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## **(I) Medical isotope production and research with IAMI at TRIUMF**

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From its inception, the Life Sciences division at TRIUMF has leveraged the laboratory's extensive particle accelerator expertise and infrastructure to develop novel technologies that help understand life at the molecular level. This includes novel technologies and research in particle beam therapy and biobetaNMR, but also prominently the production of short-lived (half-life <2 hr) positron emitting isotopes like F-18, C-11 and a number of emerging isotopes, including, but not limited to Ga-68, Zr-89, Cu-64 and cyclotron-produced Tc-99m. More recent efforts have focused on the development of various therapeutic isotopes: Alpha-emitting isotopes like Ac-225 for targeted alpha therapy (TAT), or Hg-197 for targeted radionuclide therapy (TRT) with an Auger emitter.

In order to better enable a new generation of scientists and experiments with a wider array of isotopes, TRIUMF is currently construction the Institute for Advanced Medical Isotopes (IAMIs). IAMIs will be commissioned and ready for operation in early 2023. This facility will house a dedicated TR24 (24 MeV) cyclotron, and several state-of-the-art laboratories for the development of radiopharmaceuticals from all accelerators on site. This presentation will provide an overview of the facility and the research that is planned to take place at IAMIs. It will significantly increase British Columbia's and Canada's capacity for the sustainable and reliable production and distribution of medical isotopes currently critical for Canadian health research and clinical use, and ultimately allow Canada to maintain leadership in the realm of isotope production and application across the life sciences.

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