

# **BLaST RAMP HANDBOOK**

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**DIVERSITY  
PROGRAM  
CONSORTIUM**

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# **Expectations of BLaST RAMPs**

## **(Research, Advising and Mentoring Professional)**

The RAMP position is dynamic and encompasses a wide variety of duties. RAMPs mentor undergraduate students and meet with them regularly throughout the semester providing comprehensive advising and support. RAMPs help undergraduate students explore their research interests and identify research projects. Additionally, RAMPs participate and develop outreach activities, trainings, and workshops and collaborate with partner campuses and organizations. RAMPs contribute to and assist with development of the BLaST community and offer support and assistance to faculty members and graduate students.

RAMPs are expected to lead by example, be a team player and take initiative. BLaST welcomes suggestions for improvement and encourage innovative problem solving. The following are some of the expectations:

### **General Duties**

- Develop an understanding of the BLaST and NIH BUILD program overarching aims, goals and objectives
- Support program Scholars, Graduate Mentoring Research Assistantship (GMRA) awardees Undergraduate Research Experience (URE) awardees, and Faculty Pilot Projects (FPP)
- Work collaboratively with staff, fellow RAMPs, program Principle Investigators (PIs) and Directors to discuss goals, projects, progress and challenges
- Seek assistance and support when needed
- Accept responsibilities and constructive feedback
- Assist undergraduates with BLaST funding applications
- Complete all surveys
- Review and evaluate applications for BLaST funding
- Advertise and promote BLaST opportunities
- Participate in BLaST events and meetings, including but not limited to: weekly RAMP meeting, orientation, monthly scholar gatherings, One Health Seminars, GMRA gatherings, and NIH staff visits
- Contribute to the overall success of the students and the program
- Serve as instructor/lead for program courses, summer boot camps, and workshops
- Coordinate and participate in development, organization and delivery of the connections courses as described in the BLaST grant

- Design, develop and conduct learning experiences in classrooms, laboratories and in communities
- Coordinate with faculty to integrate research into teaching and/or develop curriculum.
- Develop ways to collaborate with other organizations and programs
- Contribute to, and assist with, development of the BLaST community by coordination and facilitation of student, cultural, and community outreach activities
- Identify improvements, issues, or additional services to the program and lead efforts to find solutions
- Mentor and provide comprehensive academic advising to undergraduate students
- Meet regularly with students to: create individual development plans (IDP), monitor academic progress, provide psychosocial support, provide career guidance, and promote STEM opportunities
- Understand and be aware of students' personal circumstances and individual needs to promote academic success and foster personal growth
- Help students navigate challenges both personally and professionally
- Keep records of advising sessions
- Refer students to appropriate resources for complex problems

### **Lead RAMP**

- Collaborate with PA, PIs, Directors and Office Manager to stay updated on events and to collect and disseminate information to RAMPs
- Attend weekly BLaST Leadership Meetings and other meetings as requested by PIs and Directors
- Serve as pipeline for effective and efficient communication between supervisor and RAMPs
- Create agendas for and lead Staff Meetings
- Train new RAMPs and STEM Coordinator
- Assist with identifying group tasks for RAMPs and creating action plan and timeline for completion of tasks
- Assist with delegation of tasks to other RAMPs
- Assist ROC with promotion and advertisement of courses and funding opportunities and coordinate with RAMPs to disseminate information
- Create agendas and lead RAMP meetings
- Meet weekly with PI/supervisor to discuss and assess progress of tasks

## **STEM Coordinator**

- Monitor participants' academic progress, meet regularly with students (weekly or bi-weekly)
- Identify, contact and establish plan of action for struggling or failing students
- Assist and develop outreach activities
- Attend weekly meetings, provide updates on current projects and students' status and assist with program development
- Develop ways to collaborate with other organizations and programs, and advertise funding opportunities
- Assist students with preparation of applications and proposals
- Participate in mentoring training, cultural awareness training, and other professional trainings, as required
- Assist students with deciding on a major, course scheduling, identifying sources for and obtaining financial aid, employment, social support and relevant referrals
- Use test scores, academic record and professional judgment when determining course placement and semester load
- Explain university policies, degree audits and creation of graduation plans to ensure a timely graduation
- Monitor program participants' academic progress, maintain contact and keep written and electronic records of advising sessions
- Advocate for students on academic issues, including but not limited to: authorizations for appeals for financial aid, academic probation and academic disqualification
- Refer students to appropriate legal and social resources for complex problems
- Identify the need for improved or additional services and develop retention strategies
- Work closely with RAMPs and BLaST students to provide comprehensive and holistic advising

## **Professional Development and Training**

BLaST provides many opportunities and support to develop your skills and professional growth. RAMPs should attend conferences and/or other professional development opportunities that increase their effectiveness in the program. RAMPs are expected to participate in mentor training, cultural awareness workshops, and other professional trainings, as requested.

RAMPs should identify and discuss professional development trainings with supervisor during annual performance evaluation and pursue those trainings/opportunities throughout the year. Trainings

should not only enhance individual skills but also be disseminated to BLaST Program staff and students through workshops and other activities, when applicable.

## Reporting

It is necessary that RAMPs track all participation in courses taught, trainings attended/offered, time spent mentoring scholars or other undergraduates, workshops attended/offered, outreach activities while serving in the BLaST Program. RAMPs must complete a six-month and annual report for NIH and may be asked to assist with compiling data for reports as needed.

There are specific times of the year and during the semester that we will ask for RAMPs to help in recording information. During the semester, you will be asked for an undergraduate listing of names, UA IDs, and email addresses of your mentees. For the annual report, you will need to provide a more detailed listing of those undergraduate students and total number of hours (rounded to .5 hours) you have mentored them, specifically in research (in the lab), advising, and tutoring.

### How to report activities and contact hours:

**Activities** presented by RAMPs, GMRAs, staff, and other are to be reported in **two** locations.

1) The *“Wufoo GY4 BLaST Activities Report”*.

- Rosters are required for all activities that BLaST hosts. Roster includes all participants regardless of role and must be Excel spreadsheets with the following column headings:

**First\_name last\_name id\_type id email role**

- **Id\_type** is “UA” unless the participant is not affiliated with the university (i.e. does not have a UA ID). If a participant does not have a UA ID, then leave blank. Do not forget to include yourself as “presenter” in addition to your normal role.
- Please submit rosters and activity information no more than 3 - 5 days after activity is completed.

2) The *“Blast Outreach/Activities, Training, Collaborations, Presentations, and Products”* report.

Any questions about reporting, contact the Program Administrator or Reporting and Outreach Coordinator.

## Outreach

The BLaST Program focuses on establishing collaborations with rural communities and the UAF Campus community. Facilitating and developing these relationships requires time, patience and a willingness to step outside of your comfort zone. We strive to develop meaningful activities and workshops and opportunities that benefit students and their communities. We encourage RAMPs to get involved in projects that are of interest and capitalize on individual strengths and experience.

Outreach includes networking, advertising, recruiting students, acting as liaison with STEM departments, faculty, staff and student organizations to promote BLaST and undergraduate research funding opportunities. For any outreach flyers, brochures, or descriptions to the targeted audiences (students, grads, faculty, etc.) or any BLaST events, the BLaST logo, the UAF logo (or use the CNSM logo), and the Diversity Consortium Program logo must be present (*see "Branding and Correspondence section"*). Acknowledgements that include our NIH funding grant numbers, as well as the UAF EEO non-discrimination acknowledgement must also be on the same flyer or advertisement.

Please access the full guidelines at the BLaST website. Please notify the Reporting and Outreach Coordinator before publicizing any events or research to the public to ensure the requirements are met.

### How to report outreach activities:

Any outreach event must be reported in **two** locations:

- 1) The *"Wufoo BLaST Activities Report"*
- 2) The *"Blast Outreach/Activities, Training, Collaborations, Presentations, and Products"* report.

## Weekly Meetings

RAMPs are expected to attend all weekly staff and RAMP meetings. Staff meetings include BLaST staff members and are a forum to share program information, provide status updates on projects, discuss issues and future plans. RAMP meetings are a collaborative time, exclusive to RAMPs and the STEM coordinator, to discuss advising topics and develop action plans for tasks. Additionally the Lead RAMP will attend weekly BLaST leadership meetings and brief other RAMPs on any relevant information during this time.

Agendas are stored on a shared Google drive (gDrive), and RAMPs are encouraged to add items. If meetings are missed, review the agenda for the meeting notes and list any travel dates at the bottom of the agenda so everyone knows when you will be out-of-the-office.



## **Staff and Student Support**

The BLaST Program implements a group tiered mentoring approach that provides holistic support to students, ensuring a successful experience in research and academics. BLaST aims to provide students with research opportunities to develop their skills and encourages them to be involved in projects that are interesting to them and relevant to their communities. We strive to create an inclusive, supportive environment that fosters growth and independence.

Support for GMRAs and faculty members includes assisting with purchasing supplies, directing them to the appropriate person for answers, helping them navigate the program and/or assisting them with projects. RAMPs maintain contact and provide support to faculty and graduate students at UAF and rural campuses, as needed, on research projects in which undergraduate students are involved to ensure undergraduate student success on these projects.

Support for Scholars includes meeting regularly with assigned scholars, providing assistance and guidance, and may include purchasing supplies and meeting with Scholar and GMRA/mentor at the beginning of each semester to discuss the research project.

# BLaST Scholars

## Eligibility and Expectations of a BLaST Scholar

- Any UAF full-time undergraduate student (12+ credits) can apply
- Have an interest in biomedical or One Health research
- Be considering a career in health care, biomedicine or research (life or social sciences)
- Have a cumulative GPA of 2.75 or higher
- Be a US citizen, US non-citizen national or permanent resident
- Complete required safety and Responsible Conduct of Research (RCR) trainings
- Participate in mentored research experiences
- Enrollment in BLaST-sponsored courses (1-2 credits each) for both semesters
- Provide information about specific projects and activities as requested
- Participate in BLaST events, including One Health seminars, orientation, and other activities as requested
- Attend BLaST Orientation in August
- Participate in other BLaST-sponsored activities as requested (monthly gatherings, regular meetings with BLaST mentor, trainings, etc.)
- Maintain good academic standing - a cumulative GPA of 2.75 or better and successful completion of 12 or more credits each semester
- Be an active participant in the BLaST community
- Present work at conferences, poster sessions or other opportunities
- Complete all surveys requested by BLaST, Evalulogic and the Diversity Program Consortium (DPC)

## Mentoring resources

- Mentoring handbook
- RAMP Handbook
- Mentoring workshops and discussion groups
- Additional resources available on BLaST website

## Purchasing

- Research mentor or RAMP needs to order on behalf of the scholar as undergraduate students cannot check out Procards
- Mentors can check out a Procard from Travel and Purchasing Technician to purchase supplies
- All invoices need to be submitted via the following form within five days of purchase.

- Food cannot be purchased. For a list of other unallowable purchases, check out the following link - <http://www.uaf.edu/files/procurement/ProCard/ProCard-Unallowable-Purchases.pdf>

# Scholar Selection Process

## New Applications

### 1. Primary Screening

- a. New application period opens in December and closes in February
- b. Office Manager downloads applications from Wufoo and determines whether applicants are eligible based on requirements (i.e. GPA, full-time status). Qualified applications are emailed to the RAMPs for evaluation
- c. RAMPs provide a primary review and score all applications using the following rubric evaluation criteria:
  - i. Academic Experience
  - ii. Research Interests
  - iii. Diversity Statements
  - iv. Motivation
  - v. Programmatic Fit
- d. Scores are aggregated and the applicants are discussed. The number of scholarships available may vary from year to year

### 2. Secondary screening

- a. The Director of the Student Training Core meets with all RAMPs to further evaluate the applicants and determine which applicants should be interviewed
- b. Finalists are interviewed in-person, if possible, or via phone call
- c. Director of the Student Training Core and Lead RAMP conduct interviews
- d. Director of the Student Training Core and RAMPs meet to discuss interviews and make final selections as well as generate a list of two or three alternate candidates

### 3. Awards

- a. Award letters are sent via email to successful applicants to be returned to the BLaST Office Manager within two weeks
- b. Any declined award will be offered to the next applicant on the alternate list
- c. If any awarded Scholar drops from the BLaST program, an alternate may be chosen

### 4. Pairing with RAMPs

- a. Once the award is accepted, the student becomes a Scholar and is assigned a RAMP to act as a program mentor during participation in the program
- b. Scholars are paired with RAMPs based on:
  - i. Shared research interests and experiences

- ii. Social and emotional needs of the scholar
  - iii. Individual goals of the scholar
  - iv. Personality
- c. Scholars may request to be reassigned to a different RAMP for any reason at any time

## ***Renewal Applications***

### **1. Primary Screening**

- a. Renewal application period opens in December and closes in February
- b. Office Manager downloads applications from Wufoo and determines whether applicants are eligible based on requirements (i.e. GPA, full-time status). Qualified applications are emailed to the RAMPs for evaluation.
- c. RAMPs provide a primary review and score all renewal applications using the following rubric evaluation criteria:
  - i. Academic Experience
  - ii. Research Interests
  - iii. Motivation
  - iv. Programmatic Fit
- d. Scores are aggregated and sent to Director of the Student Training Core and Lead RAMP

### **2. Secondary Screening**

- a. Director of the Student Training Core and RAMPs meet to discuss applicant scores. This is also an opportunity to identify and discuss action plans for renewal students who are accepted into the program for an additional year but need increased support and/or structure

### **3. Awards**

- a. Renewal award letters are sent via email to selected Scholars and returned to the BLaST Office Manager within two weeks
- b. Any declined award will open a spot for a new Scholar
- c. If an awarded Scholar drops from the BLaST program within the academic year (AY), an alternate new Scholar may be chosen to fill that scholarship

### **4. Pairing with RAMPs**

- a. Returning Scholars will keep with their assigned RAMP from the previous year unless a change is requested or appropriate.

## **RAMP and Scholar Expectations**

RAMPs are primary resources for our Scholars and able to help them navigate the BLaST program. Meeting with your Scholars regularly to offer guidance and encouragement creates a welcoming, supportive environment, free of judgment, and based on purposeful communication and mutual trust.

### **Support includes, but not limited to:**

- Meeting with a RAMP and Student Core Director at the beginning of each semester to discuss their IDP (Individual Development Plan) and semester goals
- Clearly defining expectations at initial meetings
- Working with students to create a custom IDP
- Using their IDP for meeting structures and discussions
- Meeting consistently weekly or at minimum bi-weekly. Regular personal interaction will help enforce student accountability and engagement
- Keeping written and electronic records of advising sessions, discuss progress and other relevant details
- Ensuring that Scholars take required safety trainings and archiving evidence of completion
- Monitoring scholars academic progress and establish a plan of action to help students be successful
- Assisting in locating research projects related to student's interests and facilitating meetings with mentors/GMRAs if needed; ensure that matches with mentors/GMRAs and projects are a good fit
- Providing resources specific to student's interest
- Keeping students informed about research, presentation and funding opportunities relevant to their interests
- RAMPs will meet with each Scholars and their assigned research mentor once or twice per semester to discuss timelines and expectations and to ensure clear communication
- Being available and responsive to the needs of scholars. Be a source of encouragement and support

# Developing an Individual Development Plan (IDP)

## A Structured Approach to Annual Training and Development (See “BLaST IDP Template”)

### What is an Individual Development Plan?

- A formal document that specifies an individual’s development goals and how they are to be accomplished (including resources, time, importance)
- A negotiated plan designed to meet the goals and objectives and close competency gaps in a structured way
- A “living document” subject to change as work schedules, goals, and even budgets shift
- A "non-binding" agreement between RAMP or mentor and scholar, used solely to help them agree on training plans over a specific period (normally one year)

### When do we use IDPs?

- To identify and assess future developmental needs or competency areas
- To provide structured learning experiences linked to an organization’s goals and objectives
- To establish agreed-upon developmental activities for the student's career development
- To promote formal career development

### How do we use IDPs?

- Individuals assess their own skills and strengths
- Compare the assessment with individual’s abilities and current competencies required
- Identify developmental opportunities
- Draft a proposed plan
- Mentee and RAMP meet informally to discuss modifications and mentee and RAMP finalize the document
- Both mentee and RAMP rely on the IDP as a roadmap to success
- At the end of the AY, or at another agreed-upon time, both the mentee and RAMP meet to review the IDP to determine successes and areas for improvement. These adjustments are incorporated into the next (new) IDP for the coming year

### How to use an IDP to achieve success!

- RAMPs can use IDPs as motivators, to focus the approach to training and development rather than a random, *ad-hoc* approach
- An IDP can serve as a retention tool for the BLaST program as well as the university

### **RAMP Responsibilities:**

RAMPs evaluate each of their assigned Scholars at the start of a new academic year through the creation of an IDP. An IDP is mentee driven, with the RAMP facilitating completion. The IDP should be completed within three weeks of the start of the AY and referenced at meetings throughout the AY.

The IDP is a guiding framework for all decisions and plans made on behalf of the scholar and should be formally revisited during semester meetings recheck for alignment of goals. An IDP is a dynamic document, and should be modified if misalignments are recognized or if goals are changed.



## RAMP and Scholar Meetings

Effective advising and mentoring is the cornerstone of the BLaST program. It is a continuous and consistent process, which is built upon the basis of frequent, accumulated personal contacts between RAMPs and Scholars. Our mission is to provide sensitive and thoughtful support to our students as they wrestle with the many choices open to them and to develop inquisitive, ethical researchers. Thus, advising fosters the development of the whole student who is a self-directed, motivated, responsible decision-maker and encourages the successful completion of degree requirements and timely graduation.

### **Advisors/Mentors who possess the following characteristics are most successful with students:**

- Interested in advising
- Demonstrates a concerned and caring attitude toward Scholars
- Exhibits effective interpersonal and communication skills
- Available to Scholars
- Has frequent contact with Scholars
- Knowledgeable of institutional regulations, policies, offerings, and procedures
- Monitors student progress
- Uses appropriate information sources and refers when necessary
- Engages in meaningful developmental advising

### **Conducting Meetings:**

1. *Ask about general well being*
  - a. *How is school going? Specific Classes – try to uncover any support BLaST could provide such as tutoring.*
  - b. *How are things going with your family? Friends?*
  - c. *How are you feeling?*
2. *Review up and coming events of interest to the student's goals or general BLaST functions – Relative to the student goals.*
3. *Review IDP (if needed)*
  - a. *Is it still in alignment with current goals?*
  - b. *Does it need to be adjusted?*
4. *Discuss Topics/assignments in BMSC and/or other academics courses. Use “Suggested Topics” as a guide to help facilitate.*

- a. **Admin Topics** – These are Scholar maintenance items that must be completed on, or very close to, the week indicated.
- b. **Suggested Topics** - Topics relevant to a new Scholar especially those in their first or second year in college who may benefit from the conversation. These topics are not mandatory and the schedule is flexible depending on need and the individual circumstances of the scholar.
- c. **BMSC Course Items** – Course assignments that need additional support from RAMPs to ensure completion.

## Scholar Pathways to Research

Scholar Pathways is an educational pipeline designed to engage BLaST Scholars in activities that support the development of critical research skills. The pathways integrate comprehensive advising with research methodology and independent research support during an academic year. The overarching goal is to meet program outcomes and student development needs by suggesting a sequence of support courses aligned to the level of experience of each student.

**Primary Track** – Scholars on this path are typically new to, or have limited experience in research. This track leads students to an understanding of basic biomedical research methods and proposal development in the fall (BMSC 214) and a practical research experience in the spring (BMSC 224). Upon completion of this first year, students should be involved with (or poised to join) a mentored research group. This leads to a foundation for creating an independent project in the following academic year or summer. In subsequent years students will be placed on the Secondary Track.

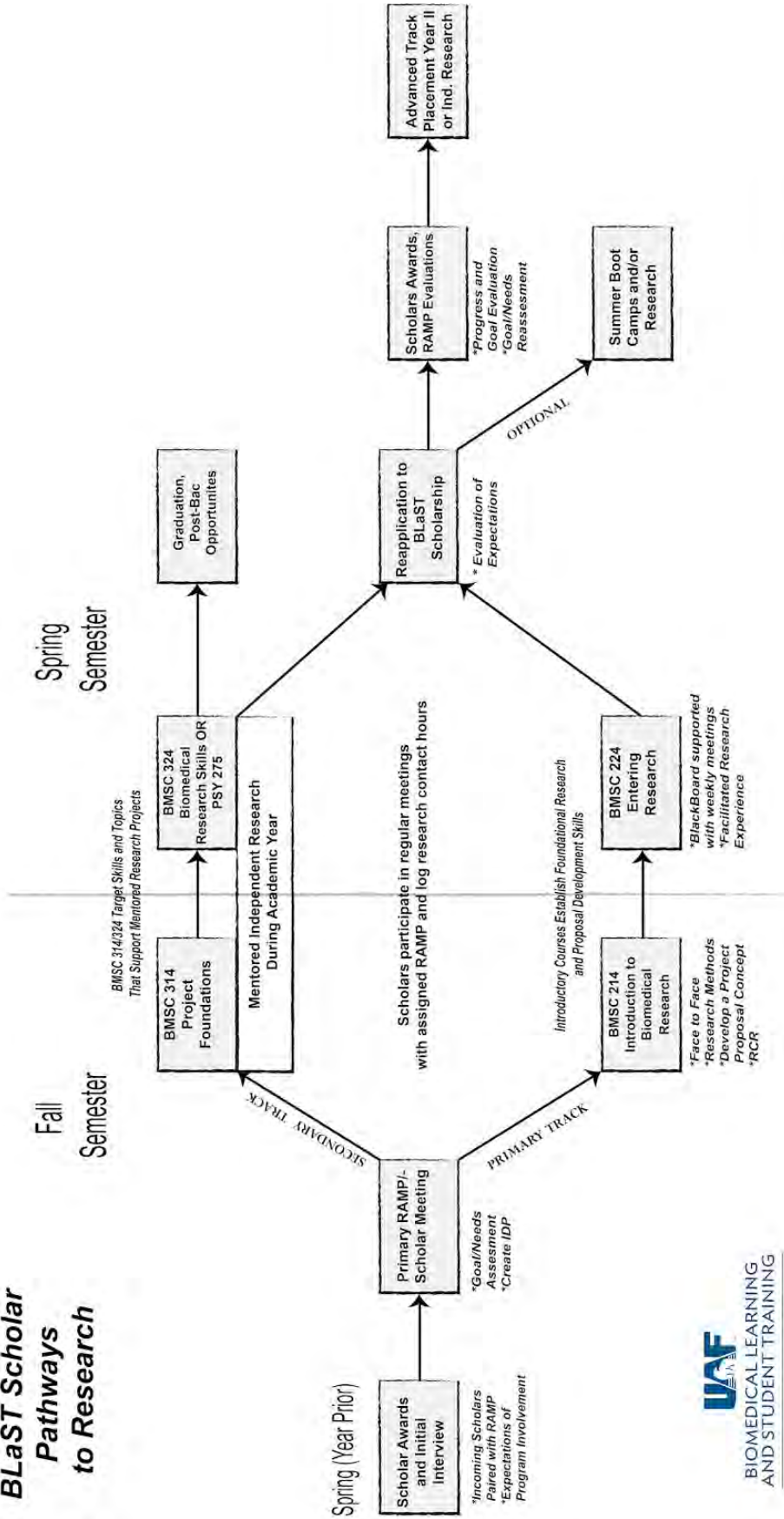
**Secondary Track** – Students on this path have demonstrated competency in research foundations or have completed the Primary Track courses and are actively conducting independent research. The courses in this pathway target project foundational skills (BMSC 314) and biomedical research skill topics (BMSC 324) that support their growth as a researcher.

***Regardless of track, progress made during the academic year will be a factor in consideration for subsequent BLaST Scholarship awards.***

### **RAMP Responsibilities:**

Pathways to Research is a suggested sequence with placement based upon a Scholars' previous experience and responses to application and interview questions. The RAMP is primary in determining the actual series of courses and supplemental trainings necessary to support the Scholar. It may be required to construct a unique pathway for a Scholar if their needs can be better met through alternatively. However, the unique pathway should support areas of growth identified in the Scholar's IDP.

# BLaST Scholar Pathways to Research



Updated 1/8/18

# **BMSC 214: Introduction to Biomedical Research**

## **2 Credits Offered Fall**

**Course Description:** Course aims to introduce students who are new to research, opportunities to learn about, discuss, and conduct ethical biomedical research activities in a low stress, small group seminar setting. The ultimate objective is for participants to develop self-efficacy and interest in pursuing quantitative or qualitative biomedical research opportunities early on, and throughout their undergraduate studies.

### **Course Objectives:**

- a. Present qualitative and quantitative research methods
- b. Identify, describe, and perform diverse research methods that can be used in to explore, explain, and address important issues
- c. Define, understand, and demystify terminology used when discussing research
- d. Discuss how culture, worldviews, and prior experiences with research can impact topics and methods used in research
- e. Discuss important ethical considerations involved in conducting research

### **RAMP Responsibilities:**

BMSC F214 introduces Scholars to biomedical research methods. Responsible Conduct in Research (RCR) Training and certification is built into the curriculum. Ultimately, Scholars produce a simplified project proposal based on a testable research statement and become RCR compliant.

The role of the RAMP in this course is to be supportive of the Scholar as they complete their research statements and the project proposal poster. The RAMP can help their Scholar in understanding the major elements in developing a proposal based on primary literature and keeping them on track to completion (see *pacing guide built into the suggested topics sequence*). The RAMP must be familiar with the syllabus and use that as a resource for conversations during check-in meetings throughout the semester.

## BMSC 214 Suggested Meeting Topics

Meeting (Assumes Bi-weekly Meetings)	Discussion Topics	Tasks
<b>Wk 1</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> Introduction to the BLaST Program (Mentoring Handbook pgs 58-62)</li> <li>● <b>Admin Topic:</b> Review expectations of scholarship (Mentoring Handbook pg. 69)</li> <li>● <b>Admin Topic:</b> Process of logging hours</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Joint Task:</b> Overview of Mentoring Handbook</li> <li>● <b>RAMP Task:</b> Log hours</li> </ul>
<b>Wk 2</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> Create AY Individual Development Plan (IDP) (Handbook pg. 14, 46-50, Advising Handbook pg. 11)</li> <li>● <b>Suggested Topic:</b> Fostering a Culture of Respect (Mentoring Handbook 9-10)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Student Task:</b> Complete beginning portion of IDP Template (Objectives, skills self-assessment, goals)</li> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>
<b>Wk 3</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> Review Student completed sections of IDP</li> <li>● Finalize IDP</li> <li>● <b>Suggested Topic:</b> Dealing with change</li> <li>● <b>Suggested Topic:</b> Effective Studying Habits (Advising Handbook pg. 7)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Joint Task:</b> Student and RAMP Completes Planning section of IDP</li> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>
<b>Wk 5</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> Review Mandatory Safety Trainings (Mentoring Handbook pg 68)</li> <li>● <b>Suggested Topic:</b> Digital Footprint, social media smarts, professional ethics</li> <li>● <b>Suggested Topic:</b> Discover how you learn (Advising Handbook pg 9)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Joint Task:</b> Setup CITI Profile</li> <li>● <b>Joint Task:</b> Develop trainings folder timeline for safety trainings</li> <li>● <b>Student Task:</b> Complete safety trainings</li> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>
<b>Wk 7</b>	<ul style="list-style-type: none"> <li>● <b>Suggested Topic:</b> Review of University and BLaST Resources (services and supplies)</li> <li>● <b>Suggested Topic:</b> Communication ethics (Mentoring Handbook 11)</li> <li>● <b>Suggested Topic:</b> Tips for Resolving Conflict (Mentoring Handbook pgs. 12-13)</li> <li>● <b>Suggested Topic:</b> Time Management and Life Balance (Advising Handbook pg. 8)</li> <li>● <b>Suggested Topic:</b> Strategies to manage stress</li> </ul>	<ul style="list-style-type: none"> <li>● <b>RAMP Task:</b> Collect Safety Training Certs</li> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>
<b>Wk 9</b>	<ul style="list-style-type: none"> <li>● <b>BMSC Course Items: Edit Research Statements (BMSC 214 – due final day in class)</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>Suggested Topic:</b> Extracurricular Activities (Volunteering, social groups)</li> </ul>	
<b>Wk 11</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> Assist with Spring Semester registration (Advising Handbook pg. 12)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>RAMP Task:</b> Log Hours</li> </ul>
<b>Wk 13</b>	<ul style="list-style-type: none"> <li>● <b>BMSC Course Item: Editing Digital Poster (due final day in class)</b></li> <li>● <b>Suggested Topic:</b> Test taking strategies</li> </ul>	<ul style="list-style-type: none"> <li>● <b>RAMP Task:</b> Log Hours</li> <li>● <b>Student Task:</b> Complete CITI RCR Training</li> </ul>
<b>Wk 15</b>	<ul style="list-style-type: none"> <li>● <b>Admin Topic:</b> CITI Quizzes</li> <li>● <b>Admin Topic:</b> Review IDP</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Joint Task:</b> Edits to IDP (if needed)</li> <li>● <b>RAMP Task:</b> Log Hours</li> <li>● <b>RAMP Task:</b> Collect CITI Transcripts</li> </ul>

## **BMSC 224: Entering Research**

### **2 Credits Offered Spring/Fall as needed**

**Course Description:** This course facilitates mentored research experiences for undergraduate students engaged in advanced research topics from outside the usual undergraduate laboratory offerings. Students will be required to actively participate in research activities and report on progress and growth throughout the course through weekly meetings and online through Blackboard. Course will conclude with a Semester Research Report and a poster presentation based on research activities.

#### **Course Objectives:**

- A. Link general curriculum in the sciences through independent research and project-based activities
- B. Provide students with opportunities to engage in research in the laboratories of UAF
- C. Foster healthy mentoring connections between student and UAF researchers
- D. Develop and apply scientific methodology to experimental design
- E. Further develop laboratory research skills and techniques
- F. Learn to work cooperatively within a research group
- G. Learn to think critically and make scientifically based conclusions or inferences
- H. Gain experience communicating results and defending arguments

#### **RAMP Responsibilities:**

Entering Research is self-paced. Each RAMP with enrolled Scholars will serve as the instructor for their Scholars. RAMPs are expected to manage assignments, tasks, and grades in Blackboard.

RAMPs need to keep a consistent schedule of weekly meetings with Scholars throughout the course. The syllabus provides a suggested timeline for course assignments as well as in the “Suggested Topics” page in this handbook. The BLaST Mentoring Handbook is the primary literature resource and offers several worksheets to select, align and cultivate a research mentorship. The course has a Blackboard shell that provides a step-by-step framework for completion.

For Scholars, this may be the first time they have worked with a mentor while others may have experience or are currently involved in a project. Therefore, the assignments may not be necessary or required for all Scholars, for example, lab rotations and agreements, may have been something explored in the previous semester while establishing a mentorship.

Below are the major assignments to be aware of:

1. **\*Lab Rotation and Visitation Report** – If Scholars are not currently in a lab, this assignment encourages them to visit a few potential labs/projects and reflect on that experience.



2. **Project Description and Hazard Assessment** – Every student produces a summary of the scope and purpose of their project and identifying specific safety hazards possible while working on the project. The assignment helps to clarify the goals of the project as well as identify any lab specific safety trainings.
3. **Safety Trainings** – All students must complete the Core, Mandatory and Additional Lab safety trainings prior to working in the lab. Please refer to “Mandatory Training Reference Chart” on page 68 of the Mentoring Handbook.
4. **Mentoring Agreement** – A template is provided in the handbook or another format may be used. The agreement needs to be approved by the mentor prior to submission. A template can be found on pages 54-58 of the Mentoring Handbook.
5. **Weekly Research Logs and Journals** – Scholars are required to keep a weekly journal and logs contact hours. Journals may be paper-based or digital through the online journal feature in Blackboard. Journals should be used by the RAMP as conversation starters during weekly meetings.
6. **Semester Research Report** – The major writing element of the course and should be started well in advance of the due date. A pacing guide is embedded in the syllabus calendar and the RAMP ensures completion. This may well be the first introduction to a research writing for the student.
7. **Project Poster Presentation** – Each student will create a scientific poster that illustrates the project they contributed to that semester. Depending on the role the student played in the project, this may be an overview of the current status of the project and may or may not have data to share. Students may present at a university or BLaST sponsored poster session.

\* = *May be excused if completed previously*

## BMSC 224 Suggested Meeting Topics

Meeting (Assumes weekly meetings)	Discussion Topics	Tasks
1	<ul style="list-style-type: none"> <li>• Introduction to the BMSC 224 course</li> <li>• Finding a Research Project</li> <li>• Keeping a research journal/diary (Bb)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Joint Task:</b> Develop a list of possible research projects and mentors to visit</li> <li>• <b>Student Task:</b> Download syllabus and mentoring handbook (Bb)</li> <li>• <b>Student Task:</b> Read pgs. 7-18 in Mentoring Handbook</li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
2	<ul style="list-style-type: none"> <li>• Expectations and roles of a mentee (Handbook pgs. 7-18)</li> <li>• Discuss potential labs/projects to visit. Lab rotation report (Bb)</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Participate in Lab rotations and visitations</li> <li>• <b>Student Task:</b> Read page 19 in Mentoring Handbook</li> <li>• <b>Student Task:</b> Complete "Mentee Expectations Worksheet" (Handbook pgs. 51-52, Bb)</li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
3	<ul style="list-style-type: none"> <li>• Selecting a mentor (Handbook pg. 19)</li> <li>• Mentee Expectations Worksheet (Handbook pgs. 51-52, Bb)</li> <li>• Assessing Hazards and additional lab specific trainings (Handbook pg. 68)</li> <li>• Review previous week's journal entry</li> </ul> <p style="text-align: center;"><b>Suggested joint meeting with research mentor</b></p>	<ul style="list-style-type: none"> <li>• <b>Joint Task:</b> Develop a list of needed safety trainings</li> <li>• <b>Joint Task:</b> Complete "Mentoring Match Worksheet" (Handbook pg. 53, Bb)</li> <li>• <b>Student Task:</b> Submit "Lab Rotation and Visitation Report" (Bb)</li> <li>• <b>Student Task:</b> Read pgs. 19-21, 25-26 in Mentoring Handbook</li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
4 <b>Scholar Group Meeting</b> (Time TBD)	<p style="text-align: center;"><b>Group Meeting Topics:</b></p> <ul style="list-style-type: none"> <li>• Review of expectations, Hazard Assessment, required trainings</li> <li>• Potential Pitfalls of a Mentoring Relationship (Handbook pgs. 25-26)</li> <li>• Developing a Mentoring Agreement (Handbook 20-21, 54-56, Bb)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Complete additional mandatory Safety Trainings</li> <li>• <b>Student Task:</b> Submit a "Project Description and Safety Hazard Assessment" (Bb)</li> <li>• <b>Student Task:</b> Work with research mentor to develop an agreement (Handbook pgs. 54-56, Bb)</li> <li>• <b>RAMP Task:</b> Log Hours</li> <li>• <b>Student Task:</b> Read pgs. 22-26 in Mentoring Handbook</li> </ul>
5	<ul style="list-style-type: none"> <li>• Cultivating a Mentoring Relationship (Handbook pgs. 22-25)</li> <li>• Review previous two week's journal entries</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Submit Final Mentoring Agreement</li> <li>• <b>Student Task:</b> Review Expectations of Semester Report and Presentation in Syllabus and Bb</li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>

6	<ul style="list-style-type: none"> <li>• Expectations of the Semester Research Report (Bb)</li> <li>• Gathering Reference Materials and Navigating Databases (Bb)</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Joint Task:</b> Review expectations of the Semester Research Report (Bb) and develop timeline for completion</li> <li>• <b>Joint Task:</b> Review scoring rubrics (Bb)</li> <li>• <b>RAMP Task:</b> Log Hours</li> <li>• <b>Student Task:</b> Gather background information about your project</li> </ul>
7	<ul style="list-style-type: none"> <li>• How to write introductions to scientific papers (Bb)</li> <li>• How to write a methods section (Bb)</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Write an introduction to your semester report</li> <li>• <b>Student Task:</b> Write a methods section for your report</li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
8 <b>Scholar Group Meeting (Time TBD)</b>	<ul style="list-style-type: none"> <li>• Communication Ethics, Practical Tips for Resolving Conflict</li> </ul>	<ul style="list-style-type: none"> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
9	<ul style="list-style-type: none"> <li>• Review draft of Introduction and Methods section and suggest edits</li> <li>• Properly using figures and tables (Bb)</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Develop figures and tables relevant to project (Data)</li> <li>• <b>Student Task:</b> Complete a second draft of introduction and methods section</li> </ul>
10	<ul style="list-style-type: none"> <li>• Review second draft of introduction and methods section and suggest edits</li> <li>• Writing conclusions and discussions</li> <li>• How to write abstracts (Bb)</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> Complete a draft of the conclusion, results and discussion section of your report</li> </ul>
11	<ul style="list-style-type: none"> <li>• Review draft of conclusion/discussion section and suggest edits</li> <li>• Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> <i>Complete a draft of the Semester Report.</i></li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>
12 <b>Scholar Group Meeting (Time TBD)</b>	<ul style="list-style-type: none"> <li>• Conversation about summer/fall registration (<i>BLaST Scholars Only</i>)</li> <li>• Discuss potential directions for year two as a Scholar.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>RAMP Task:</b> Log Hours</li> <li>• <b>Student Task:</b> Read page 27 of Mentoring Handbook</li> </ul>
13	<ul style="list-style-type: none"> <li>• Review the first draft of Semester Report and suggest edits</li> <li>• Expectations of the Project Poster (Blackboard)</li> <li>• Conversation about summer/fall registration</li> <li>• Review poster drafts and revise</li> <li>• Review the draft of Semester Report</li> <li>• Concluding a Mentoring Relationship (Handbook pg. 27)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Task:</b> <i>Complete second draft of Semester Report</i></li> <li>• <b>Student Task:</b> <i>Complete First Draft of Project Poster</i></li> <li>• <b>RAMP Task:</b> Log Hours</li> </ul>

	<ul style="list-style-type: none"> <li>Review previous two week's journal entry</li> </ul>	
14	<ul style="list-style-type: none"> <li>Review poster first drafts and revise/edit</li> <li>Review second draft of Semester Report and suggest final edits</li> <li>Preparing for closure. Handbook page 27.</li> <li>Practice delivery of poster presentation and edits</li> <li>Review previous week's journal entry</li> </ul>	<ul style="list-style-type: none"> <li><b>Student Task:</b> <i>Submit Project Poster Draft</i></li> <li><b>Student Task:</b> <i>Complete second draft of Project Poster</i></li> <li><b>Student Task:</b> Deliver a practice presentation</li> </ul>
15 <b>Scholar Group Meeting (Time TBD)</b>	<ul style="list-style-type: none"> <li>Student presentations</li> </ul>	<ul style="list-style-type: none"> <li><b>Student Task:</b> <i>Submit final Semester Report</i></li> <li><b>Student Task:</b> <i>Submit final Project Poster</i></li> <li><b>RAMP Task:</b> Log Hours</li> </ul>

**Bb = Blackboard Resource**

## **BMSC 314: Research Project Foundations**

**1 Credit Offered Fall**

Research Project Foundations supports undergraduate research by highlighting the strategies and methodologies used when establishing a scientific research project. Additionally, the course seeks to foster personal, academic and career growth. Topics include personal wellness, academic and career planning, mentoring relationships, project management, scientific writing, and communication strategies in the sciences. Guest speakers from the UAF and BLaST research community are invited to present and share their own experiences and background with students. Topics are presented through discussion and accompanied by activities that reinforce the application in research projects. Open to any UAF undergraduate student.

### **Course Objectives:**

- a. Foster personal well-being and healthy mentoring relationships
- b. Connect academic topics to applications in research
- c. Emphasize strategies for project management and communication
- d. Highlight academic, college and career planning strategies and pathways
- e. Support project proposal creation and submission
- f. Provide an open forum for sharing of ideas

### **RAMP Responsibilities**

BMSC 314 assumes Scholars are actively participating in a research project, or lab or actively exploring project opportunities. (*The RAMPs may utilize the same steps as in BMSC 224 to place a student, draft an agreement and verify the proper safety trainings have been completed.*)

The role of the RAMP is supportive and is encouraged to blend BMSC 314 topics into weekly meetings and encourage independent research. Many of the activities presented in class will require scholars to share and complete with RAMP or mentor assistance in order to complete the assignment.

# **BMSC 324: Biomedical Research Skills**

## **1 Credit Offered Spring**

Biomedical Research Skills supports individual student research projects by highlighting foundational skills and techniques commonly used in biomedical research. Guest speakers from the UAF and BLaST research community are invited to present and share their own experiences and background with students. Topics are presented through discussion and visits to UAF laboratories. Activities and readings of primary research reinforce the application and best practices in research. This course is open to any UAF undergraduate student.

### **Course Objectives:**

- a. \_\_\_\_ Connect academic topics to applications in research
- b. \_\_\_\_ Present skills, techniques and equipment used in biomedical research
- c. \_\_\_\_ Encourage peer mentoring and networking opportunities
- d. \_\_\_\_ Provide an open forum for sharing of ideas

### **RAMP Responsibilities**

BMSC 324 assumptions:

- 1) A student is actively participating in a project or research lab
- 2) Students may be completing research experiences, looking for ways to present or preparing to engage in independent research in the future

The role of the RAMP is supportive and is encouraged to blend BMSC 324 topics into weekly meetings and encourage independent research.

## Scholar Training Reference Chart

Complete Required Training	Training Title	Accessed Through	Confirmation
<b>Mandatory for <u>ALL</u> Scholars <u>within</u> 60 days of start of AY.</b>	UAF Mandatory Student Trainings (Title IX, AlcoholEdu)	<a href="#">Dean of Students</a>	Email
	Responsible Conduct in Research (RCR)	<a href="#">CITI Program</a>	CITI Certificate and Training or BMSC 214
	Lab Safety	<a href="#">Required Lab Worker Training</a>	Certificate
	Chemical Hygiene	<a href="#">Required Lab Worker Training</a>	Email
<b>Mandatory for any Scholar <u>before</u> working/visiting labs.</b>	Hazardous Waste Management	<a href="#">Required Lab Worker Training</a>	Email
	Understanding Safety Data Sheets MSDS	<a href="#">UAF Basic Training</a>	Email
	Lab Sharps Safety	<a href="#">UAF Basic Training</a>	Email
<b>Additional lab specific trainings before entering a lab.</b>	Formaldehyde	<a href="#">UAF Basic Training</a>	Email
	Methylene Chloride	<a href="#">UAF Basic Training</a>	Email
	Phenol	<a href="#">UAF Basic Training</a>	Email
	Benzene	<a href="#">UAF Basic Training</a>	Email
	Chloroform	<a href="#">UAF Basic Training</a>	Email
	DEAP (annual)	<a href="#">Department Specific</a>	Email
	IACUC, IRB	<a href="#">CITI Program</a>	CITI Certificate
	Other trainings may be required by the participating lab		

- Mandatory Student Training (Dean of Students) - <http://www.uaf.edu/deanofstudents/mandatory-student-training/>
- CITI Program – <https://about.citiprogram.org/en/homepage/>
- Required Lab Worker Training - <http://www.uaf.edu/safety/training/required-lab-worker-train/>
- UAF Basic Training - <http://www.uaf.edu/safety/training/basic-training/>

## **RAMP Responsibilities**

RAMPs must ensure compliance with the trainings and develop a way to archive evidence of trainings for scholars in their charge. It is the RAMP's responsibility to put copies of their Scholar's training certificates on the Google Drive in the designated folder.

## **Graduate Mentoring Research Assistantship (GMRA)**

### **What is a Graduate Mentoring Research Assistantship (GMRA)?**

- UAF Full-time graduate student (9+credits)
- 12-month award
- Need to mentor at least one undergraduate student
- Requirements – attend weekly One Health seminars, two professional development trainings offered by BLaST, maintain good academic standing and evaluate URE applications as requested
- Participate in BLaST events (orientation, One Health Seminars, GMRA gatherings, poster sessions)
- Attend at least two mentor trainings each year
- Complete all surveys

### **Application process**

- Annual process – Request for proposals in December through early February, award is for following academic year and summer
- Proposals evaluated by a selection committee

### **Mentor resources available**

- Mentoring handbook, workshops, trainings and discussion groups
- May apply for funding to attend conferences for professional development or to support mentee presentations (internal travel)
- Additional resources on BLaST website - <https://www.alaska.edu/blast/mentor-resources/>

### **Purchasing**

- RAMPs can assist GMRA's and their mentees with purchasing. Undergraduates cannot check out Procards
- GMRA's can check-out a Procard from Travel and Purchasing Technician to purchase supplies for research mentees
- All purchases need to submit with attached receipts via the following form within five days of purchase.



- Food cannot be purchased. For a list of other unallowable purchases, check out the following link - <http://www.uaf.edu/files/procurement/ProCard/ProCard-Unallowable-Purchases.pdf>

**Bi-monthly GMRA meetings**

- Attend and notify GMRA of any relevant issues or changes, offer assistance

# Undergraduate Research Experience (URE)

## Eligibility and Expectations of an Undergraduate Research Experience (URE)

- UAF, UAS, Iḷisaġvik students who are full-time (12+ credits) undergraduate students (if they are planning on salary or travel)
- UAF, UAS, Iḷisaġvik students who are part-time (<12 credits) undergraduate students (for supplies or services only)
- Maintain good academic standing
- Complete required laboratory safety and Responsible Conduct of Research (RCR) trainings
- Participate in a mentored research project
- Complete all surveys requested by BLaST, Evalulogic and the Diversity Program Consortium (DPC)
- Assure that all publications comply with NIH guidelines
- Present work at conferences, poster sessions or other opportunities
- Participate in BLaST events, including One Health seminars, orientation, and other activities as requested. Be active in the BLaST community

## Application process

- Semester process – applications are accepted each semester for the following semester, award is for following academic year
- GMRAs review URE applications
- Awards amounts vary

## Mentoring resources

- Mentoring handbook
- Mentoring workshops and discussion groups

## Purchasing

- Mentor needs to order on behalf of URE
- Mentors can check-out a Procard from Travel and Purchasing Technician to purchase supplies
- All purchases need to submit with attached receipts via the following form within five days of purchase.
- Food cannot be purchased. For a list of other unallowable purchases, check out the following link - <http://www.uaf.edu/files/procurement/ProCard/ProCard-Unallowable-Purchases.pdf>
- Undergraduates cannot check out Procards

# Faculty and Curriculum Projects

## **Faculty Pilot Projects (FPP)**

Faculty Pilot Projects (FPPs) are submitted by faculty located at UAF, UAS, Iñisaġvik and are a two year term. They are written similar to any major research proposal and require more details than GMRA, Scholar, or URE, especially in overall scope, background, and budget/allocation of funds.

BLaST FPP awards provide up to \$20,000/year for up to 2 years after NIH approval, with an additional \$10,000 per year for projects conducted by rural faculty members or in rural Alaskan locations.

Awardees are expected to be active members of the BLaST learning community and must comply with all reporting and evaluation requirements of the NIH and BLaST.

## **Application process -**

- Annual process – Request for proposals through mid-October for the following year
- The BLaST Advisory Committee (BAC) and the National Institutes of Health (NIH) will review Faculty Pilot Project (FPP) applications
- Funding priority will be assigned to projects that directly enhance undergraduate student training opportunities in biomedical research with a special emphasis on students from/in rural Alaska and health-related issues germane to the concerns of rural Alaskans
- Based on these priorities the following criteria will be used for evaluating proposals:
  1. Scientific merit based on significance, innovation, and approach
  2. Research training opportunities for undergraduate students
  3. Biomedical One Health relevance
  4. Capacity building in Alaska to enhance undergraduate research training
- Additional preference will be given to proposals at rural campuses and projects in rural communities

## **Curriculum Development Projects**

Curriculum Development Projects (CDPs) usually expand upon a specific course, either by modifying in part or adding a new module or activity. May also include workshops to support curriculum, in particular for distance classes, which may benefit from an intensive in-person session. CPDs can be used to develop novel courses.

**RAMP Responsibilities:**

RAMPs can have a variety of roles in supporting FPPs & CDPs through:

- Providing research support/advice on the project design
- Recruiting and training undergrads
- Ordering supplies
- Researching support for experiments
- Reviewing/co-writing manuscripts
- Leading/teaching sessions as per need

## BLaST Program Executive Summary

### Building the Alaska BLaST (Biomedical Learning and Student Training) program

Our BUILD-funded Biomedical Learning and Student Training (BLaST) program will enhance capacity for undergraduate biomedical research training and efficacy for engaging students from diverse, especially rural Alaskan, backgrounds in preparation for biomedical research careers. Through distinct and innovative approaches we seek transformative change in higher education, the complete integration of research and teaching, which is generally lacking in higher education (Jenkins 2004). We will expound undergraduate roles in the research mission and research roles in the educational mission. We will establish undergraduate mentorship as a contribution valued in faculty advancement. Transformation to a culture of thoughtful mentorship and integrated research and teaching will occur through student, faculty, and institutional development that address institutional, social, and individual factors influencing engagement and persistence of emerging scientists.

BLaST will engage students in active learning, early research experiences, and learning communities that engender confidence in knowledge and status as researchers, and motivate persistence to postgraduate training. A compelling need exists to improve quantity, quality, and diversity in science, technology, engineering, and mathematics workforces in the US. The NIH Diversity Program Consortium seeks needed improvements in biomedical research training through the BUILD (BUilding Initiatives Leading to Diversity).

The University of Alaska Fairbanks (UAF) has a deep commitment to undergraduate research training, and multiple infrastructure-building grants from the NIH have dramatically increased our biomedical research capacity. The next step is to integrate these elements and enhance capacity for undergraduate biomedical research training. We will leverage existing faculty and infrastructure to enhance competitive biomedical research that includes undergraduate trainees. We focus on recruiting students from rural Alaska, the most dispersed and isolated US rural population and one for whom the subsistence lifestyle (significantly supplementing one's diet through harvest of wild animals and plants) is important for survival. Alaska is the most rural state and has extreme educational and economic disparities, which make it the ideal test case for developing transformative approaches to engage and support rural students.

UAF is ideally suited to implement BLaST by integrating current commitments to biomedical and undergraduate research. Integration of research and teaching infrastructure and integration of rural partner institutions will enable us to successfully pursue specific aims to improve the quality of research training for all students including those from disadvantaged backgrounds. BLaST proposes an integrated suite of activities that will contribute individually and function as a whole to achieve 3 overall aims derived from the persistence framework developed by Graham et al (2013), an evidence-based framework that serves as a guide for efforts to increase student persistence in STEM majors.

**Overall Aim 1: Emphasize active and experiential learning throughout undergraduate curricula, thereby building capacity to engage students, rather than capacity simply to serve students.** We will provide faculty with training and support to develop and implement frequent classroom activities that require every student to engage in critical thinking and creative problem solving. We will also provide training and

support for faculty to develop and implement research projects designed to engage undergraduate students in biomedical research.

**Overall Aim 2: Fully integrate teaching and research in the higher education enterprise, thereby immersing students in biomedical research throughout their undergraduate study.** We will provide a series of research experiences: early research opportunities through courses for lower division students with little or no background in college-level biology; faculty-mentored projects as central components of upper division research courses; and 6- and 12-wk summer research experiences.

**Overall Aim 3: Embed students in a biomedical learning community that takes a holistic approach to student development by emphasizing cultural inclusiveness and comprehensive advising as well as training in critical-thinking and problem-solving skills, which are hallmarks of scientific training.** We will establish a biomedical learning community that integrates multiple mentoring formats and ensures inclusion of students in face-to-face and online tutoring and research discussion activities that enhance biomedical knowledge, research skills, and ultimately students' self-identification as a biomedical professional.

Our focus is significant. BLaST includes rural students in the definition of diversity and considers health from the perspective of the subsistence lifestyle. Subsistence activities (hunting, fishing, berry-picking, and preserving meat and fish, etc.) are common in rural Alaska where many households maintain themselves with a mix of cash, subsistence, and trading. Among remote rural households (including both Alaska Native and non-Native families) 60% harvest game and 80% harvest fish amounting to several hundred pounds annually per person (Goldsmith 2008). Reliance on subsistence makes food safety integral to community health (Smith 2013). Since 2007 the US Geological Survey and Alaska Native Tribal Health Consortium have collaborated to explore community health and biomonitoring records against a background of long-term environmental datasets; they exchange ideas and data on interconnections between ecosystem conditions and human and wildlife health (Shasby, 2009). Thus, Alaska is an early adopter of the One Health initiative, a multidisciplinary collaborative to attain optimal health for people, animals, and the environment (AVMA 2008), that is endorsed by prominent scientists, physicians, and veterinarians worldwide. BLaST and DVMed join in this initiative, which is a means to serve the health and biomedical research needs of rural Alaska and rural America.

In this proposal we will address, among other issues, the underrepresentation of Alaska Natives in biomedical research careers. We will focus not on Alaska Natives, per se, but on building programs for rural Alaskan students, which will address underrepresentation beyond race by including first-generation college students and those from educationally and economically disadvantaged backgrounds. We will not only expand the pool of targeted students to non-native disadvantaged students, but also follow the guidelines set forth by the US Supreme Court on affirmative action. With 80-90% of rural students being Alaska Native this approach will still focus recruitment and engagement on a largely Alaska Native population without preferential treatments for any racial group.

By integrating research and teaching through BLaST activities, we propose to foster institutional environments that truly value undergraduate research training and put students in the center of Alaska's biomedical research enterprise. By integrating rural and Fairbanks partners, we will spread a vision of a student-centered biomedical research. Successful NIH BUILD projects will yield tangible advances in student, faculty, and institutional development. We have adopted and adapted the exemplary advances as BLaST targets. The detailed approaches and activities to achieve these specific aims will be described in the Administrative, Institutional Development, Student Training and Research Enrichment Cores.

## The Institutional Development Core

The Institutional Development Core focuses on deliberate development and integration of faculty and other instructional personnel, curriculum, infrastructure, and students. The goal of the Institutional Development Core is to improve the research training environment by enhancing culture, infrastructure, faculty, and mentoring capacity for biomedical education and research training at the Fairbanks campus and its rural partners, from three separate Alaskan Institutions of higher learning:

<u>University of Alaska Fairbanks</u>	<u>Iiisaġvik Tribal College</u>	<u>University of Alaska Southeast</u>
Bristol Bay campus Chukchi campus Interior-Aleutians campus Kuskokwim campus Northwest campus	Barrow campus	Juneau campus Ketchikan campus Sitka campus

Pursuit of 3 specific aims will enable achievement of our goal.

**Specific Aim 1: Build capacity and infrastructure to enhance the research training environment at the primary institution and its rural partners.** We will foster institutional development that builds capacity and infrastructure for research training as well as rewards students and faculty who participate in that training.

**Specific Aim 2: Support faculty at the primary institution and its rural partners as they develop instructional strategies, approaches, and skills to engage students and the mentoring capabilities to prepare them for biomedical research careers.** Strategic changes will be implemented at Fairbanks and rural campuses to enhance faculty development including mentorship skill in biomedical research training.

**Specific Aim 3: Support faculty at the primary institution and its rural partners as they develop research projects amenable to undergraduate participation.**

Successful completion of the interconnected yet independent specific aims will create a more integrated institution and will place undergraduate research training of all students at the heart of Alaska's biomedical research enterprise. This institutional development and transformation will lay the foundation to develop a sustainable effort to increase persistence and success of undergraduate students interested in biomedical research careers, including those from underrepresented backgrounds such as students from rural Alaska. This development and transformation also will provide a model for other departments at UAF to blend research experience and education.

## The Student Training Core

The Student Training Core focuses on how capacity for, and efficacy of, biomedical research training can be enhanced through student training in biomedical research. Successful student research training requires integrated recruitment and research opportunities, courses designed to optimize both learning and research training outcomes for students, and programs that provide a path to biomedical research careers. The goal of the Student Training Core is to enhance the research-training environment by enhancing research infrastructure and increasing opportunities for biomedical education and research at the Fairbanks and rural campuses. Pursuit of 4 specific aims will enable achievement of our goal.

**Specific Aim 1: Develop and implement workshops and mentored research experiences at the rural partner institutions.** These experiences will serve as a first exposure for many rural students to

opportunities in biomedical research within their communities and cultures. Thus, we will integrate the biomedical research enterprise with rural communities and cultures in Alaska.

**Specific Aim 2: Develop and implement summer biomedical research experiences at the Fairbanks campus for rural students.** We will develop 2-, 6- or 12-wk summer research modules; an assortment of research experiences at varying levels will accommodate a stepwise integration of students into the biomedical research enterprise

**Specific Aim 3: Establish the active, connected, and experiential (ACE) learning initiative.** This initiative will integrate high impact learning approaches at UAF. Students will participate in active learning exercises in introductory coursework, synthesize learning during *Connections* courses, and learn through experiencing biomedical research fields. The result will be improved outcomes for all students including those from underrepresented backgrounds.

**Specific Aim 4: Establish a Post-Associate Program in Biomedical Sciences at the Fairbanks campus.** Students with an associate degree will be eligible for a 3-year bachelor/master program in Biomedical Science. We will focus recruiting efforts on rural students, not previously targeted for biomedical careers, and provide modularized options for program entry and exit, as well as courses focused on basic science and One Health.

Alaskan universities and colleges are uniquely positioned to increase diversity in biomedical research training by increasing success of rural Alaskan students. We met with rural faculty and rural student support organizations to identify barriers to success for these students and to develop integrated approaches to reduce these barriers.

Undergraduates in Biomedical Sciences and BLaST Scholars will complete research-based courses and receive individualized support through *Connections* courses and comprehensive advising. (All students participating in faculty-mentored biomedical research will be encouraged to sustain their participation through nine course credits, which will count toward their major in biology, chemistry, or biomedical science.) These activities embody the spirit of BLaST; they integrate research and education for our students. This integration is to be mirrored in faculty workloads; mentoring undergraduate researchers will be included in faculty workloads – it is already part of annual activity reporting. This transformative change will be implemented in DVMed. To increase the number of faculty for whom research and teaching is integrated, biomedical faculty, will upon request and with BLaST endorsement, be given an academic and research appointment to DVMed. Thus, BLaST will catalyze institutional transformation at the Fairbanks campus, integrating research and teaching to benefit biomedical research training of our students and success of our faculty.

### **The Research Enrichment Core**

The Research Enrichment Core focuses on implementing innovative and integrative approaches that promote biomedical research throughout Alaska, so more Alaskan students will be aware of this career option, and improve infrastructure, so students will be better engaged, motivated, and prepared for biomedical research careers. Pursuit of 4 specific aims will enable achievement of our goal.

**Specific Aim 1: Develop and implement research pilot projects designed to increase participation by undergraduate students at the Fairbanks campus and rural partners.** This specific aim will embed undergraduate research training into Alaska's biomedical research enterprise.

**Specific Aim 2: Develop presentations and workshops at rural partners to engage students and stimulate their interest in biomedical research careers.** We will employ culturally appropriate approaches



to engage rural high school and undergraduate students in biomedical research. We will work closely with rural partners and existing UAF programs to develop regionally specific programs in rural Alaska.

**Specific Aim 3: Develop academic enrichment activities, skill development workshops, and seminars that will enhance students' competitiveness for entrance into biomedical doctoral programs.** We will develop instructional tools for undergraduate and early graduate students to enhance competitiveness in biomedical research training and careers for all students, including those from underrepresented backgrounds.

**Specific Aim 4: Develop mentoring resources to build a culture of group research mentoring across the state.** We will develop research mentoring for undergraduate students as an integral part of biomedical training in Alaska through customizable plans, workshops, and an integrated organizational structure of peer, one-to-many, many-to-one, and many-to-many mentoring groups that will occur in formal courses and seminars as well as informal study and research working groups. We will provide mentoring resources and tools to evaluate mentoring outcomes at individual student, faculty, and institutional levels. Finally, we will work with the Diversity Program Consortium's Collaboration and Evaluation Center to integrate our evaluation with national efforts.

Through all its specific aims, BLaST will enhance research experiences for undergraduate students interested in biomedical sciences, including those from underrepresented groups, such as rural Alaskans. While being independent, these aims are interconnected and closely aligned with existing UAF programs. This synergy will promote the success of BLaST; our commitment makes it sustainable. BUILDing Biomedical Learning and Student Training in Alaska; it's a BLaST.

# BLaST IDP Template

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Major: \_\_\_\_\_ Year in School: \_\_\_\_\_ UA ID: \_\_\_\_\_

**Professional/Career Objective** (e.g., specific position within a university, industry, government, or something else)

<i>1<sup>st</sup> Choice</i>	
<i>2<sup>nd</sup> Choice</i>	

**Plans for an Advanced Degree or Training** (e.g., M.S., Ph.D., or M.D.-Ph.D.)

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## Mentor(s)

Please list your primary mentor (LRTT/Faculty/Grad Student) you have who will enhance the training experience by supporting your development in various skill sets. Eventually, this will include your summer research mentor(s) but please feel free to add additional mentors, if applicable to you.

<i>Mentor 1 (Primary mentor)</i>	
<i>Department &amp; Institution</i>	

<i>Mentor 2 (Research Mentor if Applicable)</i>	
<i>Department &amp; Institution</i>	

The IDP is meant to cover various areas of training including Coursework, Research, Professional Development, and Other (which is customized by student, e.g., graduate school preparations).

The student and the mentor(s) will assess the skill set of the student in each of these areas and then define goals to address the skills to develop. In addition, the entire training period needs to be considered in the IDP as goals may have a particular sequence or necessary timeframe for success. The mentor(s) will guide the student in how to meet these goals to best achieve the desired career outcome.

The student will meet with the mentor(s) to ensure that the goals are specific, realistic, and are met in a timely manner. Goals will also need to be reassessed to address the particular needs of the individual and to reflect the changing nature of research and/or the student's career goals.

## Training Skills Assessment (to be completed initially by the student)

Please list your skill strengths and areas for improvement. After completion, please share with your mentor(s) for feedback.

## Skills Self-Assessment

Area of Training	Current Strengths	Areas for Improvement	Mentor Comments
<b>Coursework</b> (e.g., working with others; learning content independently; time management; writing; reading; math; multitasking; seeking help when needed)			
<b>Research</b> (e.g., problem-solving; analyzing data for patterns; organizing research projects; discussing scientific concepts; defending an idea; working independently; teamwork; critical thinking; creating a poster; academic writing; PPT skills)			
<b>Professional Development</b> (e.g., networking; involvement in professional societies; workshops; conferences)			
<b>Other:</b>			

**Goals (to be completed initially by the student)**

As an IDP is an overall plan for training, setting goals for each year is crucial in order to progress and build upon goals in successive years. Keep in mind that certain goals for a career may need to be met on a timely basis.

**1<sup>st</sup> Year Goals (*Short Term*)**

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**2<sup>nd</sup> Year Goals (*Long Term*)**

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**Planning (to be completed with the mentor)**

Students will work with their mentor(s) to create goals and specific action steps to address and gain the skills necessary for their anticipated career. This plan should be assessed and revised regularly and annually. If Revisions are needed, separate pages may be added

Time frame covered by this Plan (*Academic Year*): \_\_\_\_\_

Coursework ( <i>including any BLaST Courses</i> )	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:                    \_\_\_ Met Goal                    \_\_\_ In Progress                    \_\_\_ Needs Revision

Research ( <i>if applicable</i> )	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:                    \_\_\_ Met Goal                    \_\_\_ In Progress                    \_\_\_ Needs Revision

Professional Development ( <i>Workshops, trainings, seminars, etc.</i> )	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:                    \_\_\_ Met Goal                    \_\_\_ In Progress                    \_\_\_ Needs Revision

Other:	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:            \_\_\_ Met Goal            \_\_\_ In Progress            \_\_\_ Needs Revision

Other:	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:            \_\_\_ Met Goal            \_\_\_ In Progress            \_\_\_ Needs Revision

Other:	Action Step	Frequency (i.e., weekly)	Target Completion Date

**Midterm Check**

Date:            \_\_\_ Met Goal            \_\_\_ In Progress            \_\_\_ Needs Revision