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FACILITIES & RESOURCES

University of Alaska Anchorage (UAA)

Environment (leadership)

The University of Alaska Anchorage (UAA) is the UA system's largest campus with six colleges and schools: The Colleges of Arts and Sciences, Business and Public Policy, Engineering, Health, and Community and Technical College, and the School of Education. UAA transforms lives through teaching, research, community engagement, and creative expression in a diverse and inclusive environment. Serving students, the state, and the communities of Southcentral Alaska, UAA is a comprehensive, open-access, public university established on the ancestral lands of the Dena'ina, Ahtna Dene, Alutiiq/Sugpiaq, Chugachmiut, and Eyak peoples. UAA 2021 total unduplicated headcount is 19,093; 18,227 were undergraduates and 866 were graduates. UAA offers two clinical doctoral degrees, a Ph.D. in Clinical-Community Psychology and a Doctor of Nursing Practice, 20 master's degrees, and 3 cooperative doctoral degrees in Medicine, Occupational Therapy, and Pharmacy, with the University of Washington School of Medicine (UWSOM), Creighton University and Idaho State University, respectively. UAA also offers cooperative PhDs with the University of Alaska Fairbanks.

UAA is also composed of a number of research centers and institutes, including the Alaska Center for Rural Health and Health Workforce/Alaska's Area Health Education Center, Alaska Center for Conservation Science, Alaska Small Business Development Center, Business Enterprise Institute, Center for Alaska Education Policy Research, Center for Alcohol and Addiction Studies, Center for Behavioral Health Research and Services,

Center for Economic Development, Center for Economic Education, Center for Human Development, Alaska Geriatric Education, Center Environment and Natural Resources Institute, Alaska State Climate Center, Alaska Experimental Forecast Facility, Office of Transportation Research, Ethics Center, Institute for Circumpolar Health Studies, Institute of Social and Economic Research, Justice Center, Montgomery Dickson Center for Japanese Language and Culture, Psychological Services Center. In FY22, UAA had research expenditures totaling over \$17.6M which is consistent with the five-year average of \$17.8±1.2M. In the current federal fiscal year to date, UAA has received nearly \$2M in NIH funding.

Institutional Commitment (leadership)

The Office of Academic Affairs offers faculty development, research, and travel grants each academic semester. These funds can be used by faculty for creative activity, research, training and study, program development, and travel to meetings or workshops. For the NIGMS INBRE program, UAA leadership, in addition to those of network partner University of Alaska

Fairbanks and the University of Alaska Southeast and the UA System Central Office, have agreed to return up to 57.5% of the Facility and Administrative indirect costs to the AK INBRE 5 program. These funds, estimated at \$700K per year, will be used to augment the Student Research Program to provide housing support for undergraduate research awardees with a demonstrated need and to fund graduate student fellowships, awarded competitively each year. In addition to the student support, AK INBRE 5 will also provide 5-person months of effort for the Data Science Core data engineer to bring the person's total commitment up to 11-person months of effort.

Clinical

UAA Healthy Aging Lab (*bmhowell2@alaska.edu*): Alaska INBRE funded support to update the healthy living lab in 2020. The lab works to understand the shifting sociocultural landscape for aging adults and identify service needs to facilitate healthy aging-in-place. We do this in various ways, from Community-Based Participatory Research (CBPR) projects to community-engaged courses in health sciences to individual service-learning projects—our work aims to benefit not only the student (and future geriatric workforce) but the senior community as well.

Equipment provided in the labs includes a centralized computer with SPSS and NVivo, locked filing and desk cabinets as well as an adjustable stand-up desk, and headsets for listening to audio. Transcriptions and a web camera for virtual data collection and lab meetings. INBRE funded updates to the Healthy Living Lab space in

Animal

Vivarium (*uaa_vivarium@uaa.alaska.edu*): The Vivarium is a 5925 ft² fully staffed facility located on the first floor of the CPISB and was designed and constructed for research and husbandry of small vertebrate animals (up to 5 kg). The vivarium currently houses biomedical research projects for multiple AK INBRE-supported faculty. Additionally, AK INBRE-research-supported graduate and undergraduate students are offered opportunities to perform research experiments while gaining valuable research skills and experience. Alaska INBRE allotted \$25,000 per year to support animal research infrastructure at the Vivarium. Facility support included items such as maintaining service contracts on vivarium equipment, developing and maintaining INBRE-purchased equipment, general repairs, and purchase of general supplies.

Laboratories

ENRI Stable Isotope Lab (SIL) (*uaa_isotope@alaska.edu*): An analytical facility that quantifies stable isotope concentration to help researchers understand biological, hydrologic, geological, and atmospheric processes on short and long-time scales. Analyses of liquids, gases, and organismal tissues are routinely carried out at the laboratory.

Planetarium and Visualization Theatre (*planetarium@alaska.edu*): The UAA Planetarium and Visualization Theatre offers a cutting-edge, full-dome experience with an all-digital definition projector system made by Sky-Skan Inc. Many faculty are involved in editing and

narrating movies from microbiomes to evolution to galaxies. The theatre is also used for classes such as astrobiology.

Advanced Instrumentation for Microbiome Studies (AIMS) Core Facility Microbiome Suite (*uaa_aims_core@alaska.edu*): The Microbiome suite was renovated in 2019 with support from Alaska INBRE 4 through the A&R project. The AIMS core was established and maintained through support from the NIH COBRE-funded Center for Transformative Research in Metabolism (Center-TRiM) and the UAA Department of Biological Sciences. The AIMS facility measures 248 ft². This Core provides advanced instrumentation and expertise to characterize

microbial isolates and communities. AIMS provides vital equipment for microbial culturing (incubators, Eppendorf Das-box bioreactor-16), physiological characterization (Biolog), and genomic sequencing (Oxford NanoPore MinION, Illumina MiSeq). AIMS is the only Core providing microbiome services in the Network of IDeA-Funded Core Laboratories (NiCL), including organismal analysis to characterize new isolates. AIMS provides a complete pipeline for the characterization of microbial communities and isolates, combining multiple modules, such as sequencing and bioinformatics, that researchers can plug into at any point along the pipeline or access the entire pipeline to characterize either isolates or microbial communities. These core services, the first of its kind in the U.S. based on our knowledge, allow for the generation of directed hypotheses that can be tested with clinical experts to advance microbiome research and the characterization of microbial communities and isolates. Other key equipments AIMS maintains are a CO₂ incubator, -80°C Freezer, Three ABI thermocyclers, and M.P. Biomedicals FastPrep.

Alaska Center for Chemical Analysis (ACCA) (*pltomco@alaska.edu*): The Alaska INBRE-supported ACCA laboratory is a modern laboratory equipped with main facilities to provide the appropriate surroundings for analytical instruments.

The laboratory is equipped with analytical instrumentation, sample preparation equipment, and other equipment and resources; Thermo Scientific Exploris 120 Orbitrap MS connected to Thermo Vanquish UHPLC, Agilent 7850 ICP-MS connected to SPS4 autosampler and Agilent 1200 HPLC, Agilent 6410B triple quadrupole MS connected to Agilent 1200 HPLC VWD, Agilent 6410A triple quadrupole MS connected to Agilent 1200 HPLC with FlexCube for online, SPE and DAD, Agilent 7980/5975 GC/MS, Agilent 6890/5973N GC/MS, with Frontier Lab multi-shot pyrolyzer, Agilent 7100 Capillary Electrophoresis System with Zetalif Discovery Laser, Perkin Elmer 8300 ICP-OES, JEOL ECZS 400 MHz NMR spectrometer with royal probe and autosampler, Dionex IC 5000+ Ion Chromatograph, Horiba Aqualog Spectrofluorometer, Shimadzu TOC-L/TON Analyzer, Gow-Mac Series 400 GC-TCD (2), Thermo Nicolet IR-200 IR Spectrometer (2), Cary 50 Bio Uv/Vis Spectrophotometer (2), Cary 50 Eclipse Fluorometer with microplate reader, Shimadzu 1800 UV/Vis Spectrophotometer, Varian EM360 60 MHz NMR, Mettler Toledo Refracto 30PX Refractometer, Microlab FS 522/528, PureLab 2 chemical containment glove box, VWR 1585 Shaking Incubator, Thermo Max Q 4000 Platform Shaker, Labconco centrivap with lyophilizer, Thermo Scientific Heratherm Oven (2), Thermo Scientific Lindberg/Blue M Box Furnace, Eppendorf 5430 centrifuge (2), Eppendorf 5810R Centrifuge, Branson 1510 ultrasonicator, Meltemp 1101D

(5), Organomation N-Evap 111, Atlas SunTest XLS+ with SunCool, Cryomech LNP20 Nitrogen liquefier plant, Parker Balston Nitrogen Generator N2-45, Growth chambers (2) with programmable temperature to 4 °C and 0-24 hr photoperiod, Autoclaves (3), Chemical hoods (8), Cold rooms (3), Fume hoods (3), NanoPure water dispensers, High speed centrifuges (Sorval, Beckman) and ultracentrifuge (Beckman Coulter Optima™ L-80 XP), Basic laboratory equipment: balances, benchtop refrigerated centrifuge, shaking water baths, sonicating water bath, hybridization oven, -20°C freezer (3), - 80°C (2); refrigerator/freezer (1) ; refrigerator (4) Bench top incubators (4) and cold-temp incubators (2).

Buildings

Conoco Phillips Integrated Sciences Building (CPISB)

(<https://www.uaa.alaska.edu/map/index.cshtml>) : CPISB opened in 2009 and offers UAA faculty research wings with shared equipment corridors, common-use equipment and procedural space, and bench space for dedicated use by faculty in an open floor plan. Alaska INBRE funded the alteration and renovation of 174 square feet for the renovation of physical space for the Clinical-Translational Research Center human research subject interaction room and 136 ft². for the biosafety level 2-sample processing and data collection lab. Shared equipment and specialized procedural space are available to support physiological, biochemical, biomechanical, and cell and molecular biological approaches. Specialized equipment includes gel electrophoresis and visualization equipment capable of femtomolar protein detection, NanoDrop 2000, speed- vac, ABI, BioRad, and Analytik Jena real-time PCR instruments, ProteinSimple Abby for Simple western blot, Automatic Anaerobic Chamber, Beckman XP-80 ultracentrifuge; Criterion 42 Material Testing System with compression, tension, and 3-point bending fixtures; Sonometrics TRX16 ultrasonic measuring system with resolution enhancement; and an iNet 100HC system with linear and rosette strain gauges. Specialized rooms are dedicated to radioisotope analyses, spectrophotometry, tissue processing/histology, and protein chemistry, including high-performance liquid chromatography and microscopy. Microscope resources include Olympus automated brightfield and fluorescence FSX-100, Leica DM6000B widefield deconvolution system with Lumencor LED light source and Photonics cooled CCD camera; Leica SPE laser scanning confocal with piezoelectric motorized Z-sectioning and four solid-state lasers. Spectroscopy resources include multiple UV- Vis spectrophotometers, Horiba and Cary fluorescence spectrometers, Molecular Devices UV-Vis plate reader with auto-injectors. Glass washing, autoclaves, fume hoods, biological containment at Biosafety Level 2+ equipped with six-ft: biological safety cabinets and CO2 incubators are available. The open floor plan of the

research wing facilitates interactions between faculty, students, post-doctoral associates, and staff. In addition, the research wings contain common interaction space. The CPISB integrates teaching and research by combining classrooms, instructional laboratories, and research space in a single building. It brings together faculty, staff, and students in biology, chemistry, geology, and physics.

Health Sciences Building (HSB) (<https://www.uaa.alaska.edu/map/index.cshtml>): HSB, which opened in 2011, houses state-of-the-art medical technology, laboratory space and equipment, interdisciplinary simulation suites for clinical training, and the WWAMI (the regional medical education program) anatomical laboratory. In addition, AK INBRE 3 supported a renovation to assist in clinical and translational research activities by reconfiguring HSB room 107 with a reception/desk area for research staff members and participants and a physical exam and sample collection area.

Computer

UA OIT (bpshier@alaska.edu): Compute cluster, server, and desktop computers are provided, including basic email and internet access. Conventional and wireless network services provide connectivity to internal services and to the Internet on campus.

Other

University of Alaska Consortium Library (<https://ask.consortiumlibrary.org/ask>): serves UAA/Alaska Pacific University students, faculty, staff, and communities of Southcentral Alaska. The library boasts an extensive computer commons and instructional lab for collaborative study and research, and group study rooms equipped with DVD/VHS or Blu-Ray/DVD machines, televisions with cable and computer access, power sources, and whiteboards. The library has wireless internet access throughout the facilities. Materials may be loaned from the library's in-house collection or borrowed directly from over 17 million volumes of the 19 U.A. System campuses. Affiliated users may request materials via interlibrary loan service. Affiliated students, faculty, and staff have on and off-campus access to the library's comprehensive e-books, journal databases, and streaming video collections to facilitate research. Patrons may also access archival collections, including collections that inform research on the ecology of Alaska, Arctic Health, and the history of Alaska. Librarians are available for research and reference assistance via in-person meetings, telephone, email, Blackboard Collaborate, and Zoom. Also, WWAMI faculty affiliated with UWSOM has access to all the library resources of the University of Washington, including the most current biomedical research publications.

Institutional Review Board (IRB) (uaa_irb_chair@alaska.edu): UAA has an IRB compliant with national standards through the Office of Research Integrity and Compliance to protect human research participants, with an efficient online application process through IRBNet. The IRB fulfills the requirements of the Federal Regulations of Title 45, part 46 of the Code of Federal Regulations (45 CFR 46). Meeting monthly, the 10-member board contains experts from psychology, philosophy and ethics, population health sciences, law, and three non-affiliated community members. Additionally, research involving Alaska Native participants is subject to review by the Alaska Area IRB, housed within the Alaska Native Tribal Health Consortium in Anchorage, AK. The AAIRB is sponsored by the Indian Health Service Director's Office, which serves the tribal health organizations and tribes of Alaska.

The role of the AAIRB is to help ensure that all human participant research observes three principles from the Belmont Report: (1) respect for persons, (2) beneficence, and (3) justice. In addition to the Belmont principles, the Alaska Area IRB follows federal regulations 45 CFR 46 and the Food and Drug Administration (FDA) regulations when reviewing research with Alaska

Native people in the Alaska Tribal Health System. The AAIRB and the UAA IRB both ensure human research participants' protection with an efficient online application process through IRBNet.

Office of Sponsored Programs (OSP)

(<https://www.uaa.alaska.edu/research/office-sponsored-programs/>): The UAA Office of Sponsored Programs (OSP) serves a dual role of facilitating and promoting the research and sponsored project's mission of UAA while maintaining compliance related to fraud, waste, and abuse. OSP assists faculty and staff throughout the life cycle of external funding, with services provided through pre-award and post-award functions. Such supportive functions include assistance in the development of high-quality proposals that meet sponsor criteria, proposal and budget preparation, acting as a liaison between the university and funding agencies, providing compliance reviews, and assistance with award account setup, cooperative agreements, sub-contracts, financial reports, award modifications, and closing awards.

Mountain West Clinical & Translational Research - Infrastructure Network (CTR-IN)

(ctr-in@unlv.edu): The Mountain West CTR-IN, which falls under the IDeA program, is a \$20 million 5-year grant that was awarded to the mountain west region, including the states of Alaska, Hawaii, Idaho, Montana, Nevada, New Mexico, and Wyoming.

Under this award, programs have been created to facilitate the pilot funding of translational research projects, provide funding to attend their workshops and build the translational science infrastructure for UAA and other research facilities in the region. The program aims to "foster clinical and translational research according to NIH definitions." The CTR-IN offers short courses on grant writing, research design and methods, biostatistics and infrastructure resources, and networking. We recently participated in a mock review process through CTR-IN, with four senior investigators providing critical feedback on our grants. In addition, the CTR-IN program awards mini-sabbatical awards to gain experience in clinical translational research.

Student Programs

Alaska Native Science and Engineering Program (ANSEP) (ansep_msa@uaa.alaska.edu): ANSEP provides financial, academic, and social support for Alaska Native students in engineering and science (>100 students/year). As a result, ANSEP participants boast increased retention, academic success, and graduation rates for Alaska Native STEM students compared to students of similar backgrounds who do not participate in the program. In addition, ANSEP Summer Bridge is a residential program to provide academic support, especially in math, to Alaska Native students. The ANSEP program was founded at UAA and continues to be administered by UAA, although it provides statewide programming.

Building Infrastructure Leading to Diversity Initiative (BUILD) Enhancing Cross-Disciplinary Infrastructure Training at Oregon (EXITO) (exito@pdx.edu): BUILD EXITO is an undergraduate research training program funded by the National Institutes of Health (NIH). BUILD has recruited seven cohorts of scholars and is looking for students who are passionate about solving health issues and addressing health disparities and are

interested in pursuing a degree in biomedical, behavioral, clinical, health, social, or bioengineering research topics. Students do not need to have prior research experience or think of themselves as scientists-BUILD EXITO helps students prepare for a future research career.

BUILD EXITO strongly encourages applications from students of color, those with disabilities, individuals from disadvantaged socioeconomic backgrounds, and first-generation college students.

BUILD EXITO offers a pathway to graduation and beyond with enhanced science education, dedicated advising, opportunities for hands-on research experiences, and financial support. Students who are accepted into the program will be trained, mentored, and supported as a community of Scholars with the ultimate goal of preparing to solve important health issues through research in the biomedical and social sciences.

Undergraduate research training initiative for student enhancement (U-RISE)

(tkburke@alaska.edu): Approximately 90% of UAA students are from Alaska, and 50% of the incoming students are from Anchorage, which includes the most diverse census tract, and the three most diverse high schools in the US. Less than 50% of the UAA student body identifies as white. In fact, 62% of the students graduating from the target majors over the last 7 years were from minoritized racial/ethnic or other underrepresented groups. When fully operational, the URISE program at UAA will support a total of 20 students with majors in Biology, Chemistry, and Natural Sciences to increase the diversity of students going on to advanced biomedical research-focused degrees. The program actively provides the academic foundation, practical hands-on experience, professional development skills, and key psychosocial aspects to develop well-rounded graduates in the biomedical sciences.

Undergraduate Student Research (<http://www.uaa.alaska.edu/ours>): Undergraduate research is a priority at UAA and is supported by the Office of Undergraduate Research and Scholarship (OURS). OURS is now the clearinghouse for identifying faculty who will engage with students to conduct research and students interested in researching while pursuing a degree. Fifty percent of UAA undergraduate students participate in research while pursuing a degree. OURS coordinates information about opportunities for undergraduates, including major prestigious scholarships and fellowships