

Biomedical and Health Research – FY10 Budget

NOTE: highlighted requests may already be covered from other funds

FY10 Budget requests in support of Biomedical and Behavioral Research at the University of Alaska – narratives start on p8

	FY10 request	MAU	Program	INBRE support?	Request
A	Joint UAF/Public Health Laboratory (DHSS) position (6 months) in Virology	UAF	tbd	Yes	\$ 75,000
A	Joint UAA/Public Health Laboratory (DHSS) position (6 months) in Microbiology	UAA	WWAMI	Yes	\$ 75,000
A	1.0 Faculty FTE (9 months) in Virology and Infectious Diseases (salary + benefits)	UAF	tbd	Yes	\$ 100,000
A	1.0 Faculty FTE (9 months) in Immunology	UAF	tbd	Yes	\$ 100,000
A	1.0 Faculty FTE (9 months) in Stress Physiology	UAA	tbd	Yes	\$ 100,000
A	1.0 Faculty FTE (9 months) in Clinical/Translational Science (mid-senior level)	UAA	WWAMI	Yes	\$ 150,000
A	Post-doctoral research support (3)	UAF	tbd	Yes	\$ 200,000
A	1.0 Staff FTE (12 months) Veterinary Services Lab Technician	UAF	CRS	Yes	\$ 95,000
A	1.0 Staff FTE (12 months) Veterinary Services Animal Health Technician	UAF	CRS	Yes	\$ 95,000
A	1.0 Staff FTE (12 months) Animal Research Facility Manager	UAA	VPR	Yes	\$ 70,000
A	0.25 Staff? (3 months) Attending Veterinarian	UAA	VPR	Yes	\$ 60,000
A	UAS teaching buyout for 2 INBRE supported faculty	UAS	SAS	Yes	\$ 50,000
A	1.0 Faculty FTE (9 months) in Neuroscience (mid-senior level)	UAF	ABNP	No	\$ 200,000
				subtotal	\$ 1,370,000
B	1.0 Faculty FTE (9 months) in Behavioral Health Intervention	UAF	CANHR	No	\$ 105,000
B	1.0 Staff FTE (12 months) in Core Epidemiology and Biostatistics support	UAF	CANHR	No	\$ 116,000
B	1.0 Staff FTE (12 months) for Coordination of Field Research in rural Alaska	UAF	CANHR	No	\$ 116,000
B	0.5 UAF Faculty FTE (4.5 months) in Nutritional Biochemistry	UAF	ABNP	No	\$ 70,000
B	1.0 FTE (9 months) in Alcohol and Addiction Research	UAA	CHSW	No	\$ 110,000
B	1.0 Faculty FTE (9 months) in Environmental Health	UAA	CHSW	No	\$ 100,000
B	1.0 Staff FTE (12 months) in Biostatistics and Epidemiology	UAA	CHSW	No	\$ 75,000
				subtotal	\$ 692,000
C	0.5 staff FTE Pre-professional Health Advisor/Coordinator	UAF	CNSM	No	\$ 45,000
C	1.0 Faculty FTE (9 months) in Bioethics (mid-senior level)	UAF	CLA	No	\$ 120,000
C	1.0 Staff FTE (9 months) in Health Careers and Pathways	UAA	WWAMI	No	\$ 75,000
C	1.0 staff FTE (12 months) in Research Administration	UAA	OSP	No	\$ 75,000
				subtotal	\$ 315,000
				TOTAL	\$ 2,377,000
	Category A = high priority after July 10 review				

	Category B = low priority after July 10 review				
	Category C = excluded after July 10 review				

Background

The health and welfare of Alaskans is reliant on the activities of several state and federal agencies. Along with the rest of the United States, Alaskans have benefited from several major advances in biomedical research and health care delivery, all attributable to research conducted in other states by other universities. Nevertheless, we continue to have significant health care delivery problems and Alaskans have challenges unique to our state. A chronic deficiency has been the minimal state investment in biomedical and behavioral research programs at the University of Alaska. With no state or university commitment Alaska has received minimal support from the National Institutes of Health. Fortunately the funding environment is changing and, over the past 10 years, UA has witnessed increasing success in securing federal funding for biomedical and behavioral research. This has developed alongside renewed state interest in biomedical research and health care delivery issues in Alaska. In response to the Alaska state legislature, the August 2004 report, *Health Research in Alaska – A Report in Response to SJR44*, outlines the needs and offers a framework for building biomedical research at the University of Alaska. This focuses on fostering close ties and collaborative programs with communities, several state and federal agencies, and many private organizations delivering health and medical services. Growth of biomedical and behavioral research at UA is essential for improving the health and welfare of our people. Moreover, it creates opportunities to diversify Alaska’s economy through support of sponsored research and it builds intellectual infrastructure necessary to develop biotechnology in the state. Current research programs focus on Alaska Native Health, prevention of chronic disease and psychosocial disorders, genetics of obesity, diabetes, substance abuse, neuroscience, infectious disease, toxicology, mechanisms of disease, use of hibernating species as animal models of human disease, and natural product chemistry. All research programs address questions related to state health needs or make use of unique Alaskan resources. Biomedical research augments pre-professional and professional training of health care providers as well as training in allied health fields.

Biomedical, behavioral, and health research spans several institutes, centers, colleges, schools, and departments across the University of Alaska. In addition to serving state needs active research programs are vital for the education and training of undergraduate, graduate, pre-professional and professional students. At the University of Alaska Fairbanks, most biomedical research tends to be supported by or is affiliated with three NIH funded programs: Center for Alaska Native Health Research, Alaska Basic Neuroscience Program, and Alaska INBRE which is helping to build research programs in contaminants and infectious agents. Faculty engaged in biomedical and behavioral research at UAF have appointments within the Institute of Arctic Biology, the College of Natural Sciences and Mathematics or the College of Liberal Arts. Faculty academic appointments cross many different departments on campus including but not limited to Biology and Wildlife, Chemistry and Biochemistry, Psychology, and Sociology. At the University of Alaska Anchorage biomedical and behavioral research is conducted by faculty with appointments in the WWAMI program, College of Arts and Sciences, or the College of Health and Social Welfare.

Significant Ongoing Efforts

1) University of Alaska Fairbanks

a) Center for Alaska Native Health Research

In 2007, the NIH/NCRR awarded CANHR a second five-year Centers of Biomedical Research Excellence (COBRE) grant to continue its work of investigating Alaska Native health disparities. The primary theme continues to be the investigation of obesity and chronic disease-related risk, control, and prevention factors. Current research is with Yup'ik Eskimos in the Yukon Kuskokwim delta, but there are plans to work with the South Central Foundation in Anchorage. CANHR currently has four interrelated research projects: Yup'ik Perceptions of Body Weight and Diabetes; Developing a Novel Set of Diet Pattern Biomarkers Based on Stable Isotope Ratios; Contaminants and Nutrients in Alaskan Subsistence Foods; and Yup'ik Experiences of Stress and Coping: Intervention via Cultural Understanding. Additionally, there is data from CANHR I on 1005 participants that include biological, nutritional and psychosocial data. These data continue to be analyzed by investigators.

In addition to these projects, CANHR supports affiliated research projects through its cores. CANHR director Gerald Mohatt is completing two NIH-sponsored grants to develop an intervention program aimed at reducing suicide and substance abuse among Alaska Natives. He and James Allen have just been awarded a five-year grant to implement and test the intervention program in three new villages. James Allen has an NIH R21 grant to develop and test a measurement model developed over the past 15 years through earlier NIH-funded research called the People Awakening Project (Mohatt, PI; Allen, Co-I). They have also been granted a NSF IPY three-year research project to study the resilience of indigenous youth in the circumpolar north with investigators from Russia and Canada, and to add the NANA region in Alaska. CANHR also provides support to Bert Boyer's NIH R01 to study the genetics of obesity and Cecile Lardon's NIH R21 grant to continue a health promotion intervention in one of the CANHR 1 villages.

CANHR's director and principal investigator is Gerald V. Mohatt. Co-Investigator and Genetics Core leader is Bert Boyer. Project investigators are Diane O'Brien and Todd O'Hara, Dr. Inna Rivkin, and Andrea Bersamin who will be joining us in the fall. Upcoming CANHR faculty searches include an epidemiologist and an intervention specialist. CANHR has a full-time field and administrative staff and hires part-time field assistants in each research village. Graduate research assistants come from the doctoral program in psychology, as well as from the biology and wildlife department.

www.alaska.edu/canhr

b) Alaska Basic Neuroscience Program

The Alaska Basic Neuroscience Program (ABNP) strives to expand and stimulate basic neuroscience research. Scientists study the basic science of the nervous system related to health problems such as stroke, cardiac arrest, sudden infant death syndrome, Alzheimer's disease, toxicology of arsenic, teratogenic effects of alcohol and nicotine, and the neuroprotective properties of natural Alaskan grown products. Neuroscience also

includes biotechnology such as development of biological sensors and drug discovery. The interdisciplinary research effort of the ABNP addresses health disparities of Native Alaskan populations in part by giving Alaskan Native students access to experience and careers in biomedical research and health care. The program was started through support from a Specialized Neuroscience Research Program (SNRP) grant, through the National Institute of Neurological Disorders and Stroke (NINDS), National Institute of Mental Health (NIMH), and the National Center for Research Resources (NCRR). The mission of SNRPs is to enhance and strengthen both the quality and intensity of basic neuroscience research at Minority Institutions and other 'non-research-intensive' institutions. The ABNP director is Dr Larry Duffy and faculty includes Kelly Drew, Abel Bult-Ito, Thomas Kuhn, YiLong Ma, Michael Harris, and Barbara Taylor. Currently fund comes from the NIH, DOD and USDA.
www.iab.uaf.edu/abnp/home.htm

c) **Infectious Disease and Toxicology** (INBRE supported theme areas)

The scientific emphasis is on research at the interface between the environment and disease. INBRE themes investigate the chemical and microbial agents that cause disease and the cell biology relevant to their impacts. The health consequences of global climate change stem from the mobilization of contaminants and emergence of infectious microbial agents. Alaska INBRE programmatically targets research on chemical agents (especially contaminants in subsistence foods) and on zoonotic and vector-borne microbial agents of disease. Alaskans are front-line recipients of health assaults from environmental agents that cause disease. The University of Alaska is internationally renowned in ecology, population biology, wildlife biology, and climate changed research (physical and ecological). UA's intellectual community offers a particularly auspicious site to nourish research at the human-environmental interface with initiatives the focus on contaminant biology, food safety, and emerging infectious diseases. Alaska is uniquely appropriate for pursuing biomedical research on the health impacts of climate change.

The major program priority for the INBRE 2 is a closer partnership between UA and the Alaska State Public Health Laboratories in Fairbanks and Anchorage.

d) **Biomedical applications of hibernation**

Hibernation research at UAF investigates the physiological, molecular, and genetic basis of hibernation in arctic ground squirrels and black bears. Research efforts also include the use of freeze tolerant wood frogs and insects. The biomedical application of this research is the development of novel animal models on human disease and new drugs. Current research is focused on preventing and treating trauma from injury and ischemia in humans; however, hibernating animals offer several opportunities for biomedical and behavioral research. Hibernation research builds on existing intellectual infrastructure in hibernation at the Institute of Arctic Biology and utilizes unique Alaskan resources. UAF is recognized as a world leader in hibernation research and exploration of biomedical applications of hibernation biology. Biomedical aspects of hibernation research is currently funded through several federal sponsors including the National Institutes of Health and the Department of Defense.

2) University of Alaska Anchorage

Waiting for Doug Causey

3) IDeA Networks for Biomedical Research Excellence (INBRE)

Alaska INBRE is an Institutional Development Award (IDeA) funded by the National Center for Research Resources (NCRR), a division of the National Institutes of Health (NIH). Alaska INBRE is a statewide program based at the lead institution, the University of Alaska Fairbanks. This program supports faculty at all 3 MAUs. The primary goal is to support new faculty, conduct research, provide new equipment, expand research infrastructure, and train Alaska students in biomedical research. Themes are emerging infectious diseases, the effects of contaminants in subsistence food species, and the mechanisms of disease. Alaska INBRE bridges the University of Alaska campuses to enrich educational opportunities and research and partners with state, federal, and local agencies. Alaska INBRE contributes to a base of knowledge for the prediction, prevention or treatment of human diseases, disorders, and health risks.

<http://www.inbre.alaska.edu/>

The Biomedical Research Infrastructure Network (BRIN) was an initial funding stream available from the National Institutes of Health in 2001. Provost Reichardt cited BRIN as an appropriate funding stream to support “Environmental and Human Health” and “Renewable Natural Resources” - two of the seven areas of emphasis in the academic development plan for UAF. The goal of BRIN was to broaden and strengthen Alaska’s capacity and performance in biomedical research aiming to self-sufficiency of successfully NIH funded faculty. Funding from BRIN and the University of Alaska institutional commitment allowed for the hiring of 4 faculty on the Fairbanks campus and 2 on the Anchorage campus. BRIN created a Bioinformatics Core, funded several major instruments for molecular biology, and supported graduate fellows and undergraduate research.

The second phase of NIH funding is known as INBRE (Institutional Development Award Network of Biomedical Research Excellence) and was awarded to UA in 2003. This funding stream is committed to the continued building and strengthening of a community of biomedical faculty members on all three campuses of the University of Alaska. Continuing BRIN faculty were supported, 3 new faculty were appointed, and several other existing faculty were invited to be a part of INBRE. Today there are 5 members in Fairbanks, 5 in Anchorage and 1 in Juneau. This cadre of faculty now provides depth and breadth to the academic profile of each campus for biological science including computational biology on the Fairbanks campus. The labs of these faculty members provide working space and research opportunities for more than 15 graduate student and another 20 undergraduates annually. A high school outreach program is now funded by a new NIH SEPA award (R25). These experiences have deepened the students’ research expertise and enhanced their educational pursuits. There have been four students out of these labs that have been accepted into medical school in the past two years. These faculties have contributed to their areas of research with 57 peer reviewed articles published and another 15 in press. They have collectively been responsible for additional research dollars in the following manner:

Non-Federal sources including foundations and industry:	\$ 595,437
Federal sources Non-Public Health Service	
National Science Foundation	\$ 222,070

National Wildlife Protection	\$ 38,100
US Geological Survey	\$ 2,625
Federal Sources Public Health Services	
National Institutes of Health	\$ 824,953
NIH collaborative with UW Bioterrorism	\$ 188,000
Pending awards NIH (in administrative review) RO1 valued at:	\$ 857,277
Pending awards NIH SEPA (in administrative review) valued at:	\$1,348,000

Capacity

Biomedical research is an emerging focus area that has and will continue to require significant state investment. We need to attract experienced faculty with established programs in biomedical research and connections with research sponsors. They must be capable of guiding and mentoring our junior faculty, post docs and students. At the same time we need to increase the numbers of junior faculty and post docs to increase our grant writing capacity and our research output. We also need to buy research and teaching space and facilities and advocate for economic development programs to support development of biotechnology state-wide. The purpose of SNRP, COBRE, INBRE, DEPSCoR and the federal initiative process is to build infrastructure to produce competitive, self-sustaining, investigator-initiated research programs. Success has been realized as an increase in the numbers of grant proposals submitted and in award of an increasing number of investigator-initiated grants from NIH. Increasing the number of successful individual competitive grants is a primary goal; however, renewal of the large, infrastructure building grants and success in seeking new center grants is just as critical and requires continued growth in terms of faculty and research space.

Recently renovated and newly constructed laboratories and facilities at the UAF and UAA campuses offer direct or indirect support for the biomedical and behavioral research programs:

West Ridge Research Building (WRRB) completed in 2004 provides new space for several research programs at UAF but a portion of the 2nd floor houses several faculty engaged in biomedical research as well as support services centers like the DNA sequencing core and the bioinformatics core.

Biological Research and Diagnostics (BiRD) Building was completed in 2008 and offers badly needed space for animal research and veterinary support services. At present it is being operated as a conventional animal facility but, with minimal investment, a portion of the facility will be converted into Alaska's only barrier facility.

The **State Virology Laboratory (SVL)** is one of two State of Alaska Public Health Laboratories. The SVL is being built on the UAF campus, is attached to the BiRD building, and will have an underground connection to a future building planned for a building site on the west side of Sheenjek Dr. This future building, coupled with the SVL, and BiRD will consolidate the biomedical research effort and foster a collaborative relationship between the UAF research program and the Alaska Department of Health and Social Services.

Arctic Health Research Building was originally built in 1968 by the Public Health Service and turned over to UAF in 1974 when PHS vacated Alaska. It is home to an eclectic group of faculty spanning several institutes, colleges, and schools. Over the past several years code compliance improvements have generated several new laboratories and offices, some of which are used in our biomedical and behavioral health programs.

Ecosystem-Biomedical Health Laboratory (EBL)

ConocoPhillips Integrated Science Building

Additional Resources:

- a) Health Research in Alaska – A Report in Response to SJR44:
<http://www.alaska.edu/health/downloads/HealthPlanforAlaska.pdf>
- b) Improving the Health Status of Alaskans: University of Alaska's Role
<http://www.alaska.edu/health/downloads/HealthStatusAlaskans.pdf>
- c) Healthy Alaskans 2010
http://www.hss.state.ak.us/dph/targets/ha2010/volume_1.htm