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Canadian Team Reaches Next Milestone in Addressing Medical-Isotope Crisis *Demonstrates Technology Suitable & Scalable for Multiple Brands of Cyclotrons*

(St. Louis, Missouri) -- Today at the Society of Nuclear Medicine and Molecular Imaging's annual conference, a Canadian team with members from TRIUMF, the BC Cancer Agency, the Centre for Probe Development & Commercialization, and Lawson Health Research Institute announced that they have dramatically advanced technology for addressing the medical-isotope crisis. The key medical isotope, technetium-99m (Tc-99m), can now be produced in meaningful quantities on the world's most popular cyclotrons, many of which are already installed across Canada and around the world.

Patients, doctors, and hospitals have been concerned about a supply shortage of the workhorse medical isotopes used in cardiac tests and cancer scans as the world moves away from uranium-based nuclear reactors to create these exotic, short-lived, life-saving compounds. The Canadian team has demonstrated the successful production of Tc-99m on a standard cyclotron manufactured by GE Healthcare, confirming that this alternative technology can be used by roughly half of the world's already-installed cyclotrons.

Speaking for the consortium, Dr. Frank Prato of the Lawson Health Research Institute said, "This achievement is based on the efforts of the entire team and showcases our progress; we have a technology that can be applied in jurisdictions across Canada and around the world to produce this important isotope."

Last summer, the team set a world record for production of the critical isotope, Tc-99m, on a Made-in-Canada medical cyclotron; today, the team showed record production of Tc-99m using a GE PETtrace cyclotron at the Lawson Health Research Institute in London, Ontario. This demonstration, along with the work being done at a similar GE cyclotron in Hamilton, ON, validates the business proposition that conventional cyclotrons around the world can be upgraded to produce Tc-99m for their region.

The Government of Canada has articulated an intention to shift away from reactor-based production of medical isotopes in order to diversify the supply, remove uranium from the supply chain, and halt Canadian taxpayer subsidization of isotopes used in other countries. Through a sequence of programs at the Natural Sciences and Engineering Research Council, the Canadian Institutes for Health Research, and now Natural Resources Canada, the Canadian government has invested in the research, development, and deployment of alternative accelerator-based technologies for the production of Tc-99m.

Paul Schaffer, principal investigator of the Canadian team, said, "Canada is truly a pioneer in developing accelerator-based alternatives for medical-isotope production. I am proud of our recent success and also salute our colleagues across the country who are working on complementary approaches that will help ensure that the global market has options as nuclear reactors adopt other primary missions."

Next steps in deploying this technology for Canadian patients will include regulatory approval and working with provincial governments to make the choices required to diversify the supply chain and strengthen healthcare systems. The Canadian team is working to license its proprietary technology and to be positioned to market and supply the essential ingredients to cyclotrons around the world to enable their Tc-99m production.

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Background

The Canadian team has successfully demonstrated production of more than 3.5 Curies of Tc-99m on GE PETtrace cyclotrons in Ontario, using six-hour production runs at maximum intensity at the Lawson Health Research Institute facility in London. These quantities of Tc-99m set the world record for production on PETtrace cyclotrons and show that the London cyclotron can supply its region with a single run each day and the Centre for Probe Development & Commercialization could supply the Hamilton market with two production runs each business day. Thus, a single PETtrace cyclotron, when equipped with the consortium's proprietary technology, can supply a mid-size market.

These results pave the way for optimizing the isotope production parameters, demonstrating the reliability of daily production, and securing regulatory approval.

About 4% of Canadians require a diagnostic examination with Tc-99m each year; at current prices, this costs approximately \$20 million annually. Canada presently purchases the Tc-99m in the form of generators from the United States and Europe even though the raw material may be produced by the NRU reactor in Chalk River, ON.

In 2009, following the prolonged shutdown of the NRU reactor due to a leak in its aluminum tank, a team led by TRIUMF with members from the BC Cancer Agency, Centre for Probe Development & Commercialization, and Lawson Health Research Institute, decided to revisit the direct production of Tc-99m using medical cyclotrons. This effort, based on a concept proposed in 1971 by researchers at the University of Miami (Beaver and Hupf), was enabled by a competitive research grant funded by the National Sciences and Engineering Research Council Canada and the Canadian Institutes for Health Research; subsequent research funding was awarded by Natural Resources Canada.

With other researchers and industrial partners in Canada, this team developed a comprehensive solution to produce Tc-99m in large quantities suitable for large population bases using conventional medical cyclotrons. The technology is now ready for clinical testing and is moving forward to obtain regulatory approval for routine use in patients with a target date of 2016.

Can cyclotrons provide a reliable supply of medical radioisotopes? Yes. In fact, for the last several years, cyclotrons have been producing radioisotopes for positron emission tomography (PET), which is the future of nuclear medicine and provides more accurate tests to detect mental health, bone and cardiac diseases, in addition to detecting cancers. Approximately 80% of current nuclear medicine procedures could be replaced by more accurate PET scans if the radioisotope production infrastructure and the imaging equipment was in place.

About TRIUMF

TRIUMF is Canada's national laboratory for particle and nuclear physics. Together with its partner AAPS, Inc., TRIUMF also seeks to commercialize its technologies for the benefit of all Canadians. Located on the south campus of the University of British Columbia, TRIUMF receives operating support from the Government of Canada through a contribution agreement via National Research Council Canada; the Government of British Columbia provides capital for new buildings. TRIUMF is owned and operated as a joint venture by a consortium of the following Canadian universities: University of Alberta, University of British Columbia, University of Calgary, Carleton University, University of Guelph, University of Manitoba, McGill University, McMaster University, Université de Montréal, University of Northern British Columbia, Queen's University, University of Regina, Saint Mary's University, Simon Fraser University, University of Toronto, University of Victoria, University of Winnipeg, and York University. Visit us at <http://www.triumf.ca>.

About Lawson Health Research Institute

Lawson Health Research Institute, located in London, Ontario, is one of Canada's largest and most respected hospital-based research institutes. As the research arm of London Health Sciences Centre and St. Joseph's Health Care, London, and working in partnership with Western University, Lawson is committed to furthering scientific knowledge to advance health care around the world. Its state-of-the-art, 6,000 sq. ft. Cyclotron & PET Radiochemistry Facility opened on March 31, 2010 and includes a GE PETtrace 880 cyclotron with proton and deuteron acceleration capability, class 100 shielded hot cells, and automated chemistry units for producing F-18 and C-11 radiopharmaceuticals – all to GMP specifications.

About the Centre for Probe Development & Commercialization

The Centre for Probe Development and Commercialization (CPDC) discovers, develops and distributes molecular imaging probes for the early diagnosis of diseases and to assess the effectiveness of treatments. An important part of Ontario's health system, CPDC provides a reliable, daily supply of imaging probes to hospitals across the province. CPDC also works collaboratively with industry and academic partners, offering the research, manufacturing and regulatory expertise needed to move innovative probe technology and new therapeutic drugs from R&D labs to clinical use. CPDC, located on the McMaster University Campus, is a Centre of Excellence for Commercialization and Research, part of the Networks of Centres of Excellence Program. It is supported by the Ontario Institute for Cancer Research, GE Healthcare, Cancer Care Ontario, and McMaster University.

About the BC Cancer Agency

The BC Cancer Agency, an agency of the Provincial Health Services Authority, is committed to reducing the incidence of cancer, reducing the mortality from cancer, and improving the quality of life of those living with cancer. It provides a comprehensive cancer control program for the people of British Columbia by working with community partners to deliver a range of oncology services, including prevention, early detection, diagnosis and treatment, research, education, supportive care, rehabilitation and palliative care. The BC Cancer Foundation raises funds to support research and enhancements to patient care at the BC Cancer Agency.