OMICS DATA AGAINST CANCER: TANGIBLE RESULTS THROUGH ARTIFICIAL INTELLIGENCE

Montréal, May 8th, 2025 — More than four years ago already, Génome Québec, Oncopole and IVADO joined forces to provide financial support for research teams using genomic data and AI to advance knowledge in oncology. In all, more than $1.5 million was invested to support cutting-edge research.

Genomics and the study of cancer are two particularly complex fields of research, with many challenges to be met. The projects funded under the "Omics Data Against Cancer" (ODAC) initiative have enabled a few multidisciplinary research teams to use AI to explore large datasets, with the aim of extracting the information needed to better understand cancer.

The results of the work conducted by four of the research teams are featured (in French only) in the digital magazine *CScience*.

- **When AI delves into the secrets of cancer** - Amin Emad (McGill University, Mila) and Morag Park (Rosalind and Morris Goodman Cancer Research Centre) have developed artificial intelligence models designed to predict response to drug combinations in cancer patients with a bad prognosis.

- **Decoding the epigenome with AI: heading towards precision medicine for cancer** - Jacques Drouin (Université de Montréal, Institut de recherches cliniques de Montréal) and Marc G. Bellemare (McGill University, Mila) worked on the interpretation of the cancer epigenome using innovative artificial intelligence tools.

- **AI and cancer: developing algorithms to predict drug efficacy** **-** Sébastien Lemieux (Université de Montréal, IRIC) and his team developed new vector representations for the use of transcriptomic and chemical data in acute myeloid leukemia.

- **The 3D genome: the new frontier in the fight against cancer** **-** Mathieu Blanchette (McGill University) and his team have used deep learning approaches to understand the mechanisms of epigenetic alteration in cancer based on three-dimensional genomics.

Omics, AI and cancer

Oncogenomics combines two particularly complex fields of research. Thanks to the arrival on the market of new-generation sequencers, huge quantities of omics data have been generated in recent years. Artificial intelligence has thus become an essential tool for analyzing and interpreting these megadata sets. The scientific knowledge generated now enables oncologists, for example, to better target their therapeutic approaches, for increasingly personalized medicine.

About

Génome Québec
Génome Québec's mission is to catalyze the development and excellence of genomics research and promote its integration and democratization. It is a pillar of the Québec bioeconomy and contributes to Québec's influence and its social and sustainable development. The funds invested by Génome Québec are provided by the ministère de l'Économie, de l'Innovation et de l'Énergie du Québec (MEIE), the government of Canada, through Genome Canada, and private partners.

To learn more, visit www.genomequebec.com

IVADO
IVADO is an interdisciplinary, cross-sector consortium for research, training and knowledge mobilization, whose mission is to build and promote robust, reasoning and responsible artificial intelligence. Led by Université de Montréal, with 4 university partners (Polytechnique Montréal, HEC Montréal, Université Laval and McGill University), IVADO brings together research centers, government and industry partners, to co-construct ambitious cross-sector initiatives promoting a paradigm shift in AI and its adoption. IVADO's contribution to these research projects was made possible through the financial support of the Canada First Research Excellence Fund.

To learn more: www.ivado.ca

Oncopole
Oncopole, cancer division of Fonds de recherche du Québec – secteur Santé, is the result of a unique co-creative approach, supporting research, innovation and investment to accelerate the fight against cancer. Oncopole's mission is to act as a catalyst for the actions deployed by Quebec's oncology research and innovation ecosystem. It aims to position the province as a leader in the field.

To learn more: www.oncopole.ca

Contacts

Génome Québec
Antoine Gascon
Specialist, Communications and Digital Media
agascon@genomequebec.com

IVADO
Sandra Estrela
Communications Advisor
sandra.estrela@ivado.ca

Oncopole
Maxime Dumais
Oncopole Coordinator
maxime.dumais@frq.gouv.qc.ca