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"Building and increasing research capacity to improve the health of Alaska NATIVE HEALTH RESEARCH

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Michael Sayre, the Center's program official with National Institutes of Health's National Center for Research Resources, visited Alaska in March 2009. Sayre is standing, and CANHR faculty and staff, left to right, are Jim Allen, Inna Rivkin, Scarlett Hopkins, Gerald Mohatt, Jacques Philip, Andrea Bersamin and Ralph Gabrielli, CANHR's program evaluator. -Photo by Diana Campbell

From the director's desk: Gerald Mohatt Building a true health research center

It's become clear in CANHR's eighth year that we are becoming a true center for health disparities research, one that is strengthened by the bonds we have with our Alaska Native partners. With their generous support, we have enrolled nearly 1,400 participants in our studies on diabetes, obesity, nutrition and contamination in traditional foods, stress and coping, suicide and drug and alcohol prevention in the Yukon Kuskokwim delta.

Now we are expanding bevond those regions. Dr. Ellen Lopez, a cancer researcher, has started a planning process with Maniilaq regional leaders for a program to improve cancer survivorship among Inupiat Eskimos. She has applied for funding for this research with both Maniilaq and the Yukon-Kuskokwim Health Corporation. The Alaska Native Tribal Health Consortium (ANTHC) is discussing with the university how to work together on climate change and health research. We are involved because of our nutrition work and the need for a diet nutritional study in the Maniilaq and other regions. To expand our partnerships with tribal health agencies, ANTHC is seeking funding to share our President's Professors of Biomedical Research.

Our investigators are developing well professionally. Todd O'Hara earned tenure last year and Diane O'Brien this year. Both have plans to submit R01 applications, as does new faculty member Andrea Bersamin, who is also submitting a Robert Wood Johnson Foundation grant. Inna Rivkin is planning a submission this summer to the National Center for Minority Health and Health Disparities. A major CANHR goal is for all investigators to achieve independent funding.

Bert Boyer is now in his second year of his R01, Genetics of Obesity in Yup'ik Eskimos. See page 7 for article.

Within the university we're attracting people interested in human research. For example in order to bridge animal studies to prevention science, we are connecting with UAF neuroscientists who study Sudden Infant Death Syndrome. We

are exploring links with UAF ecologists, climatologists, and geophysicists for health and climate change studies. We hope to plan future UAF Centers of Biomedical Excellence that would deepen the university's capacity for biomedical research.

Our work is being recognized. O'Brien's article showing that marine-based foods have a significant biomarker was published in the American Journal of Clinical Nutrition. Boyer published findings on his genetic and obesity work in Obesity. I, along with Chris Wolsko, a former CANHR researcher, published an article in Ethnic Diversity and Minority Psychology about enculturation and tobacco use. Rosemarie Plaetke and Federico Balbi, a consultant, created PedMerge, a software program that sorts the huge pedigrees histories of our participants. They have presented at several conferences and are preparing a publication on the work.

All of our successes are based on the creativity of our investigators, the dedication of our staff and the partnerships with our participating communities.



A year at CANHR: Faculty, students and staff stay busy

*Bert Boyer went to the Yukon Kuskokwim delta six times last year for data collection for his genetics and obesity research projects. Renee Pasker, '08, and Kate McGlone West,'09, two of his graduate students, graduated with master's degrees. Their studies were based on CANHR projects. Dominick Lemas joined Boyer as a graduate research assistant in 2008.

*Todd O'Hara, project principal investigator of Contaminants and Nutrients in Alaskan Subsistence Foods: Striking a Balance, went to Western Alaska four times to gather data, taking family, staff and students. In February 2009 he presented a draft R01 proposal for an independent research project to a mock review board. He plans to submit the proposal in late 2009.

•Nine President's Professors of Biomedical Research visited Alaska 19 times since 2008. Mary Sexton, who is also CANHR's Epidemiology and Biostatistics co-core leader, gave seminars on how to write National Institutes of Health grant proposals, assisted by Bruce Fowler, with the Agency for Toxic Substances and Disease Registry. Fowler and Jerry Mohatt traveled to Kotzebue to talk about cancer research. Kim Hopper, a Columbia University professor, led a journal club and held seminars on globalization, as well as the World Health Organization's schizophrenia study.

Ed Trickett and David Henry, both from the University of Illinois Chicago; Nancy Schoenberg, University of Kentucky; Nick Wareham, Cambridge University; and Dr. Bill Knowler, of the National Institutes of Health's National Institute of Diabetes and Digestive and Kidney Diseases; spent time mentoring CANHR researchers on data analysis, grant proposals and journal articles. Dr. Wylie Burke, of the University of Washington, gave a well-attended presentation about the ethics and policies regarding genetics of common

diseases research.

 Dennis Valenzeno, WWAMI Alaska director, met with CANHR researchers about collaboration with WWAMI medical students in April 2008.

*Sangita Sharma, University of Hawaii, gave several trainings over the year on food recall for CANHR faculty and staff.

•The Elluam Tungiinun project started in a new YK community in the fall of 2008.

•The Center's Diane O'Brien and her Ph.D. student Sarah Nash spent time in the field last year. O'Brien and Nash gave presentations at the Stable Isotope Conference in Hawaii last September.

•Devra Davis, author and director of the Center for Environmental Oncology at the University of Pittsburgh, visited Fairbanks, gave two UAF talks and met with leaders at Tanana Chiefs Conference in September 2008.

•Mohatt and Chris Wolsko presented a tobacco use paper based on CANHR studies at a CANHR research meeting. The resulting article appeared in the journal *Ethnic Diversity and Minority Psychology*.

•Kelly Fryer-Edwards, University of Washington, spoke on campus about the Institute of Translational Health Science at UW in February 2009.

•David Driscoll, the new director for UAA's Institute of Circumpolar Health Studies visited CANHR in March of this year.

•CANHR co-sponsored the 3rd Alaska Native Health Research Conference in Anchorage this March. Most of CANHR faculty and staff attended, with several presenting.

•CANHR hosted eight candidates for three faculty positions in prevention and intervention, epidemiology, and biostatistics in April and May. June decisions are expected.

Mohatt wins 2008 Usibelli research award for his work in Alaska Native health issues

Jerry Mohatt, the Center's director, earned the Emil Usibelli Distinguished Research Award in 2008. Mohatt established CANHR in 2001 with funding from the National Institutes of Health. CANHR researchers, along with those at UAF's Institute of Arctic Biology, have garnered numerous grants at UAF to study Alaska Native health issues.

Mohatt has spearheaded more than two decades of work to develop a nationally recognized biomedical health research program in Alaska, said UAF psychology professor James Allen.

"His research is characterized by a commitment to foster Alaska Native health, self-determination and human rights. Dr. Mohatt provides an example to our UAF community of engaged research, and mentorship and support to new researchers attempting to continue in his path-breaking work with our Alaska Native communities."

Mohatt has published more than a dozen articles on Alaska Native health. His research project, People Awakening: Alaska Native Pathways to Sobriety, received the highest level of award from NIH and has since been described as a landmark study in addictions science.

In addition to successfully competing for millions of dollars in federal funds, Mohatt also laid the foundation for a joint Ph.D. program in clinical psychology between UAF and the University of Alaska Anchorage.

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Isotopes show promise in simplifying food research studies.

Diane O'Brien used to look for stable isotopes, natural atoms with an extra neutron, in insects when she wanted to find out what they were eating.

Now she examines human hair, fingernail clippings and blood to find out the same thing about people.

For example, corn products, such as the high fructose corn syrup used in pop and many other Western foods, also have a distinct isotope signature. Comparing various isotopes could show how much traditional Yup'ik subsistence foods people are consuming as compared to Western foods, and whether either have a beneficial or negative impact on Alaska Native health.

Last year she found one such isotope that accurately reflects how much marine food CANHR research Yup'ik participants were eating.

"This is exciting, because it provides a simple, highly accurate tool that we can use to show the links between health and the Yup'ik traditional diet," said O'Brien.

Why is this important? This could provide a cheaper, more accurate and less intrusive way to gather food consumption data needed to do diabetes, cardiovascular and obesity research. Currently the accepted form is to ask research subjects what they ate, how much they ate and when they ate over the course of a day, a week, a month or even the year.

This is expensive and time consuming, O'Brien explains. She and others at CANHR think isotopic signatures may a good alternative, especially for large-scale and long-term studies.

She published the finding in the American Journal of Clinical Nutrition in early 2009. The finding is a highlight of CANHR research, said Jerry Mohatt.

New faculty join the CANHR team



Inna Rivkin, Ph.D., joined the Center last year to become the project principal investigator (PI) for Yup'ik Experiences of Stress and Coping: Intervention via Cultural Understanding. She has researched services for people

living with HIV, HIV risk reduction and HIV interventions. The central theme for her CANHR work is adaptation in a social and cultural context, involving examination of the factors that promote physical and psychological health for people coping with stressful events. She is an assistant professor with UAF's psychology department.

Andrea Bersamin, Ph.D., joined CANHR this year as an assistant professor of nutrition after completing a postdoctoral fellowship in cardiovascular disease epidemiology and prevention at the Stanford Prevention Research Center. She is also the project PI for



Yup'ik Perceptions of Body Weight and Diabetes, which will move researchers toward cultural intervention and prevention planning.

Top researchers join President's Professors



David Henry, Ph.D., is an associate professor of psychology at the Institute for Juvenile Research in the Department of Psychiatry, University of Illinois at Chicago. He is involved in research on community attitudes about disabilities, treatment of childhood psychopathology, prevention of antisocial behavior and

school failure, and developmental and ecological risk.

Alan Kristal, Ph.D., has been a CANHR mentor and is a nutritional epidemiologist in the Cancer Prevention Program at Fred Hutchinson Cancer Research Center. His research focuses are identifying dietary risk factors for cancer and promoting healthful dietary behavior change.





Nick Wareham, Ph.D., is the director of Medical Research Council Epidemiology Unit at Cambridge University's Addenbrooke's Hospital. He is a leader in gene by environment interaction studies, and in precise measurement of environmental factors such as physical activity.

Training the future: Graduate research assist



Sara Moses, who assists Todd O'Hara, assessed the levels of nutrients and contaminants in subsistence species (seals and fish) of Kotzebue and related them to established intake criteria such as Daily Recommended Intakes for nutrients and

Tolerable Daily Intake Limits for contaminants. It has been shown that abundant nutrients, such as selenium

and omega-3 fatty acids, found in traditional marine foods protect against diseases such as diabetes and cardiovascular disease, yet there is concern because contaminants. such as mercury or persistent organic pollutants, may be present in these same foods. By analyzing levels of both nutrients and contaminants in subsistence harvested animals, one can provide a balanced risk-benefit analysis (presence of nutrients vs. exposure to contaminants) of a traditional diet. Results indicate that subsistence species of this region provided abundant nutrients while posing very minimal health risks due to the presence of low level contaminants.

Moses, who grew up in New Hampshire, hopes to complete her Ph.D. in 2010.

Tonie Marie Quaintance

assists Inna Rivkin in research methodology and strategies for assessments in rural Alaska Native communities. Currently, Tonie is writing her dissertation entitled "An Understanding of Cultural Protective Factors and Reasons for Living that



Protect Against Suicide with Young Adults in Yup'ik Villages in Rural Alaska." Yup'ik communities, particularly young adults ages 20-29, have the highest rate of suicide in Alaska. Rather than focusing on the risk factors of suicide, Quaintance wants

to focus on strengths—so individuals can turn to these common themes when they are in need. This research will allow an understanding that focuses on healthy reasons for living in a Yup'ik cultural context.

Personally and beyond research,
Quaintance wants to give back to this
community. Rather than distributing
pamphlets of Western risk factors of suicide,
she wants to provide indigenous, culturally
relevant protective factors and reasons for
living as healing practices.

Quaintance is an enrolled descendent in the Turtle Clan of the Oneida Tribe, Oneida, Wisconsin. She is married to Bryan Protzman, (Inupiat) and together they have a five-year old daughter, Paisley. Quaintance earned a B.A. in justice, with a minor in psychology, and was the first Native American student accepted in the University of Alaska Joint Ph.D. Program in Clinical-Community Psychology with a rural and indigenous emphasis.



Jordan Lewis is finishing a doctoral degree in cross-cultural community psychology. His mentor is Jerry Mohatt.

Lewis spent last fall meeting with Alaska Native elders from six communities in the Bristol Bay region to explore the concept of successful aging and what effect the community has on it. He is using grounded theory methodology to establish an explanatory model of successful aging, as well as provide an understanding of what it means to age in rural Alaska and the importance of culture, subsistence, and lifestyle choices in how elders define what it means to age well.

He has accepted a faculty position with UAF's Alaska Native Studies this fall.

Lewis is an Aleut from Naknek, where he grew up as a commercial fisherman and learned about his culture from his great-grandparents over tea and smoked fish. He is dedicated to working towards improving the health of rural communities, focusing on the needs of Alaska Native elders, and working towards preserving the culture and language in Southwest Alaska.

Camilla Lieske, postdoctoral fellow with Todd O'Hara, took the scenic photos on this page and the photo strips on pages 2-3, and 6-8.

tants take on Alaska Native health disparities



Sarah Nash is Diane O'Brien's Ph.D. student working on the validation of stable isotopes as a biomarker of diet pattern in Yup'ik Eskimos. They are hoping that this validation will provide an easy, reliable way to assess diet pattern in Yup'ik Eskimos that will enable large-scale and long-term studies of the relationship between diet and health. The two have completed the first phase of field collection, and are currently

in the process of analyzing samples. Preliminary data show that stable isotopes have strong potential to indicate diet pattern in this population.

Nash is in the first year of her Ph.D. studies. She moved to Alaska from the United Kingdom last year, where she earned a bachelor's of arts in anthropology and archeology from Cambridge University. She's enjoying life in the United States, and Fairbanks particularly.



After graduating from UAF with a bachelor's of science in exercise science, **Maria Bray** has worked with hundreds of youth and adults helping them develop healthy exercise and dietary habits by coaching a swim

team, teaching people how to cross country ski and leading a local 4-H Club.

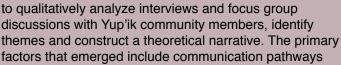
She is excited about her graduate project with Bert Boyer, which involves validating the Actiheart Monitor, a combined heart rate/movement monitor, within the Yup'ik population and using the Actiheart

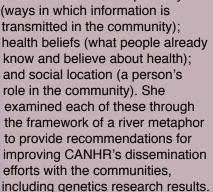
Monitor to document energy expenditure in Yup'ik Eskimos. She is documenting body composition in Yup'iks. The goal of her research is to develop accurate and easy-to-use methods for determining active energy expenditure and body fat percentages.

Ultimately, Bray wants to make a difference in the lives of many people by helping to develop further understanding of obesity and how physical activity can be an effective tool in the intervention and prevention of obesity and its related diseases.

Personally, she enjoys running, cross country skiing, raising livestock and just staying active.

Kate West studied how to improve dissemination efforts on genetic research among Yup'ik Eskimos, working with Bert Boyer. She identified factors that influence how community members receive and understand health information, including genetics information. This study used a grounded theory approach





West also worked closely with Kim Hopper, Columbia University professor and CANHR President's Professor and graduated in May 2009 with a master's degree in biology.

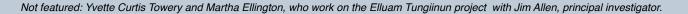
Dominick Lemas' research examines the potential of polyunsaturated fatty acids (PUFAs) to modify an individual's risk of developing

obesity by associating genetic markers or single nucleotide polymorphisms (SNPs) with obesity-related risk factors such as body mass index (BMI).

He and Bert Boyer are using nitrogen stable (D15N) isotopes as a validated PUFA biomarker to estimate marine dietary fat exposure and selected several candidate genes involved in fatty acid and cholesterol metabolism.

Lemas grew up in Seward commercial fishing, hunting, and snowmobiling. He worked as a Union Longshoreman while completing an undergraduate degree in biology at the University of Vermont.











Deborah Alstrom, Lanea Paul, and Sabrina Hanson, of Alakanuk, AK, attended a circumpolar youth meeting at Cambridge University. They are co-researchers in the \$1.09 million Circumpolar Indigenous Pathways to Adulthood study funded by the National Science Foundation as part of the International Polar Year. The project researchers seek to understand resiliency in Native youth. UAF, headed by CANHR, along with five other universities, will examine the success stories from Alakanuk and other circumpolar communities. CANHR's Jim Allen is the project's principal investigator, along with Jerry Mohatt, CANHR director. -Photo by Jim Allen

Contaminants and nutrients project add plants

The Contaminants and Nutrients in Alaskan Subsistence Foods: Striking a Balance project will include plants in the study at the request of Mekoryuk residents.

Todd O'Hara, project principal investigator, Camilla Lieske, postdoctoral fellow, and Jerry Mohatt, CANHR director, agreed with the community on the change, saying it was part of community-based participatory research (CBPR).

"As a CBPR project, we adjusted accordingly to address their well-founded needs based on very reasonable scientific and community health issues," O'Hara said. The plants include greens used in subsistence that are eaten raw and/ or processed for food.

The project team collected over 100 samples of fish representing a variety of species and food preparation methods last summer. The researchers are currently analyzing the nutrients and contaminants levels in the food, from freshly caught to preserved and sampled at the end of the fork, just prior to eating.

Community members responded with enthusiasm to requests for fish samples, he said. While the research team asked for portions, people came with the whole fish, and in some cases, many fish, ready to share.

After taking the samples back to the lab, O'Hara reports the mercury analysis has gone well and generated interesting data that will be shared with the community during the next visit this summer. They are hoping to reinforce the plant and fish sampling, and to begin sampling marine mammals, reindeer and/or musk oxen.

CANHR's Culture and Intervention core to reorganize

The Center's Culture and Intervention (CI) core plans to reorganize in order to further develop ways to take CANHR research projects findings and turn them into programs and interventions.

Yup'ik leaders and participants say they want CANHR research to benefit their communities in order to address health disparities among them.

The major change would bring Scarlett Hopkins, who has been CANHR's field research coordinator, to co-lead the core with Jim Allen, a UAF psychology professor and researcher. In addition, the fieldwork component would leave CANHR's Administrative core and fall under the CI core.

The CI core would expand fieldwork positions to meet increasing requirements of CANHR investigators.

The reorganization would provide ongoing consultation and direct project support on:

- Entry into a community
- •Community engagement (recruiting, social marketing, community liaison)
- Coordination of fieldwork support
- Liaison with the Yukon-Kuskokwim Health Corporation, a CANHR partner
- •Translational/ linguistic issues and project materials development
- Focused consultation for intervention research protocols and outcome study design

The Center's investigator group has approved the reorganization and the plan will be presented to CANHR's External Advisory Committee in May for final approval.



Understanding Yup'ik stress and coping

The Yup'ik Experiences of Stress and Coping project is undergoing slight changes with its new leadership of Inna Rivkin, UAF psychology professor.

In the first phase of the project, participants formed focus groups and CANHR researchers obtained their feedback on a set of questions about stressful and traumatic events based on work done in similar projects with Lower 48 American Indians. Rivkin and others reviewed the data gathered from the groups and made revisions to the questions.

Some of the changes included further editing, deletions, and additions to the survey. Some of the additions include:

- Feeling accepted in the community
- Deployment of loved ones
- ·Conflict between Yup'ik and Western wavs of livina
- ·Lack of understanding between youth and elders
- Parenting issues
- Access to healthcare
- Food and fuel expenses

The revisions were accepted by the Western Alaskan Yup'ik communities that have agreed to participate in the study, Rivkin said. Those communities have voiced concern about how the stressful and traumatic events affects health.

Rivkin has begun phase two of the project. Yup'ik participants will take part in interviews and keep audio or written diaries about stresses and how they cope, she said. The team is also conducting key informant interviews to understand stress in the community. The goal of the program is to develop a culturallygrounded stress management program that will be tested in Yup'ik communities.

Food costs hurt nutrition for low income families

Bret Luick, a CANHR I researcher, has received a one-year United States Department of Agriculture National Research Initiative grant to develop a food plan for low-income women in Alaska. The goal of the project is to determine the feasibility of national dietary recommendations given local food prices and Supplemental Nutrition Assistance Program benefit limits. Further it determines best food selection practices given that many nutrient-dense foods, such as vegetables, have undergone rapid price fluctuations. The new project will help low-income families whose diets tend to diminish nutritionally because of rising food prices and thereby increasing the risk for obesity.

A close look at obesity genes

Renee Pasker recently successfully defended her master's degree thesis, which was aimed at investigating the association of candidate genes with obesity phenotypes, said her advisor Bert Boyer, Genetics of Obesity PI. Pasker looked at polymorphisms in four candidate genes (ADIPOQ, PPARG, PGC1a, and PPARA) to see whether these genes were important determinants of obesity. She and Boyer also investigated whether intake of marine subsistence foods modifies the association between these polymorphisms and the development of obesity. They were specifically interested in determining whether intake of ocean foods is protective in terms of an individual's genetic risk for becoming obese. Analysis of these results is ongoing.

Many past participants are returning to check their blood cholesterol and glucose levels, as well as to see whether their blood pressure and body measurements have changed since their first visit. These return visits are important for looking at disease incidence in our study population, Boyer and Pasker said.

In other project news, Boyer's team enrolled 30 participants in a physical activity validation study to determine the accuracy of combined heart ratemovement monitors that measure energy expenditure. Preliminary reports show that these monitors are providing excellent data on physical activity and that most of our participants exceed the minimum physical activity recommendations set by the Department of Health and Human Services, and thus have very healthy physical activity levels.

Examining determinates of healthy eating

Andrea Bersamin's primary research interest is in preventing obesity in Alaska Native youth living in rural communities. An understanding is needed of the social and environmental factors that influence body weight in Alaska Native communities in order to build effective obesity treatment and prevention programs.

As the leader of CANHR's Yup'ik Perceptions of Body Weight and Diabetes: Cultural Pathways to Prevention project, Bersamin is building a conceptual model to understand the food environment in rural communities. This work will inform the development of tools to understand access to healthy foods and evaluate lifestyle modification programs. Ultimately her work is moving in the direction of testing the efficacy of a lifestyle modification program on the prevention of obesity in Alaska Native children and adolescents.



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