

Introduction to TRIUMF

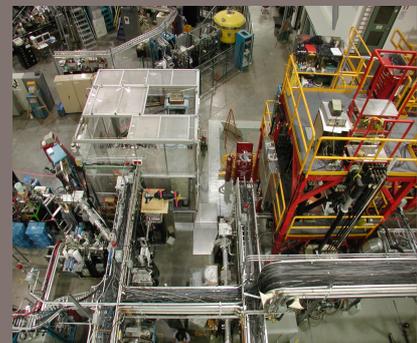
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Probing the structure and origins of matter
Advancing isotopes for science and medicine

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TRIUMF | SCIENCE
DIVISION



TRIUMF: A National Science Laboratory



Members

University of Alberta
University of BC
Carleton University
University of Guelph
University of Manitoba
Université de Montréal
Queen's University
Simon Fraser University
University of Toronto
University of Victoria
York University

Associate Members

University of Calgary
McMaster University
University of Northern BC
University of Regina
Saint Mary's University
University of Winnipeg

Research focus:

- Advancing isotopes for science & medicine
- Probing the structure & origins of matter

TRIUMF is owned & operated by a consortium of 17 universities
Founded 42 years ago in Vancouver

Unique Resource for Canada

- **People**

- ~450 scientists and staff on campus
- ~90 (50+40) staff Nordion Inc.

- **Knowledge**

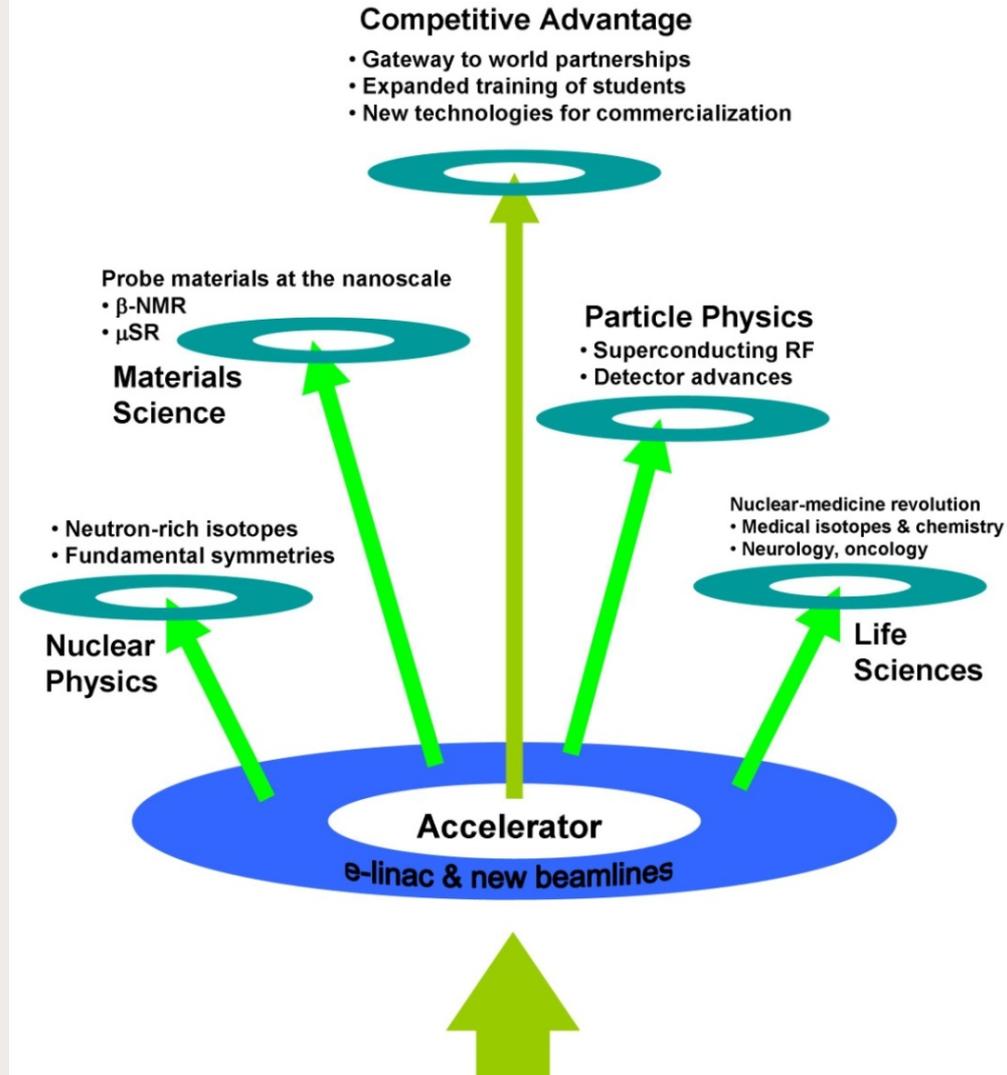
- >800 peer reviewed journal articles in the past 5 years
- 86% of NSERC exp. proposals funded proposals involve TRIUMF

- **Entrepreneurial**

- \$1B in economic activity in last decade (MMK Study)

- **International**

- 50+ international agreements/partnerships

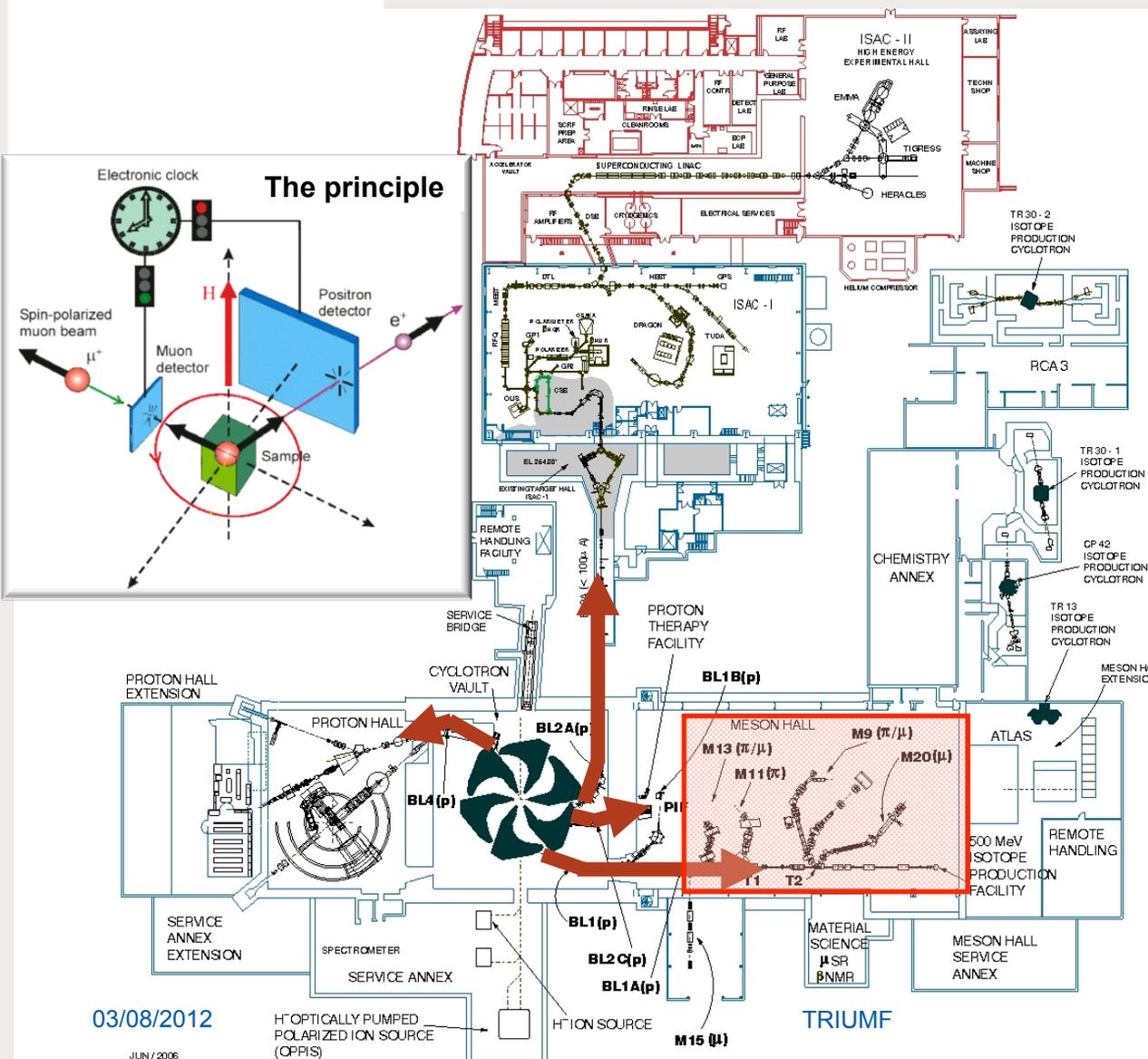


Muon Spin Relaxation (μ SR) Facility

Muon-based Molecular and Materials Science

μ SR uses the muon's spin to examine structural and dynamical processes in bulk materials on an atomic scale.

Only facility in the Americas.



ISAC rare isotope facility

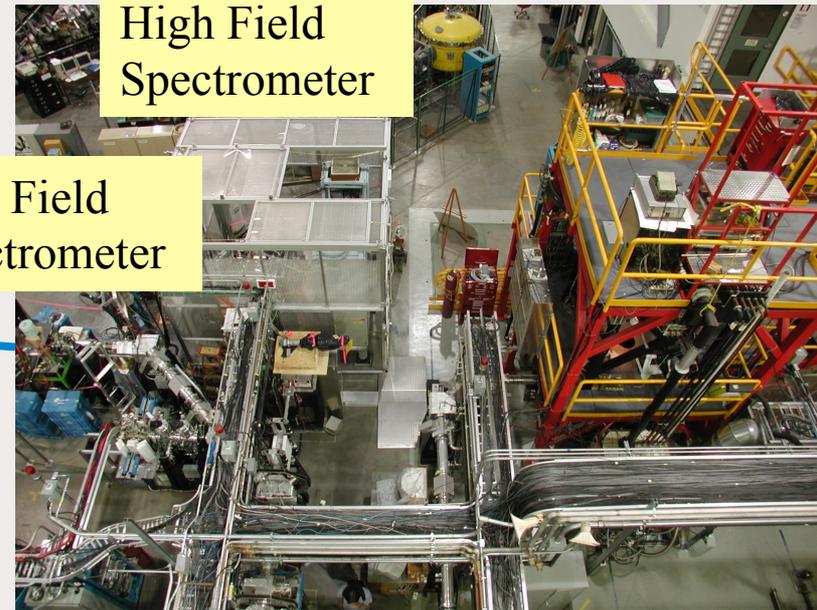
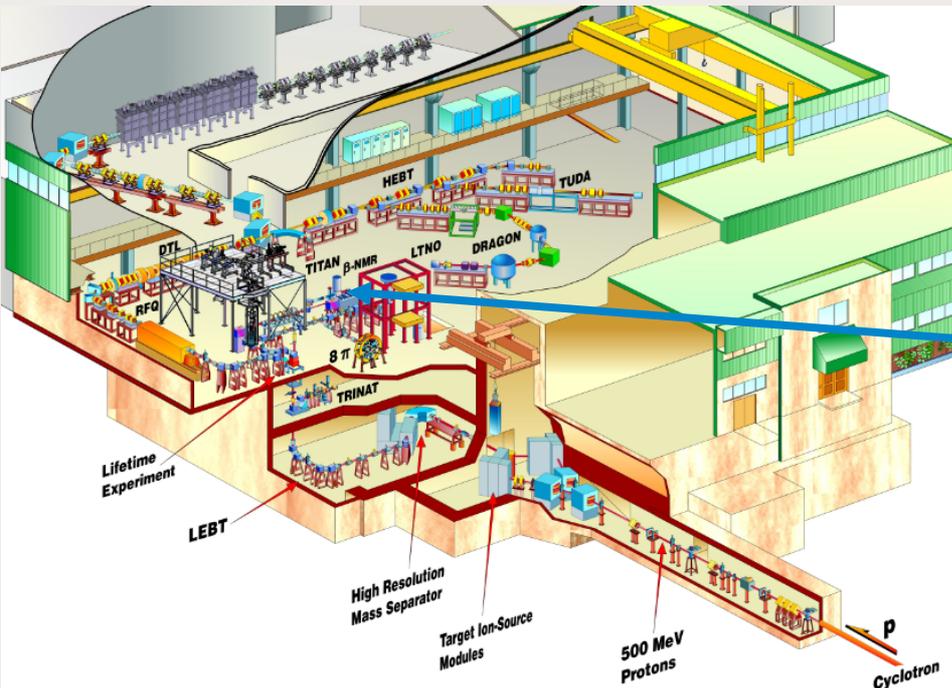
ISOL facility with *highest primary beam intensity* (100 μ A, 500 MeV, p)

ISAC I: 60 keV & 1.8 AMeV

ISAC II: 5.8 - 16 AMeV (heavy – light)

World leading rare isotope program

World unique β -NMR set-up



High Field Spectrometer

Low Field Spectrometer

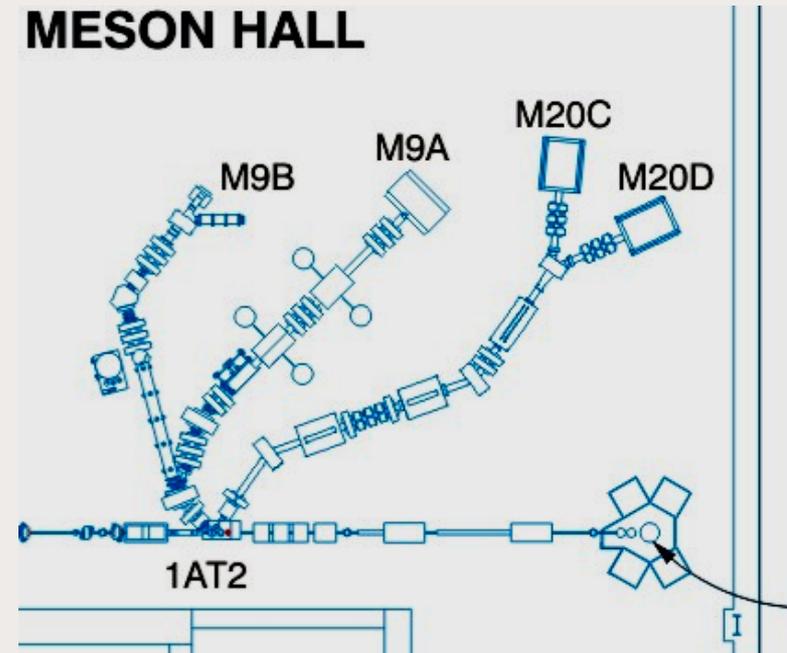
Polarizer

CMMS facilities

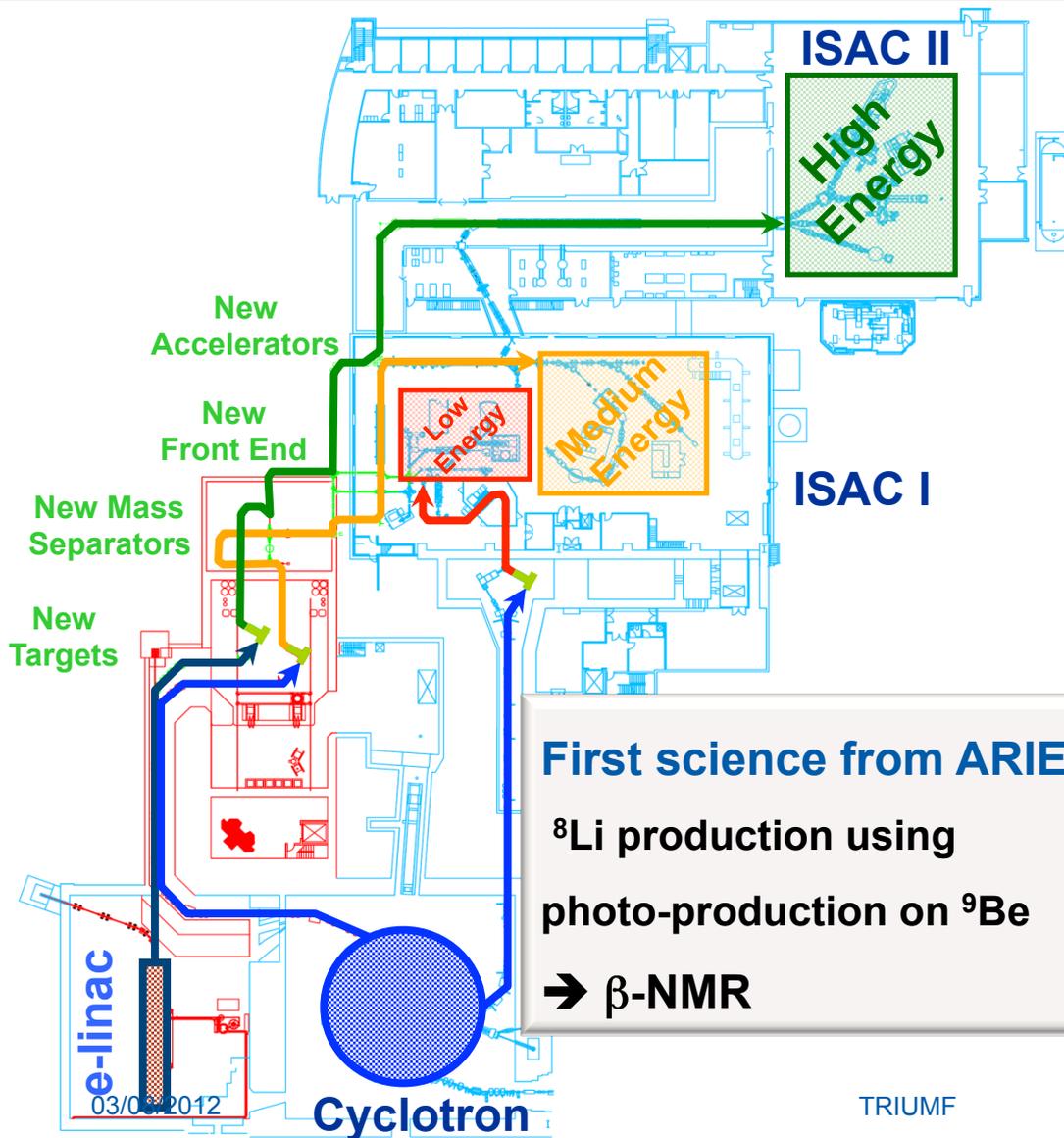
- Major investments (>\$9M) to expand MuSR program w/ M9a, M20 (coming online 2012)
- Need for He recovery system recognized, project defined, ready to go forward, awaiting funds
- increase β -NMR beam-time to 5 wks/yr
(20% of RIB program)
- Review of CMMS program in July to best position the program for the 5yr plan review Sept. 2013

→ First science from ARIEL:

**^8Li production using
photo-production on ^9Be**



ARIEL Project 10-Year Plan: Motivation



First science from ARIEL:

^8Li production using
photo-production on ^9Be
→ β -NMR

- expand RIB program with:
 - three simultaneous beams
 - more RIB hours delivered
 - enable long beam times (nucl. astro, fund. symm.)
 - more β -NMR beam time
 - new beam species
 - more beam development

- New electron linac driver for photo-fission
- New proton beamline
- New target stations and front end

- staged installation

Thank you

Merci

ありがとうございます。