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Pushing the frontier of medical isotope production at TRIUMF

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With over five decades of experience in the production of accelerator-based isotopes for science, TRIUMF also ensures that Canada remains on the leading edge of research and development of isotopes applied to nuclear medicine. TRIUMF's medical isotope program is primed to develop alternative tools and methods to meet the growing demand for life-saving isotopes, and advance the design and production of cutting-edge radiopharmaceuticals.

Together with the on-site commercial partner BWXT, formerly Nordion, already now TRIUMF delivers approx. two million patient doses of medical isotopes which are used for imaging and treatment around the world every year. The new Institute for Advanced Medical Isotopes (IAMI) - a multi-institutional research hub and facility focusing on radiopharmaceutical development and advanced isotope development –will serve as a conduit for isotopes produced using not only its own TR-24 cyclotron but also other TRIUMF's accelerators spanning the energies from 13 MeV all the way up to 520 MeV. The Advanced Rare Isotope Laboratory (ARIEL), TRIUMF's flagship project, with its symbiotic medical isotope production target positioned behind the proton ISOL target and state-of-the-the-art isotope handling infrastructure, will produce and develop isotopes for next generation-radionuclide therapies for metastatic cancers. Finally, with its high-energy proton irradiation and ISAC-I facilities, TRIUMF is already uniquely positioned to enable access to mass separated, isotopically pure Ac-225, by delivering batches for animal and clinical trials.

In this contribution, I will highlight the recent technical developments at TRIUMF which enabled the production of some of the most demanded medical isotopes (Ac-225, Tc-99m, etc), and discuss future plans in detail.

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