

AINA NEWS

Arctic Genomics Project at AINA

In 2020, Genome Alberta accepted a proposal from Maribeth Murray (University of Calgary) and Peter Pulsifer (Carleton University) to fund the project, *The Role of Genomics in Fostering and Supporting Arctic Biodiversity: Implications for Wildlife Management, Policy and Indigenous Food Security*. Wildlife genome information is extremely valuable for environmental decision-making, with many opportunities to employ this source of data. The Arctic Genomics Project team is working to co-develop a suite of genomics knowledge mobilization tools that will support environmental decision-making. Their focus is on supporting end-users with responsibilities for, or interests in, the areas of biodiversity monitoring, conservation, and the co-management of wildlife that are key to the social, cultural, physical, and economic wellbeing of northern Indigenous peoples.

In developing their program, the team is building on their assessment of genomics data availability and accessible to various end-users. The easy accessibility of massive genomic resources can greatly assist conservation managers in making scientifically sound management decisions in biodiversity assessment and setting up conservation priorities. Outcomes will also support Canada's efforts to protect Arctic species and ensure food security for Arctic peoples.

The team has been communicating and collaborating with various stakeholders and rightsholders for the Arctic Genomics Project through virtual and in-person meetings at conferences and workshops. After two years of dedicated research, two members of the team presented at the Arcticnet Annual Scientific Meeting at Iqaluit in 2023. Srijak Bhatnagar, a co-investigator with the Arctic Genomics Project presented on the DNA catalogue for Canada's Arctic Ocean, and Shivangi Mishra, a postdoctoral associate with AINA, presented a poster titled, *Genomics for Arctic Biodiversity, Conservation, and Food Security*.

In January 2024, the Arctic Genomics Project hosted a Muskoxen and Genomics in the Community Workshop at the Canadian High Arctic Research Station, Cambridge Bay, Nunavut. Through online and in-person participation, this event enabled community members and scientists to share knowledge, ideas, and concerns about the possible implementation of DNA-based tools. Attendees were diverse in both their relationships to muskoxen and in their geography of origin, but all shared a belief in the central importance of muskoxen to Arctic life. Multiple northern communities were represented at the workshop by Indigenous Elders, hunters, trappers, and municipality officeholders. There were virtual and in-person representatives from various governments both in Canada and the USA, as well as established genomics experts who have worked in the field of Arctic mammal genomics (<https://arcticgenomics.org/magic-2024/>).

AINA at Telus Spark, Calgary

AINA collaborated with Telus Spark Science Centre, Calgary, to organize a two-day event titled, *Arctic Days at Spark!* This on-stage presentation and hands-on science event reached 2000 participants of all ages, genders, and educational backgrounds. It succeeded in introducing the public to the benefits of genomics and how it can be incorporated into the protection of Arctic animals. This public engagement forum included talks, demonstrations, and live question and answer sessions with the audience (<https://arcticgenomics.org/sparking-an-interest-in-genomics/>). Information and data collected throughout the Genomics Project were presented to students and Telus Spark staff, resulting in an invitation for AINA to participate in a gallery redesign at the centre.

Currently, the Arctic Genomics Project team is preparing for the genomics side meeting titled, *Incorporating Applied Genomics and DNA-based Tools into an Ecosystem Level Framework to Manage Arctic Marine Biota at the Canadian Polar Data Workshop V (CPDW5)* in Halifax, Nova Scotia, 27–31 May 2024.

News from the Kluane Research Station

The Kluane Lake Research Station (KLRS) began 2024 operations at the end of April. To kick off the season, KLRS hosted a community BBQ on 11 May. The station team were privileged to have Kluane First Nation citizens, Amber Berard-Althouse and Pauly Sias, lead a traditional plant walk and cultural interpretation of the Kluane area.

This summer KLRS will be welcoming primary and secondary schools from Destruction Bay, Haines Junction, Whitehorse, and Calgary. Champagne and Aishihik First Nations plan to bring a youth camp to the station in August. Field trips and courses will be led by University of Calgary, University of British Columbia, University of Maine, York University, and Exeter University. The Howl Experience will return to KLRS with a youth group (aged 17–30) in July. Two artists will be hosted at the station for the Kluane National Park Artist in Residence Program. In addition, Yukon Government is basing a drone workshop at KLRS, as well as 2 youth groups (high school/university students): Yukon Youth Conservation Corps, and the Community Ecological Monitoring Program.

Researchers will be visiting the station from Yukon University, University of Calgary, Simon Fraser University, University of Ottawa, University of Waterloo, Queens University, Université de Montréal, ÉTS Montréal, University of Maine, Colby College, Exeter University, Bielefeld University, and University of Turku. Research subjects include climate change, glaciology, ecology, geology, geography, physiology, and agriculture/hydroponics.

2024 Scholarship Winners

Alexandra Kanters, a PhD student in the Department of Community Health Sciences at the University of Calgary, is the 2024 recipient of the Lorraine Allison Memorial Scholarship and the H.M. Ali Family Educational Award. She is working on a project that aims to bring together Inuit Qaujimagatuqangit and western knowledge to better understand two zoonotic diseases that seem to be increasing in caribou and muskoxen in Arctic Canada. Specifically, the work focuses on how local harvesters of these animals are protecting themselves against possible disease and can continue to do so in the future. The research is co-led by the Ekaluktutiak Hunters and Trappers Organization in Cambridge Bay, Nunavut; the Kugluktuk Angoniatit Association in Kugluktuk, Nunavut;

and the Olokhaktomiut Hunters and Trappers Committee in Ulukhaktok, Northwest Territories.

Connor Stewart, a PhD candidate in the Department of Biological Sciences at the University of Alberta, is the 2024 recipient of the Jennifer Robinson Memorial Scholarship. His research focuses on assessing the impacts of nickel (Ni) contamination on Arctic freshwater and marine ecosystems. This research is taking a multi-species approach in evaluating the physiologic repercussions of Ni exposure, assaying impacts from subcellular through whole organismal level to determine the effects on growth, survival, reproduction, respiration, ionoregulation, and more. This work intends to develop a better picture of the risks posed by anthropogenically derived Ni contamination to numerous crucial Arctic species, while carefully considering the unique biotic and abiotic makeup of Arctic ecosystems.