

ARTERIA PROGRAM - FACT SHEET

Cardiovascular disease

Cardiovascular diseases are the leading cause of death and hospitalization in the world. They account for 35 %¹ of deaths worldwide and affect 1.3 million Canadians.² Collectively, the various forms of heart disease cost us \$22 billion each year in Canada.³

The Program

ARTERIA is a large-scale research program to be led by the Research Centre of the Montreal Heart Institute and carried out as a partnership with a group of biopharmaceutical companies and the Government of Quebec. This program promises to have a marked impact on patients living with or at risk for cardiovascular diseases such as atherosclerosis, notably by offering them treatments that are adapted to their genetic profile. Thus, the program will foster the practice of precision and personalized medicine with patients who have or are at risk for heart disease.

ARTERIA is ground-breaking in its incorporation of the multiple dimensions of diagnosis and treatment of cardiovascular disease and, in particular, atherosclerosis. A further highlight of the ARTERIA program is its focus on the optimization of pharmaceutical approaches targeting:

- 1) Low-density lipoproteins LDL (known as "bad" cholesterol)
- 2) High-density lipoproteins HDL (known as "good" cholesterol)
- 3) Vascular inflammation
- 4) Heart rate

By integrating within a single scientific process cutting-edge approaches that utilize biomarkers, pharmacogenetic markers, and medical imaging technologies of high clinical value, ARTERIA will help establish precision medicine that is rooted in scientific evidence. At the same time, the approaches developed through ARTERIA will enable us to predict patient response to heart medications, thus making great strides in paving the way toward personalized medicine that ensures both effectiveness and safety in new therapies.

Targeted objectives and anticipated results

Among its specific objectives, ARTERIA aims to validate and implement diagnostic tests of statininduced muscle toxicity, a development that is highly anticipated within the biopharmaceutical field and throughout the international medical community. Secondly, it will validate genetic markers and other biomarkers identifying a subgroup of patients who respond well to therapies targeting HDL. The research program also has as its mission to validate a plasma biomarker that predicts favourable response to vascular anti-inflammatory agents. It will also determine whether various systemic antiinflammatory agents produce measurable vascular effects and clinical benefits in patients with vascular disease. Finally, ARTERIA seeks to identify the genetic factors that determine the benefits of drugs designed to lower heart rate, yet another topical question in the medical community.

¹ World Health Organization. Global status report on noncommunicable diseases 2010. 2011. Geneva, Switzerland.

² Public Health Agency of Canada (2007). http://cbpp-pcpe.phac-aspc.gc.ca/chronic-diseases/cardiovascular-diseases/

³ The Conference Board of Canada, 2010. The Canadian Heart Health Strategy: Risk Factors and Future Cost Implications



Strategic approach

ARTERIA is based on an integrated model that draws on the expertise not only of the Montreal Heart Institute, but of all of its national and international partners as well. This partnership approach, in which all parties combine their interests, goes a step further toward developing effective therapies to address the existing challenges in the health care system, and it attests to Quebec's leading position in this field.

Not only does ARTERIA confirm the exceptional value of the partnerships that have been established by the Montreal Heart Institute—one of the world's foremost cardiology centres—but it also constitutes an optimal use of the leading-edge infrastructures the Institute has cultivated over the last decade, including its Beaulieu-Saucier Pharmacogenomics Centre, its Montreal Health Innovations Coordinating Center (MHICC), its world-class Biobank, and its technologically advanced medical imaging core labs. Indeed, ARTERIA crystallizes the relevance of personalized medicine, a strategy that has been in place at the Montreal Heart Institute for the past five years, and it establishes the central role that the Institute's Cardiovascular Genetics Centre plays in the field of genetic diagnosis. The Montreal Heart Institute team is very well positioned and has succeeded in mobilizing all of the parties needed to ensure the medical application of results, the rapid realization of benefits for the healthcare system, and the socieoeconomic spin-offs of the ARTERIA program.

Financial backing

ARTERIA has been made possible thanks to the \$49.2 million it has received in funding, of which \$18.2M has come from the Government of Quebec and \$31M has come from private investments. As such, this public contribution constitutes a strong economic lever, given that for each public dollar invested, \$1.7 was received from partner businesses in the life sciences sector. The following is the list of private and public partners who have lent their support:

- Hoffmann-La Roche Ltd.
- Servier Canada Inc.
- MedImmune (a subsidiary of AstraZeneca)
- Valeant Canada Inc.
- Pharmascience Inc.
- Thrasos Therapeutics.

- Pfizer Canada Inc.
- Spartan Bioscience Inc.
- The Montreal Heart Institute
 Foundation
- The Université de Montréal's Réseau universitaire intégré de santé (RUIS)

Economic, financial, and employment spin-offs

In economic and employment terms, ARTERIA, through its discoveries and innovations, will result in substantial savings for our health care system by way of the improved efficacy and safety of a number of heart disease medications, benefits drawn from the validation of tests, the creation of over 150 direct high-skilled jobs, and the transfer of knowledge to the health system and the sector's businesses. ARTERIA will also attract new private investments, which will result in positive spin-offs for our public institutions. Therefore, by virtue of its forward-thinking vision and its strong and ground-breaking partnerships, ARTERIA will have a sustainable strengthening effect on Quebec's entire life sciences ecosystem as well as on the development of the province's biopharmaceutical industry, in keeping with the Quebec government's strategy and vision.