poster presentations.

College/School	Number of Applications	Number of Awards	Dollar Amount Awarded
CEM	86	23	\$60,426
CFOS	30	12	\$28,301
CLA	109	43	\$110,840
CNSM	135	38	\$113,575
CRCO	3	2	\$5,250
CTC	3	0	\$0
DGS	2	1	\$7,038
SNRE	14	6	\$5,590
SOE	1	1	\$250
SOM	12	4	\$7,500
Total	395	130	\$338,770

Table 2. The number of URSA applications (Apps), awards, and total dollar amount awarded (Dollar Amt.) by award type for each college/school and department/unit within each college/school for AY2017-2018.

College / School	Department/ Unit	Apps	Awar ds	Dollar Amt.	Project	Travel	Mentor	ITE	Research & Creative Activity Day
CEM	Civil & Env.	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Comp. Sci.	14	3	\$8,142	\$3,892	\$4,000	\$0	\$0	\$250
	Electrical Eng.	9	3	\$10,250	\$10,000	\$0	\$0	\$0	\$250
	Mechanical	49	13	\$34,024	\$7,605	\$6,150	\$12,494	\$7,275	\$250
	Mining & Geo.	10	4	\$8,010	\$2,500	\$320	\$4,940	0	\$250
	Petroleum	0	0	0	0	0	0	0	0
CFOS	Fisheries	30	12	\$28,301	\$7,491	\$4,575	\$14,985	0	\$1,250
CLA	Anthropology	23	13	\$32,214	\$7,255	\$6,300	\$11,000	\$9,159	\$500
	Art	7	3	\$4,750	\$2,500	\$2,000	\$0	\$0	\$250
	Comm & Journalism	8	2	\$9,000	\$0	\$2,000	\$0	\$7,000	\$0
	English	6	\$3	\$11,707	\$9,976	\$1,731	\$0	\$0	\$0
	Foreign Language	0	0	\$0	\$0	\$0	\$0	\$0	\$0
	History	1	1	\$1,321	\$0	\$1,321	\$0	\$0	\$0
	Justice	6	1	\$2,500	\$2,500	\$0	\$0	\$0	\$0
	Linguistics	2	2	\$9,646	\$9,646	\$0	\$0	\$0	\$0
	Music	4	2	\$5,478	\$0	\$2,000	\$0	\$3,478	\$0
	Northern Studies	0	0	\$0	\$0	\$0	\$0	\$0	\$0
	Philosophy	0	0	\$0	\$0	\$0	\$0	\$0	\$0
	Political Sci.	18	3	\$9,000	\$0	\$4,000	\$5,000	\$0	\$0
	Psychology	29	11	\$21,124	\$9,513	\$1,118	\$9,993	\$0	\$500
	Social Work	0	0	\$0	\$0	\$0	\$0	\$0	\$0
	Sociology	1	1	\$500	\$0	\$0	\$500	\$0	\$0
	Theater & Film	4	1	\$1,600	\$0	\$1,600	\$0	\$0	\$0
CNSM	Atmospheric Science	2	0	\$0	\$0	\$0	\$0	\$0	\$0
	Bio. & Wildlife	58	13	\$30,797	\$12,137	\$3,887	\$9,956	\$4,317	\$500
	BLaST	0	0	\$0	\$0	\$0	\$0	\$0	\$0
	Chem. & Biochem.	40	11	\$34,981	\$15,000	\$2,259	\$10,000	\$7,472	\$250

	Geosciences	23	9	\$28,096	\$21,610	\$1,236	\$5,000	\$0	\$250
	Math & Stats.	3	1	\$7,460	\$0	\$0	\$0	\$7,460	\$0
	Physics	9	4	\$12,241	\$4,991	\$2,000	\$5,000	\$0	\$250
	Vet Med	0	0	\$0	\$0	\$0	\$0	\$0	\$0
CRC	AK Native Studies	2	1	\$250	\$0	\$0	\$0	\$0	\$250
	NW - Science	1	1	\$5,000	\$0	\$0	\$5,000	\$0	\$0
CTC	Process Tech	3	0	\$0	\$0	\$0	\$0	\$0	\$0
DGS	Faculty Development	1	1	\$3,178	\$0	\$0	\$3,178	\$0	\$0
	Student Support Services	3	1	\$489	\$0	\$0	\$0	\$489	\$0
	Interdisciplinary Studies	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SNRE	NRM	14	6	\$5,590	\$4,590	\$0	\$0	\$0	\$1,000
SOE	Education	1	1	\$250	\$0	\$0	\$0	\$0	\$250
SOM	Bus. Mgmt.	5	1	\$5,000	\$5,000	\$0	\$0	\$0	\$0
	Economics	3	1	\$250	\$0	\$0	\$0	\$0	\$250
	Finance	3	2	\$2,250	\$0	\$2,000	\$0	\$0	\$250
	Homeland Security	0	0	\$0	\$0	\$0	\$0	\$0	\$0

Table 3. The number of URSA applications (AP), awards (Aw), and dollar amount (DA) for each college/school by awards type for AY2016-17.

	Student Project			Student Travel			Mentoring			ITE			Research Day		
	Ap	Aw	DA	Ap	Aw	DA	Ap	Aw	DA	Ap	Aw	DA	Ap	Aw	DA
CEM	33	13	\$23,997	17	5	\$10,470	8	4	\$17,434	3	1	\$7,275	25	5	\$1,250
CFOS	3	2	\$7,491	3	3	\$4,575	4	3	\$14,985	4	0	\$0	16	5	\$1,250
CLA	23	12	\$41,390	23	15	\$22,070	17	8	\$26,493	8	4	\$19,637	40	5	\$1,250
CNSM	38	20	\$53,738	11	7	\$9,382	22	6	\$29,956	12	3	\$19,249	55	5	\$1,250
CRCD	0	0	\$0	0	0	\$0	0	0	\$5,000	1	0	\$0	1	1	\$250
CTC	0	0	\$0	3	0	\$0	1	1	0	0	0	\$0	0	0	\$0
DGS	0	0	\$0	0	0	\$0	0	0	\$0	1	1	\$7,038	0	0	\$0
SNRE	4	2	\$4,590	0	0	\$0	4	0	\$0	1	0	\$0	6	4	\$1,000
SOE	0	0	\$0	0	0	\$0	0	0	\$0	0	0	\$0	1	1	\$250
SOM	3	1	\$5,000	2	1	\$2,000	3	0	\$0	1	0	\$0	3	2	\$500

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