For Immediate Release — Monday, September 16, 2019

Financial investment spurs genome sciences research in Alberta

Genome sciences and bioinformatics research in the province is getting a huge boost thanks to a $3-million investment and the establishment of BioNet Alberta, a research network featuring the University of Lethbridge, the University of Alberta, the University of Calgary, Genome Alberta, Genome Canada, Genome Alberta and other partners.

The network is supported by Genome Canada's Regional Priorities Partnership Program (RP3) and features a BioNet hub at each university, with the newly established Southern Alberta Genome Sciences Centre (SAGSC) at the U of L serving as the lead hub.

"Our ambition is to bring Alberta to the forefront of this new technology and its applications," says Dr. Athan Zovoilis, a Tier 2 Canada Research Chair in RNA Bioinformatics and Genomics in the U of L's Department of Chemistry & Biochemistry and academic lead of BioNet Alberta.

The rapid advance of technology has propelled research in genomics with the goal of better understanding and interpreting an organism's DNA code. Developments in the field of genomics have wide implications for agriculture and human health, and have paved the way for precision medicine and smart agriculture.

"Genome Alberta is pleased to have led in the creation of BioNet Alberta," says David Bailey, CEO of Genome Alberta. "This new network will build Alberta's capacity in bioinformatics and computational biology to manage and utilize the massive amount of data being generated by life science researchers in Canada and around the world."

BioNet Alberta will be officially announced on Friday, Sept. 20 as part of the first Western Canada Bioinformatics and Omics Conference and the formal launch of the Southern Alberta Genome Sciences Centre. The conference goes from Friday to Sunday, Sept. 20 to 22, at the U of L.

"The concept of having a genome science centre here in southern Alberta has been discussed for the last year and a half," says Zovoilis, director of the SAGSC. "At the U of

L, we have top-class researchers and infrastructure which is, in some aspects, unique for Alberta."

The centre brings together four genome sciences research platforms:

- genomics, the science of understanding and interpreting an organism's DNA code
- transcriptomics, which looks at genes that are actively expressed by examining DNA's cousin, RNA
- metabolomics, which is the study of metabolites such as amino acids, lipids and sugars
- bioinformatics, which combines biology and computer science to analyze and interpret biological data.

"We are going to encompass the vast majority of sciences that do "omics," another term encompassing genome sciences, here at the University and in southern Alberta," says Zovoilis. "The departments that contribute to this centre include chemistry & biochemistry, biological sciences, neuroscience and computer science. We also have members from the humanities who help us regarding any ethics issues and from the Dhillon School of Business about the impacts of genomic sciences on the Alberta economy."

Research in all "omics" fields has also changed significantly in the past few years due to advances in technology that allow vast amounts of data to be analyzed in a short amount of time.

"If we regard all the information that describes how we're made as information in the book of life, then we would need more than 1,200 books of 1,000 pages each to include the information of just one cell," says Zovoilis. "Ten years ago, to read only one page of one book, it would take one day using massive devices. Today we have smart-phone sized devices called sequencers which can do all 1,200 books of 1,000 pages each in just one day. We also have a larger sequencer that can do this simultaneously for 48 samples.

"This has transformed the way we can now read information about disease, about how people respond better to medication based on their personalized genomic profile or how we can deliver better agricultural products based on the genomic profile of livestock. This is already revolutionizing the ways medicine and agriculture are delivered and makes it possible to have precision medicine and smart agriculture, where diagnostic protocols used are personalized to each patient and animal."

Everyone is welcome to attend the public talks that are part of the BioNet conference to learn more about genomics research and how it's having an impact on their lives. The keynote speaker is Dr. Steven Jones, a bioinformatics professor at Simon Fraser University and the University of British Columbia and head of bioinformatics and co-

director of Canada's Michael Smith Genome Sciences Centre. Following the keynote, the public is also welcome to attend a panel discussion about the importance of omics on the health of Albertans and the economy. To register or for more information visit BioNet AB 2019.

Funders of the project include Genome Canada, the provincial government, Genome Alberta, Alberta Innovates, Agriculture and Agri-Food Canada, Alberta Public Labs, Alberta Prion Research Institute and Bioinformatics Canada.

This news release can be found online at BioNet Alberta.

—30—
Contact:

Caroline Zentner, public affairs adviser
403-394-3975 or 403-795-5403 (cell)
caroline.zentner@uleth.ca