



# IMPACT

Vol 1 Iss 1 Jan 2003

Alaska EPSCoR is a partnership devoted to growing Alaska's scientific research capacity. Alaska EPSCoR is funded by the National Science Foundation and the state of Alaska.

## Alaska EPSCoR hosts the 2002 National Science Foundation EPSCoR Conference

Alaska EPSCoR was privileged to host the 2002 annual NSF EPSCoR Conference held September 8-10 at the Hotel Capt. Cook in Anchorage, Alaska. Over 320 individuals from 21 states, Puerto Rico, and the nation's capitol were in attendance, including researchers, state legislators, business and industry representatives, administrators, and program officers from federal EPSCoR agencies. By all accounts the conference was a success, not only because of the excellent panel discussions and special presentations, but because so many visitors were able to arrange extra days before or after the conference to experience the incredible scenery and beauty of our state.

**President Mark Hamilton** opened the program with enthusiastic praise for the mission of EPSCoR and the outstanding opportu-

President Hamilton at the opening session - photo by Adela Batin



nities in research development it supports at the University of Alaska. President Hamilton introduced the keynote speaker, **Dr. Kathie Olsen**, Associate Director for Science in the White House Office of Science and Technology Policy, who addressed the nation's priorities in science and development and the role of EPSCoR states in meeting those needs.

Panel discussions included over 20 speakers highlighting EPSCoR state programs and new initiatives in areas of informatics, research and economic development, and science education outreach. **Leonard Krishtalka**, Director of the Biodiversity Research Center and Natural History Museum at the University of Kansas, spoke on the new field of biodiversity informatics

as a tool to network and integrate biodiversity data from the world's natural history museums. The data help scientists to explore questions of species distribution, biological stressors and threats, and the impact of global change on biodiversity.

**Elena Sparrow**, Coordinator of Education Outreach for Alaska EPSCoR, described the Alaska Rural Research Partnership and GLOBE programs, two efforts to increase the participation of Alaska Native students in science and math education. *continued on page 3*

## EPSCoR

*The Experimental Program to Stimulate Competitive Research*

**"EPSCoR acts on the premise that universities and their science and engineering faculty and students are valuable resources that can potentially influence a state's development in the twenty first century much the same way that agricultural, industrial and natural resources did in the twentieth century."** NSF EPSCoR program.

The Alaska-NSF EPSCoR program is centered on four Research Focus Areas: Alaska Genomic Diversity, High Latitude Contaminants, Infrastructure and Systems for Cold Regions, and Integrative Approaches to Environmental Physiology chosen because they are national priorities and they are especially relevant to Alaska's northern latitudes. The University of Alaska is the core institution for EPSCoR programs, which are administered from the doctoral campus in Fairbanks. Our research investments are complemented by high school and university educational programs, outreach to the Alaska business community, and links to state agencies.

The current EPSCoR award ends December 31, 2003. We are in the process of developing a new proposal due to the NSF on July 17, 2003. ■

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# High Latitude Contaminants Consortium

HLCC Research Focus Area *by Dan White, HLCC RFA Co-leader*

Alaskans encounter contaminants in their food, water and environment on a daily basis. Understanding the risks posed by these contaminants, as well as the fundamental behavior of the contaminants in the environment is necessary to protect human health. In addition, continued development of economical drinking water and waste treatment systems is critical to the health and long-term sustainability of Alaskan communities.

The High Latitude Contaminants Consortium (HLCC) is a group of biology, chemistry and engineering faculty from the University of Alaska's (UA) three main campuses who share the common goal of understanding the fate, effects and control of contaminants in high latitude environments. The HLCC was

*“Alaskan communities store their water for periods up to nine months... the impacts of this practice on water safety is a concern.”*

created as part of the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR). National Science Foundation funds, along with support from individual academic units and the statewide administration have provided the new faculty, shared analytical equipment, and collaborative network necessary for the UA faculty and students to address the wide variety of contaminants issues facing Alaska and the Polar Regions.

One of the main goals of the HLCC was to build a program that could serve Alaska through basic and applied research. In the last two years, the HLCC research on watershed program supported two new faculty and ten graduate students. The faculty and students conducted basic and applied management and assessment, new and established treatment technologies for contaminated water and soils, the protection of safe drinking water, and the fate of chemical pollutants in the environment. Much of the research conducted by HLCC staff and students can be immediately applied to protecting the health of Alaskans and the northern environment. For example, research was recently conducted on the deterioration of drinking water quality during long-term storage. Since many Alaskan communities store their water for periods of up to nine months before consumption, the impacts of this practice on water safety is a concern. Results from laboratory tests indicated that for some water systems, the concentration of certain potentially harmful chemicals could increase over a nine month storage period. In other systems, no increase in the same chemicals would be expected. An increase in the concentration of potentially harmful chemicals called haloacetic acids would most likely occur in systems where high concentrations of organic matter were not removed prior to storage.

Results from this and other ongoing research will be presented as case studies in future newsletters. ■

HLCC Co-leader **Dr. Craig Woolard** installs a state-of-the-art water treatment system North of the Brooks Mountain Range. Research on systems such as these provides the needed verification of technologies for Alaska's communities. The HLCC is active in improving health and safety in Alaska's communities. - Photo by Dan White

# New Faculty: Marr

**Dr. Thomas G. Marr** has accepted an appointment as the **President's Research Professor in Bioinformatics** at the University of Alaska Fairbanks, effective in January 2003. He will be the Director of an interdisciplinary program in bioinformatics and computational biology, administered through the Institute of Arctic Biology and supported in part by Alaska EPSCoR and Alaska BRIN.

With Tom Marr's leadership, we anticipate the *Bioinformatics Program* will develop graduate and undergraduate teaching and interdisciplinary research. It will involve faculty, staff, and students of several academic units, including the Institute of Arctic Biology, the Department of Biology and Wildlife, the Department of Mathematics, the Institute of Marine Science, the Arctic Region Supercomputing Center, and the Graduate Program in Biochemistry and Molecular Biology at UAF. ■





Sarita Shuster in the MHC Lab (r & l), Jayme Ballantyne far right (m) teaches Kotzebue high school students - Photos by Jayme Ballantyne

## About ARR P **Alaska Rural Research Partnership (ARRP) program**

ARRP links rural elementary and high school students and their teachers with researchers at UA in original research projects that are community-relevant. The aim is to enhance science and math education in schools and increase the participation of Alaska natives in postsecondary science/math education and research.

Currently ARRP is operating with support from Alaska EPSCoR in four communities: Barrow, Kotzebue, Nome and Sitka. The research work and training performed in Kotzebue focuses on the genetics of caribou. Future newsletters will include information on related ongoing projects including those studying arctic seals, black guillemot, reindeer, salmon and whales. For more information please visit the Alaska Rural Research Partnership web site at [www.alaska.edu/epscor/arrp/](http://www.alaska.edu/epscor/arrp/) ■

### ARRP project: the genetics of caribou

by Jayme Ballantyne

Alaska is a large state with few people. For us, success happens one student at a time. **Jayme Ballantyne**, the research technician in charge of the Major Histocompatibility Complex (MHC) Lab, knows this first hand. Jayme shared the following information about one of the students (above) she had the opportunity to teach over this past semester.

**Sarita Shuster** started her caribou project in fall 2001 as a junior at Kotzebue Middle-High School. Interested in science, Sarita immediately dove into extracting DNA from the muscle tissue of caribou of the Western Arctic Herd. Sarita is attempting to sequence the DRB1 region in the MHC to determine allele frequency in the population.

In addition to learning many new techniques, she's beginning to understand the function of the DRB1 gene. The level of genetic diversity at this locus is directly related to the level of immunity the organism has for fighting pathogens. The more alleles found at this locus, the greater chance an organism has to fight off foreign invaders in its environment.

Sarita will present her findings at the Alaska Science and Engineering Fair in Anchorage (Spring 2003.) She will receive a \$1500 scholarship provided she completes her science fair project. This will help fund her first year at the college of her choice. ■

## 2002 National EPSCoR Conference

*continued from page 1*

A special panel session closed the conference with five veteran EPSCoR administrators presenting an "EPSCoR retrospective and prospective"—a history of EPSCoR development, accomplishments, and future potential.



EPSCoR Retrospective panelists: front Gary Strobel, George Happ, back - Kenneth Pruitt, Royce Engstrom, Jim Hoehn and Joseph Danek - photo by Adela Batin

Directors or program managers from all federal EPSCoR agencies were on hand to discuss funding opportunities and research priority areas. Rounding out the conference were poster displays from the EPSCoR states and Puerto Rico and several special events, including an opening night reception at the Anchorage Museum of History and Art, (featuring live music from the **UAF Jazz Ensemble**), and two audience-pleasing presentations on unique arctic phenomena—hibernation and the aurora—from **Drs. Brian Barnes and Neal Brown**.

The 2003 NSF EPSCoR Conference will be held in Las Vegas, Nevada. We look forward to another excellent conference with the EPSCoR state community. ■

# Alaska EPSCoR Internal Awards

Each spring, Alaska EPSCoR provides research funding to UA faculty and students through an internal, competitive awards program. For faculty, there are four funding opportunities: new initiative (seed) grants, equipment grants, small college research awards, and small college partnership awards. For students, Alaska EPSCoR offers graduate fellowships and undergraduate research awards. Interested applicants are encouraged to visit the Alaska EPSCoR web site for application guidelines and program restrictions, <http://www.alaska.edu/epscor/grants/index.html>. Proposals for 2003 are due to the Alaska EPSCoR office by 4:30 p.m., February 27, 2003.



Ryan Long(right) explains his poster to Dr. Ian Van Tets at the 53rd AAAS Arctic Science Conference in Fairbanks, Alaska - Photo by Nora Kelly

## Award Winner: Ryan Long

Alaska EPSCoR congratulates student **Ryan Long of UAF** for receiving the Sigma Xi Undergraduate Poster award at the 53rd AAAS Arctic Science Conference in Fairbanks, Alaska. Ryan Long is a past recipient of an EPSCoR Undergraduate Summer Research Experience internal award and works with Dr. Brian Barnes at the Institute for Arctic Biology, UAF. Ryan received \$5,000 during summer 2002 to support an original research project on the behavioral thermoregulation of the arctic ground squirrel. Ryan continues to receive EPSCoR support through the Undergraduate Research Opportunities Program, a partnership program managed by the Office of Sponsored Programs at the University of Alaska Fairbanks. ■

**Alaska EPSCoR**  
University of Alaska  
PO Box 757040  
Fairbanks, Alaska 99775-7040

Phone 907-474-1527  
Fax 907-474-1528  
[epscor@alaska.edu](mailto:epscor@alaska.edu)  
[www.alaska.edu/epscor](http://www.alaska.edu/epscor)

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The Alaska EPSCoR IMPACT newsletter is published by the University of Alaska Fairbanks Printing Services department. To be added to the subscription list or for additional copies of the newsletter, write, call or email us.

Newsletter editor: Nora Kelly

Design & development: V. Janene Sikkink

Development support: Isable Martinez