Improving the Health Status of Alaskans

University of Alaska's Role

Our Priorities

- Workforce Development – Growing Our Own
- Behavioral Health
- Arctic and High Latitude Research
- Frontier Health
- Injury Control
- Improving Health Disparities / Partnerships
- Genomics and Bioinformatics
- Human Services Research
- Centers of Excellence

UNIVERSITY of ALASKA

Many Traditions One Alaska

State Health Problems and Needs

Alaska is a land of extremes—a huge land mass rich in natural and human resources. Alaskan's health status reflects these extremes with high rates of violence, injury and use of alcohol.

Alaska is also the state with the youngest median age and has ever-improving infant and child health status indicators.

To address our problems and build on our successes, Alaska's health and human service leaders have created some of the most innovative delivery systems in the nation to provide primary and specialty health care, uniquely tailored to a geographically huge state with a low population density.

But, what we have accomplished so far is just a start. Therefore, UA is committed to define a long term strategy to improve its capability in biomedical and health research and evaluation.

Healthy Alaskans 2010, recently published by the State of Alaska, provides an excellent roadmap for the University of Alaska to use in charting its future course in meeting state research and education needs.

The roadmap for future directions in health is outlined in this document.

HEATHER TIPTON/UAF

Professor Gerald Plumley and student Tracie Toivanen of UAF's Institute of Marine Science study bacteria as part of a project to find the causes and prevention of paralytic shellfish poisoning.

Alaska has 1.1 persons per sq. mile, compared to the US with 79.6 persons per sq. mile. Innovative methods have been created for frontier health delivery.

The University of Alaska is an important economic engine for Alaska.

Role of the University of Alaska in Meeting State Health and Human Service Needs

The University of Alaska has a major role to play in improving the health status of Alaskans by educating the workforce needed in the health care field and by tackling tough health research questions.

UA is enjoying unprecedented support from the public, the State Legislature and our Congressional delegation. Under the leadership of President Mark Hamilton and the Board of Regents, enrollments are increasing and research dollars are growing.

Nowhere is this more true than in the health and human services disciplines.

The UA Scholars program—students who graduated in the top 10% of their class—is attracting hundreds of students who three years ago would likely have chosen universities outside of Alaska.

Most exciting of all, UA has doubled the number of Alaskan students who had begun their education outside of the State but decided to come home.

Health education and research has become a major focus of UA. That's because the University is responding to a tremendous need, as expressed by industry, for a trained health care workforce, especially in nursing, allied health, and behavioral health.

It makes sense, especially in the rural areas of Alaska, to educate Alaskans for the good jobs that are local. This *Grow Our Own* philosophy has fostered strong partnerships between the University and rural health care providers.

Alaska ranks near last among states receiving competitive NIH research funding. UA has begun to reverse this trend with $30 million in recently garnered biomedical research capacity building grants. With the addition of new biomedical facilities in Anchorage and Fairbanks, the faculty will have the space necessary to secure a significant share of federal funding for biomedical research important to Alaska.

Alaska also does not have any Centers of Excellence funded by DHHS. Our long term goal is to establish centers which draw on our strengths and address our critical needs.

MATT HAGE

Freshmen at the Kuskokwim Campus in Bethel help each other with their coursework during a study session in September 2001.

Twenty-two percent of the degrees awarded by UA last year were in health.

Health Education and Training

Demand for health care workers is expected to grow faster than any other employment sector over the next decade. Approximately 15% of Alaska's workforce will be employed in the health care sector by 2010. Ten of the 15 fastest growing occupations in Alaska are in health.

Alaska has serious needs today for skilled workers in health occupations. Hospitals and clinics report high vacancy rates for nurses and many other professions. Trained workers in radiology, pharmacy, laboratory, dental, and medical office occupations are in high demand.

New degree programs in Health at University of Alaska, 1998-2002

Health Information Management, AAS
Environmental Chemistry, MS
Environmental Chemistry, PhD
Coding Specialist, Cert
Occupational Safety and Health, AAS
Health Sciences, MS
Practical Nursing, Cert
Dental Assistant, Cert and AAS
Massage Therapy, Cert
Medical Technology, BS
Pharmacy Technology, Cert
Radiologic Technician, AAS
Public Health Practice, MPH
Health Care Reimbursement, Cert

There are thousands of health care jobs in rural Alaska, where unemployment is very high. To fill these positions, health organizations are currently spending millions of dollars importing *"locums,"* or temporary workers. Rural employers, therefore, are increasingly focused on spending money to train and educate local residents for these jobs. This *Grow Our Own* approach will improve continuity of care as well as provide an economic boost in regions where unemployment is high.

UA has invested over $3.5 million in new resources in the last three years to develop programs to meet this need in nursing, social work, allied health, human services, early childhood, and health care management. Of the 2,591 degrees awarded by UA last year, 22% were in health. Another 2,914 students have chosen health or health-related majors (such as biology).

Workforce Highlights

- UA will double its nursing graduates by 2006. Almost half of this $1million expansion is financed by private hospitals in Alaska.
- Nursing education is expanding into seven new sites, including Fairbanks, Bethel, Kodiak, Juneau, Sitka, Ketchikan and Kenai, making opportunities available to many Alaskans in small communities.
- Shortages in radiology, pharmacy, dental assisting, laboratory, and medical technology are being addressed by new and expanded programs.
- UA and the Alaska Department of Education and Early Development, with support from DHHS, have initiated the Alaska System for Early Education Development (SEED), an innovative program serving Alaska's childcare workers.

Behavioral Health Workforce

Issues

Behavioral health problems are a serious issue in Alaska, reflected in high rates of suicide, violence, child maltreatment, and alcohol abuse. There is a tremendous need for training many disciplines in the behavioral health field.

Lack of access to quality health care is clearly a problem in rural Alaska, where remote small communities have only airplane access to regional hubs. Behavioral health services, if they exist, have largely been itinerant and western in modality.

The behavioral health workforce in rural Alaska is currently more than 800 positions and growing rapidly.

Alaska is the only state without any doctoral programs in health-related fields.

Solutions

- The University is expanding delivery of its village-based counselor program, Rural Human Services, acclaimed for its successful integration of western and traditional models of healing.
- Baccalaureate and Masters level social work programs are expanding to serve urban and rural students using distance education.
- Over 400 students are pursuing degrees in psychology, and specialized programs like Alaska Native Psychology (ANPsych) are reaching rural and Alaska Native students who want to pursue advanced degrees in psychology.
- Planning is underway for a collaborative doctoral program in psychology between UAF and UAA.

Rural Human Services Certificate

The Rural Human Services program (RHS) was developed in response to the critical need in rural Alaska to recognize and train local people in the delivery of village-based human services. The two-year RHS course of study is intended for Alaska Natives who are natural helpers and healers in their communities, and is delivered in intensive three-week sections designed to meet the students' needs.

Training is provided in crisis intervention, suicide prevention, community development, and counseling in mental health, substance abuse, interpersonal violence, grief and healing.

Nearly 100 students have received their certificates. Virtually all graduates are working in rural communities and many are now enrolled in Associate or Baccalaureate programs in human services, social work or rural development.

The goal of UA, the Alaska Mental Health Trust and the Alaska Tribal Health Consortium is to have at least one trained village-based counselor in every village. There are still 171 villages with no trained mental health worker.

Circles of Care/Ch'eghutsen

The vision of Circles of Care, a planning and assessment grant from SAMHSA, is to provide comprehensive, culturally appropriate mental health services to Alaska Native children dealing with serious emotional disturbances by encircling them with full support and access to necessary services.

This is a collaborative project with the Psychology Department of the University of Alaska Fairbanks, Fairbanks Native Association Life Givers Program and Tanana Chiefs Mental Health and Alcohol Services.

The project is guided by an all-Native Advisory Council, consisting of parents and service providers. Alaska Native people have traditionally not had a "voice" in designing services for themselves, and access to services in villages has been minimal or non-existent.

This is an opportunity to have a voice which can have impact for American Indian and Alaska Native children nationwide.

Health Research at the University of Alaska

The University of Alaska has a current total of 68 grants in biomedical and health-related research. The total awarded value of research grants is $41 million, with $5.25 million expended in the current fiscal year. Biomedical, mental and behavioral health, and health services account for 84% of UA's health research grants.

The University of Alaska Fairbanks is among the top 100 research institutions in the US and top 75 in National Science Foundation funding. Yet there has been very limited health and biomedicial research at UA.

State and federal agencies have gathered data on health indicators. This data points to serious health concerns, but the funding for research on underlying causes of disease has been lacking.

With the recent award of four major infrastructure grants and the construction next year of new research labs, UA is poised to address the critical health concerns and disparities of Alaska, in particular those of Alaska Natives, with application to other Northern, indigenous and rural communities.

UA is developing a strategic plan for its health research efforts. An eleven member team will work through 2002 to complete a plan. This internal effort will be dovetailed with a statewide public process to develop an Alaska Research and Development plan, as called for by the Alaska Legislature this year.

INTERIOR-ALEUTIANS CAMPUS

Native elders and students from one of University of Alaska's Interior-Aleutians campuses gather materials on the Yukon River near Galena.

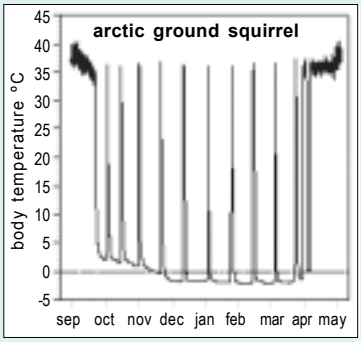
How have Alaska Natives, who have lived with a traditional diet high in fat derived from marine mammals and fish, maintained lower rates of diseases like diabetes?

Arctic Ground Squirrels and Neuroprotective Adaptations

At the Institute of Arctic Biology at the University of Alaska Fairbanks, a team of faculty and students, sponsored by the NIH (SNRP), NSF and DOD, is investigating hibernation from molecular to behavioral levels in arctic ground squirrels and other mammals. The extreme winter conditions in Alaska provide a unique opportunity to study neuroprotective adaptations to stress that could have exciting biomedical applications.

Hibernating arctic ground squirrels tolerate the lowest body temperatures ever measured in a mammal by super-cooling their body tissues and fluids to several degrees below the freezing point. Resistance to freezing is provided by removal of molecular ice-nucleators, that in other animals initiate crystallization of ice. This could have application to preservation of donor-organs and tissues.

Other potential applications of this research include protection from injury due to stroke and heart attack, the treatment of obesity and prevention of osteoporosis and muscle wastage, and the study of memory, sleep, and neurological mechanisms of daily and seasonal timing.



The arctic ground squirrel's ability to super-cool its body tissues may hold promise for stroke, trauma and organ transplantation researchers.

BRIAN BARNES/UAF

Cancer Research

Research in the Krebs lab at UAA focuses on chromosome structure and DNA repair. How do cells repair chromosomal DNA that has been damaged by chemicals or radiation? Rapidly proliferating cancer cells have escaped the normal cell cycle controls, and in many cases have lost the ability to detect or repair DNA damage. Mutations in a variety of enzymes that control chromosome structure have been implicated in a number of cancers.

This research also has links to Alaska's focus on environmental contaminants. Some contaminants, such as certain heavy metals, can directly damage DNA or alter chromosome structure. Understanding how this kind of damage is recognized and repaired is integral to our understanding of the risks and mechanism of action of these kinds of contaminants.

People Awakening Project: Pathways to Alaska Native Sobriety

People Awakening Project is funded by the National Institute of Alcohol Abuse and Alcoholism of NIH and is an exciting collaborative study between Alaska Natives and university researchers to provide understanding of the sobriety process. What factors are most helpful and what factors are barriers in the sobriety process? How do Alaska Natives conceptualize and utilize spirituality in the sobriety process? What can we learn about recovery and prevention from the life histories of a sample of abstainers, non-problem drinkers, and secure abstainers? This information will be utilized for the cultural adaptation of instruments and the development of new measures of variables that are important in the sobriety process and predictive of a favorable outcome.

Current and proposed instruments will undergo rigorous pilot testing for cultural and linguistic equivalence and psychometric integrity. Additionally, the project will plan with Native communities further research to identify ways to implement prevention or treatment methods based upon the findings.

Building Biomedical Research Infrastructure

Recently, the University of Alaska has successfully competed for four key multi-year grants to build physical infrastructure through the purchase of equipment and to augment intellectual infrastructure with 16 new faculty for health and biomedical research. State funding investments are leveraging the federal funds. Guiding these grants is the Alaska EPSCoR/IDeA State Committee, a group with representatives from the biomedical, environmental, and physical research communities, state government, non-profits, and the private sector.

Recent federal infrastructure awards allow us to develop greater research capacity, hire new faculty, purchase major equipment, and involve students in cutting-edge investigations.

- NIH-funded Alaska BRIN (Biomedical Research Infrastructure Network) supports lab instrumentation and faculty expertise in toxicology, focusing on molecular mechanisms underlying contaminant-induced diseases and disorders.
- NIH - funded Alaska COBRE (Center of Biomedical Research Excellence) is funding the establishment of the Center for Alaska Native Health Research (CANHR) to investigate weight, nutrition, and health in Alaska Natives.
- NIH-funded Alaska SNRP (Specialized Neuroscience Research Program) investigates the regulation of seasonality and hibernation of Alaska animals.
- NSF-funded Alaska EPSCoR (Experimental Program to Stimulate Competitive Research) addresses research on environmental physiology, basic molecular biology, and genomic diversity of Alaska animals and microbes.

PATRICK J. ENDRES/ALASKAPHOTOGRAPHICS.COM

University of Alaska Professor Joan Braddock studies a sample with microbiology students in the lab.

Building a Center of Biomedical Research Excellence (COBRE/CANHR)

UA has established the Center for Alaska Native Health Research (CANHR), funded by the National Center of Research Resources of NIH. The Center will focus on weight, nutrition and health in Native Alaskans, and build faculty expertise and core resources to address Alaska Native health disparities. Collaborative research partnerships with Alaska Native communities and Tribal Health Corporations form the foundation for CANHR.

Multidisciplinary health research teams will identify and characterize the prevalence, etiology and associated genetic, nutritional and behavioral risk factors and protective factors affecting the weight and health of Alaska Natives.

For instance many traditional subsistence foods are high in fat derived from marine animals and fish. Is there a "thrifty gene" which protects Alaska Natives from diabetes and can we apply this research to the millions who suffer from this and other chronic diseases?

In what ways can culture guide interventions to reduce health disparities among Alaska Natives? Building the capacity of UA and Native health corporations to compete successfully for NIH RO1 grants is a major goal.

Alaska Biomedical Research Infrastructure Network (BRIN)

The goal of NIH funded Alaska BRIN is to broaden and strengthen Alaska's capacity and performance in biomedical research, with a focus on the impact of contaminants on the function of genes. New faculty in toxicogenomics, instrumentation, seed project support and student mentoring will build the capacity for increased RO1 funding for proposals submitted by UA faculty.

There is widespread concern in rural Alaska about contaminants and food safety. Contaminants generated locally and in low latitudes persist in our cold climate and may concentrate in the subsistence foods that are a substantial part of the diet of Alaska Natives.

We do not know whether these low-level toxicants perturb the genetics and physiology of fish and wildlife as they pass up the food chain, nor the impact of specific contaminants in food species on human cells and tissues.

Research on contaminants in subsistence species will seek to elucidate the molecular mechanisms underlying contaminant-induced diseases and disorders.

With the recent award of four major infrastructure grants and the construction of new research labs, UA is poised to address the critical health concerns and disparities of Alaska.

Examples of Current UA Biomedical and Health-related Research*

Research Title	Funding Agency	Total Value Awarded
The Pathway Home	Southcentral Foundation	$124,000
Third Party Evaluation of Fetal Alcohol Syndrome (FAS) Project Y2 Funding	Office of Fetal Alcohol Syndrome/ SAMSHA	$500,855
Evaluation of Community Mental Health API 2000 Project	Mental Health & Developmental Disability/SAMHSA	$585,083
Control Women Drugs & Condoms	National Institutes of Health Alaska	$553,678
Hepatitis C Virus Epidemiology and Research in Alaska	Native Tribal Health Consortium	$265,590
H.pylori Genetics and Gastroduodenal Disease in Alaska	Washington University	$136,041
Geographic Modeling of Traffic and Asthma Rates	National Institutes of Health	$453,408
Amchitka Workers Health Assessment & Medical Screening Program	Alaska State Dist. Council of Laborers	$93,000
Research and Evaluation on Violence Against Women	National Institute of Justice	$233,555
Healthy Nations Program Evaluation	Robert Wood Johnson Foundation	$733,616
AFN Children's Mental Health/UAF Evaluation	Alaska Federation of Natives	$106,069
Circles of Care	Fairbanks Native Association/SAMHSA	$234,800
People Awakening Project: Pathways to Alaska Native Sobriety	National Institute of Health	$1,424,498
Energetics, Homeostasis, and Life History in an Arctic Hibernator	National Science Foundation	$442,479
MRNA and Protein Turnover	National Science Foundation	$311,844
Biochecmical Response of Marine Mammals	Environmental Protection Agency	$301,171
Implementation of Improved Beach or Sea Monitoring Program for Detection of Algae that Cause Paralytic Shellfish Poisoning	Alaska Science & Technology Foundation	$182,744
APIS: Nutritional Physiology and Body Condition of Seals	National Science Foundation	$231,225
Study to Detect Outbreeding Depression in Pacific Salmon	NOAA/NMFS	$997,010

* $30 million in BRIN, COBRE, SNRP and EPSCoR infrastructure grants not cited here

Rural employers and UA are committed to educating local residents for health care jobs. This Grow Our Own approach will improve the quality of care.

Partners

In order for UA to be successful in developing research that addresses state health needs, faculty and staff need to work closely with hospitals, agencies and health corporations conducting health delivery, health planning, data gathering and regulation. Primary are the State of Alaska, federal agencies, public boards and consumer groups, the major hospitals, and the Alaska Native tribal health organizations.

The University of Alaska lacks a school of medicine, thus limiting clinical research. There is ongoing collaboration with the University of Washington School of Medicine and School of Public Health, but more is needed.

The potential for clinical research has been demonstrated by several hospitals in Alaska, working with UA and other institutions. State and federal labs in Alaska also provide opportunities for joint research.

The eight countries represented on the Arctic Council have begun focusing on issues such as global warming and environmental contaminants and their impact on humans and health. Current collaborative research efforts are working well. UA will work actively with the Arctic Research Commission and others to formulate a health research plan during the next year.

Yukon-Kuskokwim Partnership

One year ago, the University of Alaska signed an agreement with the Yukon-Kuskokwim Health Corporation (YKHC) to work together to educate and train local people in the region for health care jobs. YKHC employs 1400 people in the Delta.

A team of UA leadership, led by Associate Vice President Karen Perdue, met with YKHC President Gene Peltola and his team to develop a work plan for nursing, health care management, allied health and behavioral health education.

Much has happened. As a result, UA is planning its first rural RN program in Bethel, billing and coding classes are underway, allied health programs are on the drawing board, and students in Rural Human Services are advancing into AA and BA programs.

The College of Rural Alaska, under Dean Bernice Joseph, has made this partnership and health care in general a priority. As the *Yuut Elitnaurviat, Peoples Learning Center*, becomes a reality, many more opportunities will develop between UA and YKHC.

Child Welfare Partnerships UA/DHSS

Alaska has the shameful distinction of having one of the highest rates of child abuse in the nation, and has been making significant efforts to improve its child welfare system.

Three years ago, the State's child welfare agency began to invest heavily in training child welfare workers and building programs to attract social work students to the field. A partnership was formed with UAA and DHSS, and the Family Services Training Academy was born. IVE funds have been invaluable in financing the effort.

Last year the Center conducted over 200 days of training. All new workers received 15 days of orientation and training in the first month and an additional 10 days of training in the first year. Social work students have the opportunity to work in child welfare offices statewide.

Now state and university child welfare experts are building a child welfare research and evaluation arm. Experts hope together to begin to examine the root causes behind the high statistics in Alaska.

Science Facilities

Meeting the Demands of the 21st Century

The University of Alaska is committed to the education of students and the pursuit of research in the sciences, and in health-related areas.

Demand for science instruction is increasing, and UA is attracting major new researchers in the areas of human health, biology and biotechnology.

Current classroom and laboratory facilities cannot meet today's demand, much less allow for growth in science programs expected in the next decade.

UA has embarked on an ambitious plan to construct five new science buildings and to efficiently renovate several existing outdated facilities.

The full cost of these new facilities is estimated at $200 million, with state funding requests totalling $150 million. The projects will be phase funded and built using a combination of university, federal and state funding. Voters will be asked in November to approve bonds to cover the initial state funding increment of $45 million.

CHARLES MASON

UA nursing students gain experience in the lab at the University of Alaska Anchorage.

New UA Science Facilities

Location	State $	Total $	Sq. Ft.	Facility
Anchorage	55 M	55 M	84,000 new 28,000 rehab	Integrated Science Facility
Fairbanks	70 M	100 M	164,000 new	Biological and Computational Science Facility
Juneau	18 M	20 M	40,000 new	Lena Point Fisheries Research Lab
Anchorage	4.75 M	6 M	12,000 new	Ecology Biomedical Health Facility
Fairbanks	2 M	12 M	25,000 new	West Ridge Research Building
Total	**150 M**	**193 M**	**353,000**	

For every dollar of state funding for research, UA attracts an additional $5.70 from other sources.

Integrated Science Facilities at University of Alaska Anchorage

The Plan: Design/Construct an 84,000 sq. ft. Integrated Science Facility adjacent to the existing science facility on the Anchorage campus. Renovate the existing 28,500 sq. ft. science facility. This project will:

- Serve 4500 students taking courses in the sciences each semester
- Fulfill core course requirements for all undergraduate students
- Expand course delivery in key disciplines, including science, nursing and engineering
- Create safe, code compliant, modern laboratories for instruction and research
- Provide for cutting edge teaching through multidisciplinary curriculum innovation
- Give students a competitive advantage for employment or graduate study in scientific fields

Biological and Computational Facility at University of Alaska Fairbanks

The Plan: Design/Construct a 164,000 sq. foot facility on the West Ridge at the University of Alaska Fairbanks. The building will:

- Allow scientists to conduct important new research in health problems, including diabetes, obesity, and contaminants
- Allow entry into field of bioinformatics
- House accredited animal care research quarters
- Co-locate biology teaching laboratories with research laboratories
- Combine and upgrade Alaska State Virology laboratory to include Biosafety Level 3
- Provide instruction and affiliated space for the Arctic Region Supercomputing Center

Meeting Growing Needs with a New Facility/UAF

More Research: UAF is among the top 100 research institutions in the US and top 75 in National Science Foundation funding. Recently, UAF has garnered $30 million in NIH funding and expects to rapidly develop capacity in biomedical research.

Heightened Security: As Alaska strengthens its ability to respond to terrorist events, the State Virology lab needs modernizing and enhancements to BSL3.

More Students: Each semester 750 students are enrolled in the UAF biology and biotechnology courses. Enrollment will grow with new offerings in bio-informatics, ecology and metabolism.

Supercomputing: The Arctic Region Supercomputing Center is one of the nation's leading computational facilities. Growth into bioinformatics, expanded support of science and engineering, and new interactive discovery methods require more space.

Future Directions

Healthy Alaskans 2010 and other documented State needs give the University a road map for future directions in health. It is imperative that Alaska's major university takes an active role in addressing critical health problems.

Grow Our Own: Prospects for health care jobs in rural and urban Alaska are bright. Alaskans need the education opportunities to fill the thousands of jobs now filled by imports and to fill the new jobs coming.

> **UA Role:** *We are actively expanding allied health, nursing and behavioral health opportunities. Needs range from certificate to doctoral programs.*

TODD PARIS/UAF

A 2001 Biological Sciences graduate shares a smile with her sister.

Behavioral Health Research: Alaska has staggering rates of suicide, child maltreatment, alcohol abuse and violence. The suicide rate for Alaska Native males is among the highest in the nation and perhaps the world. Yet, there are communities in Alaska that are virtually free of these problems. What makes them resilient compared to their neighbors? What are the most effective service delivery methods, blending cultural values and traditional western concepts?

Researchers are working hard to develop expertise in conducting research with Alaska Native people as true partners. As difficult as these research areas may be, Alaskans are compelled to act together to solve these urgent problems.

> **UA Role:** *UA seeks to be a center of research excellence in behavioral health concerns for rural and Native peoples.*

Arctic and High Latitude Research: How do global and trans-boundary influences such as Persistent Organic Pollutants and climate change affect humans living in the arctic? How does seasonality, cold, and air quality affect humans and their health?

> **UA Role:** *As America's only Arctic region, Alaska is the place to answer these emerging questions in the US. UA has internationally recognized work underway in some of these areas and can and will build more infrastructure to answer questions important to circumpolar people.*

Alaska Fetal Alcohol Syndrome Project

Alaska has the highest documented rate of fetal alcohol syndrome in the nation. FAS is Alaska's number one most preventable birth defect.

In 1999, state leaders petitioned Senator Ted Stevens to help prevent FAS and to help those already struggling with prenatal exposure to alcohol. Senator Stevens responded and in 2000, SAMHSA awarded Alaska a five year $29 million grant to attack the problem.

Hundreds of individuals have been diagnosed and 14 community teams are working on FAS prevention and treatment issues.

UA is documenting the progress of the project, and giving feedback for improvements. Led by the College of Health and Social Welfare at UAA, four departments of UA comprise the multidisciplinary team.

Chronic Diseases: Like most other regions of the US, Alaska's leading overall causes of morbidity and mortality stem from chronic diseases such as heart disease, stroke and diabetes.

Alaska Native populations have rising but lower rates of many chronic diseases. How have peoples who have lived with a traditional diet high in fat derived from marine mammals and fish maintained lower rates of diseases like diabetes?

> **UA Role:** *UA researchers are working to unlock genetic secrets that may help millions who suffer from chronic diseases.*

Frontier Health Delivery: Alaska has 1.1 persons per square mile, compared to the US with 79.6 persons per square mile. Innovative delivery methods have been created to span distance and isolation. Alaska consistently has fewer health care providers per capita than any other state. It has fewer persons living in institutions—nursing homes, ICF-MR's, or psychiatric hospitals—than any other state.

Due to the vision of Senator Stevens, Alaska has deployed the largest telemedicine project in the world. Alaska has innovations in health care delivery, provider training and scope of practice for health professionals that no other part of the US employs. Health care experts are continuing to seek more flexibility in frontier health systems and DHHS is responding.

> **UA Role:** *UA has an emerging and important role in testing new models of health care delivery for improvements in quality and in analyzing ways to improve provider recruitment and retention.*
>
> *UA seeks be a partner in Alaska's world class* ***telemedicine*** *development. UA hopes to obtain federal funding for studying* ***frontier health*** *systems on behalf of other states.*

Injury Control: Unintentional injuries are the leading cause of death of Alaskan children and young adults. Alaska is a dangerous place to live because of the challenges of its natural environment and lack of access to health care.

Vehicle and plane crashes, drowning, fires, poisonings, gunshot wounds, snow machine and all-terrain vehicle injuries, and even dog bites account for Alaska's alarmingly high rates of death from unintentional injuries.

> **UA Role:** *UA seeks to develop expertise in injury control in northern and remote settings, in collaboration with state and federal partners.*

Health Disparities: DHHS has focused the nation on health disparities among segments of our population. In Alaska, Alaska Natives have glaring health disparities among most major health indicators, although many trends are improving.

> **UA Role:** *Working in concert with the Alaska Native health community, UA seeks to address these disparities.*
>
> *UA's Center for Alaska Native Health Research (CAHNR) will work closely with the Alaska Native Tribal Health Consortium's Native American Health Research Center (NARCH).*

UA seeks to be a center of research excellence in behavioral health concerns for rural and Native peoples.

Genomics: UA has a strong research history in wildlife and fisheries. Relative to other states, we are weak in molecular biology, molecular physiology, strucutural biology, biochemistry, pharmacology, genomics, proteomics, bacteriology, virology, immunology, and bioinformatics. That weakness is reflected in our underperformance in NIH RO1 awards.

> **UA Role:** *We will focus on genomics and proteomics as core technologies for research in infectious diseases, chronic diseases, cancers, and environmental health. Increased genomics capacity will service the expanding needs of forestry, fisheries and wildlife biology, as well as basic science required to assess global climate change and to understand evolutionary processes.*

Bioinformatics: The 21st century deluge of genetic and environmental data challenges our capacity to analyze and integrate. We will utilize the Arctic Region Supercomputing Center in Fairbanks and it partnership with Leroy Hood's Institute for Systems Biology (ISB) in Seattle in our efforts to reduce data to information.

> **UA Role:** *New bioinformatics faculty will exploit our supercomputing capacity to develop new models for biomedicine and ecology.*

Infectious Diseases: Hepatitis, tuberculosis, pneumonias, and Helicobacter are major public health concerns in Alaska. Unusual epizootic diseases erupt in rural villages where the people have continuing exposures to feral animals.

Severe and catastrophic weather events are characteristic at high latitudes, and they render animals and peoples susceptible to unpredictable opportunistic infections. Increasing threats from bioterrorism present unique challenges in Alaska because of the great distance and isolation. Alaska needs to enhance its basic and applied research relevant to infectious disease.

> **UA Role:** *UA faculty have research expertise in paralytic shellfish poisoning, marine microbiology, environmental microbiology, and wildlife pathology/parasitology. Through both BRIN and COBRE, we will begin to develop epidemiologic expertise.*

Human Services Research: There are many important human services problems being tackled in Alaska. How have policy makers made welfare reform successful in our rural economy? What is best practice for child and family well-being services in rural and urban Alaska? How is restorative justice being implemented in our juvenile justice system?

> **UA Role:** *University social scientists have expertise and need to more fully develop capacity to help policy makers answer these and other important questions.*

Written by UA Associate Vice President Karen Perdue and Alaska EPSCoR Director George Happ. UA Health Research Task Force members: Gerald Mohatt, John Pugh, Brian Barnes, Bernice Joseph, Brian Saylor, Beth Sirles, Jocelyn Krebbs, Gerry Plumley and Craig Dorman. Editor: Ruth Lister, Information Insights, Inc. Layout: Jana Peirce, Third Sector Technologies. Background photo: Leone Thierman

Fairbanks

Nome

Bethel

Dillingham

Kotzebue

Interior-Aleutians

Tanana Valley

Anchorage

Valdez

Kodiak

Palmer

Kenai

Southeast

Juneau

Ketchikan

Sitka