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## **(I) Secondary Particle Production for Fundamental Science at TRIUMF**

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For 50 years, TRIUMF has stood at the frontier of scientific understanding as Canada's particle accelerator centre. Driven by two made-in-Canada cutting edge accelerators - the world's largest cyclotron, and our new high-power superconducting linear accelerator - we continue to ask the big questions about the origins of the universe and everything in it.

With over five decades of experience in the production of accelerator-based secondary particles for science, TRIUMF also ensures that Canada remains on the leading edge of supplying radioisotopes, neutrons, photons, and muons enabling fundamental science in the fields of nuclear, particle and astrophysics, as well as solid state and medical sciences and applications.

ISAC-TRIUMF is the only ISOL facility worldwide that is routinely producing radioisotope beams (RIB) from secondary particle production targets under irradiation in the high-power regime in excess of 10 kW. TRIUMF's current flagship project ARIEL, Advanced Rare IsotopE Laboratory, will add two new target stations providing isotopes to the existing experimental stations in ISAC I and ISAC II at keV and MeV energies, respectively. In addition to the operating 500 MeV, 50 kW proton driver from TRIUMF's cyclotron, ARIEL will make use of a 30 MeV, 100 kW electron beam from a newly installed superconducting linear accelerator. Together with additional 200 m of RIB beamlines within the radioisotope distribution complex, this will put TRIUMF in the unprecedented capability of delivering three RIBs to different experiments, while producing radioisotopes for medical applications simultaneously –enhancing the scientific output of the laboratory significantly.

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