Montréal, Friday, March 3, 2017 – Professor Sylvain Martel, Director of the Polytechnique Montréal Nanorobotics Laboratory, and a team of researchers from Polytechnique Montréal, Université de Montréal and McGill University have achieved a major leap forward in cancer research by developing new nanorobotic agents able to navigate through the bloodstream to administer a drug with precision by specifically targeting the active cells of cancerous tumours. And this without the usual side effects of chemotherapy.

These legions of nanorobotic agents are in fact made up of more than 100 million drug-loaded bacteria that take the most direct path from the point of the drug’s injection to the area of the body to be treated. Absolutely no one in the world had envisioned this as a solution!

Winning 36% of the votes cast by the public, this scientific breakthrough captured honours at the 24th annual “Discovery of the Year” contest held by the scientific magazine Québec Science. The awards celebrate the most impressive Québec discoveries of the past year.

“Québec Science magazine’s Discovery of the Year is the only scientific prize awarded by the general public,” says Marie Lambert-Chan, Editor-in-Chief of Québec Science. “As it does every year, the list of discoveries showed exceptional research work. Those by Professor Martel and his team, however, stood out in the eyes of our readers, who were impressed by the ingenuity of their methods and excited by the hope of beating cancer.”

Professor Martel, who also holds the Canada Research Chair in Medical Nanorobotics, says: “When I started my research activities, my wish was to contribute to initiatives of the scientific community that aim at improving the delivery of drugs to cancerous tumours while also reducing the collateral effects of the treatment. That wish has become a reality thanks to the multidisciplinary co-operation of colleagues from Polytechnique Montréal and other research institutions, and with the support of numerous partners.” He adds: “On behalf of the team, I thank the public for giving our scientific breakthrough the Québec Science magazine ‘Discovery of the Year 2016’ award. This recognition moves us deeply and encourages us to continue our efforts.”
Christophe Guy, Chief Executive Officer of Polytechnique Montréal, notes: “Bestowing this prestigious award on the discovery made by Professor Martel and his team shows how the work conducted at our research laboratories has tangible benefits in the field of science, as well as in society at large. I thank Québec Science magazine for giving the public a way of recognizing scientific research excellence in Québec. I also congratulate the finalist teams that made remarkable discoveries: your initiatives contribute to scientific progress and to the development of communities.”

**A promising scientific stride**

During tests conducted on mice at the Polytechnique Montréal Nanorobotics Laboratory, the bacteria reached all colorectal tumours that were targeted and 55% of those bacteria penetrated into the heart of the tumours to deliver the drug in a very precise fashion. By contrast, only 1 or 2% of anti-cancer agents reach their target in the course of traditional chemotherapy treatments.

**About the research team**

The researchers who took part in the research efforts are Michael Atkin, Dominic de Lanauze, Ouajdi Felfoul, Neila Kaou, Dumitru Loghin, Mahmood Mohammadi and Samira Taherkhani from Polytechnique Montréal; Gerald Batist, Nicole Beauchemin, Maryam Tabrizian and Tê Vuong from McGill University; Daniel Houle, Sylwia Jancik, Danuta Radzioch and Yong Zhong Xu from the McGill University Health Centre (MUHC); Louis Gaboury and Michel Lafleur from Université de Montréal; and Sherief Essa from McGill University and Université de Montréal.

The Jewish General Hospital of Montréal, the MUHC, the Institute for Research in Immunology and Cancer (IRIC) as well as the Rosalind and Morris Goodman Cancer Research Centre also participated in the research, which received support from the Consortium québécois sur la découverte du médicament (CQDM), the Canada Research Chairs Program, the Natural Sciences and Engineering Research Council (NSERC), MITACS, the Canada Foundation for Innovation (CFI) and the National Institutes of Health (NIH).

**About Polytechnique Montréal**

Founded in 1873, Polytechnique Montréal is one of Canada’s leading engineering teaching and research institutions. It is the largest engineering university in Québec for the size of its graduate student body and the scope of its research activities. With over 45,700 graduates, Polytechnique Montréal has educated nearly one-quarter of the current members of the Ordre des ingénieurs du Québec. The institution offers more than 120 programs. Polytechnique has 250 professors and over 8,200 students. It has an annual operating budget of more than $210 million, including a research budget exceeding $71 million.
About Québec Science magazine

Québec Science has a special bond with both the research community and the general public. The magazine deals with all questions relative to science and technology and takes a scientific look at major issues of current interest. Its eight issues a year are published by Vélo Québec Éditions and sold at newsstands for $6.45 or by subscription. Québec Science receives financial support from the Ministère de l'Économie, de l'Innovation et des Exportations du Québec.

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