Future Plans for IAMI

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With gratefully acknowledged help by the Life Sciences Division

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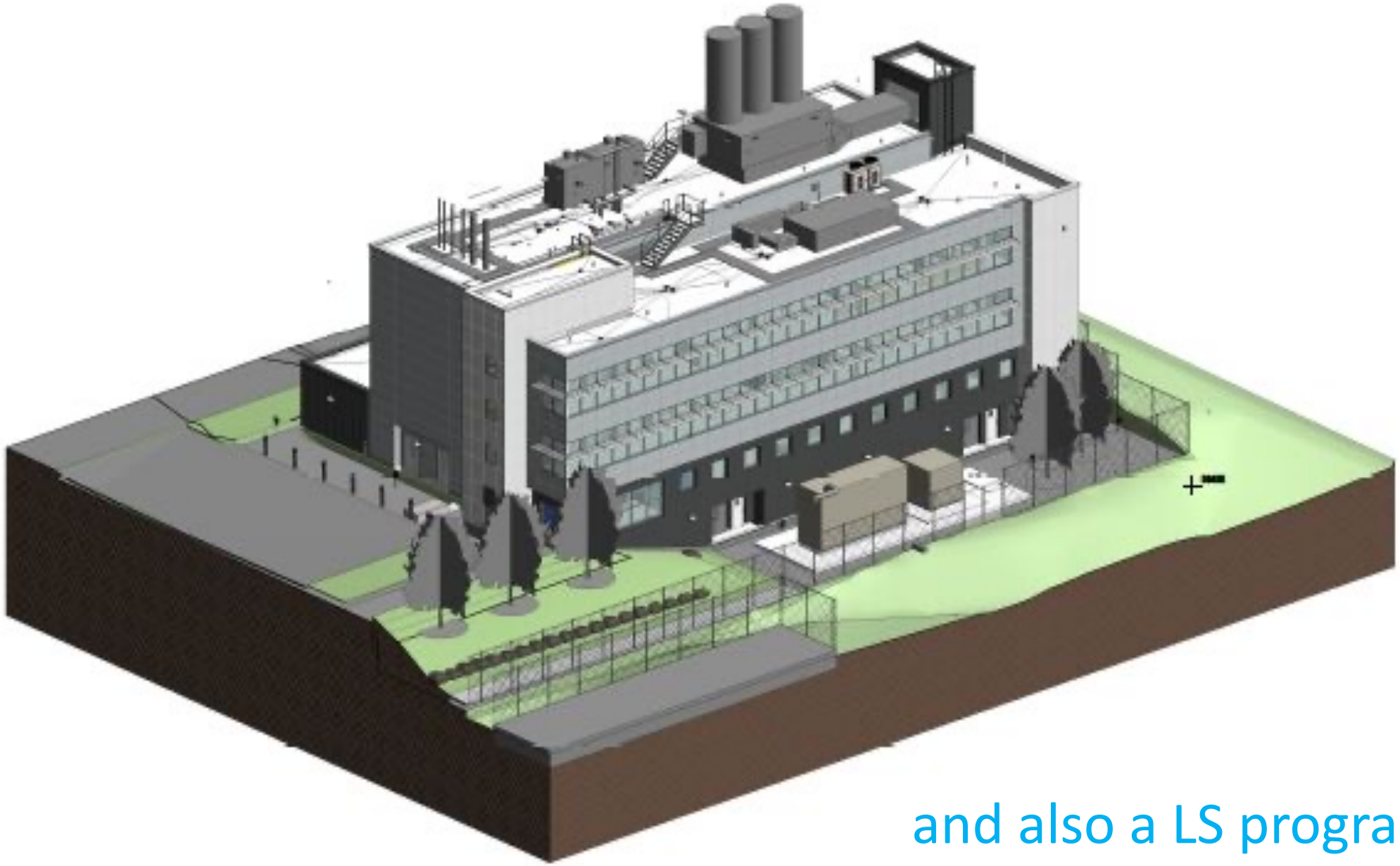
Institute for **A**dvanced **M**edical **I**sotopes… is a building …



and also a LS program…

IAMI Timeline

2012:
The idea…

Spring 2019:
Finalized Design and tender

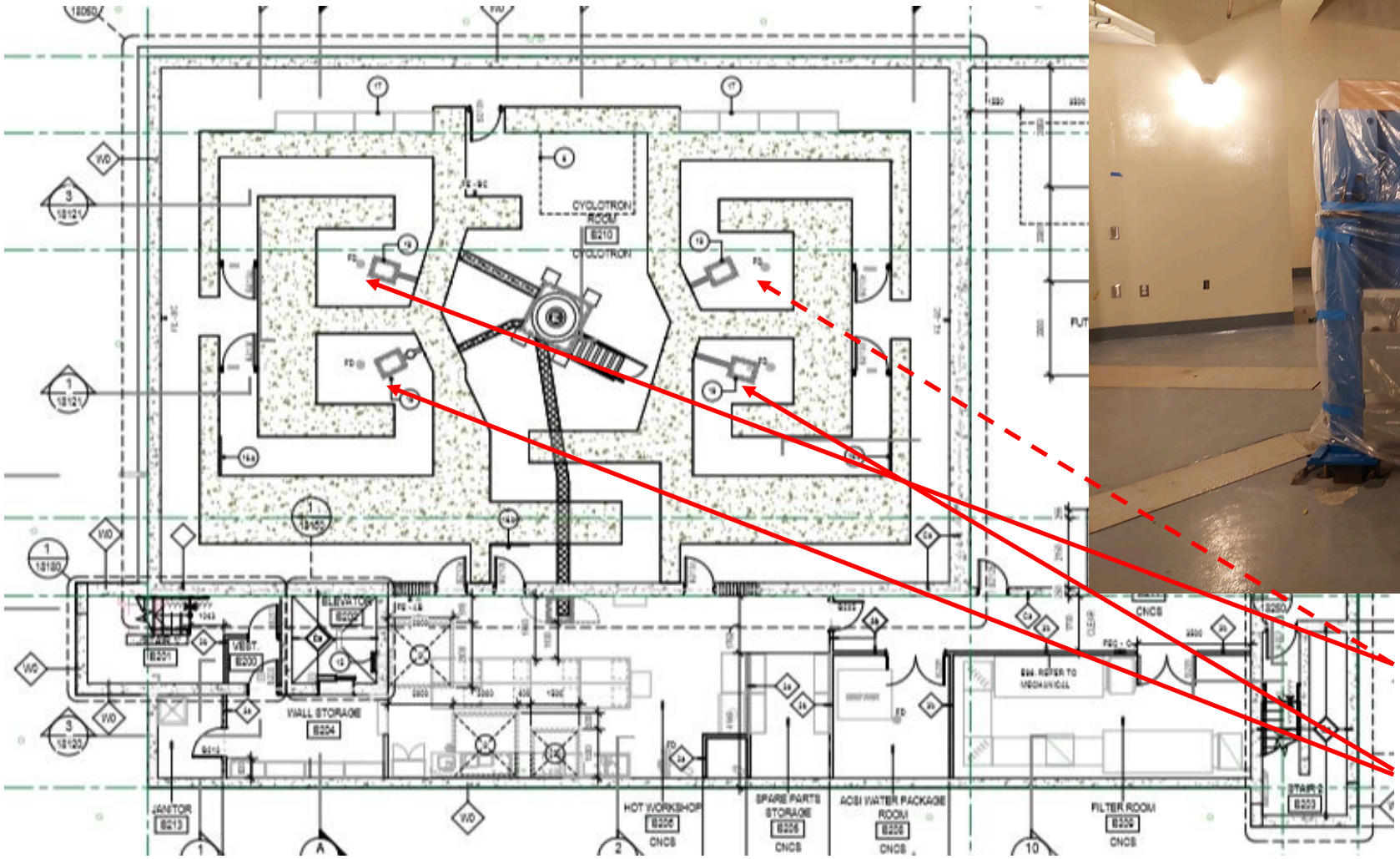
Spring 2020:
Redesign and contract signing

Summer 2020:
Construction begins

Summer 2022:
Construction completed

Winter 22/23(?):
Commissioning completed and operational start

IAMI Building: Cyclotron

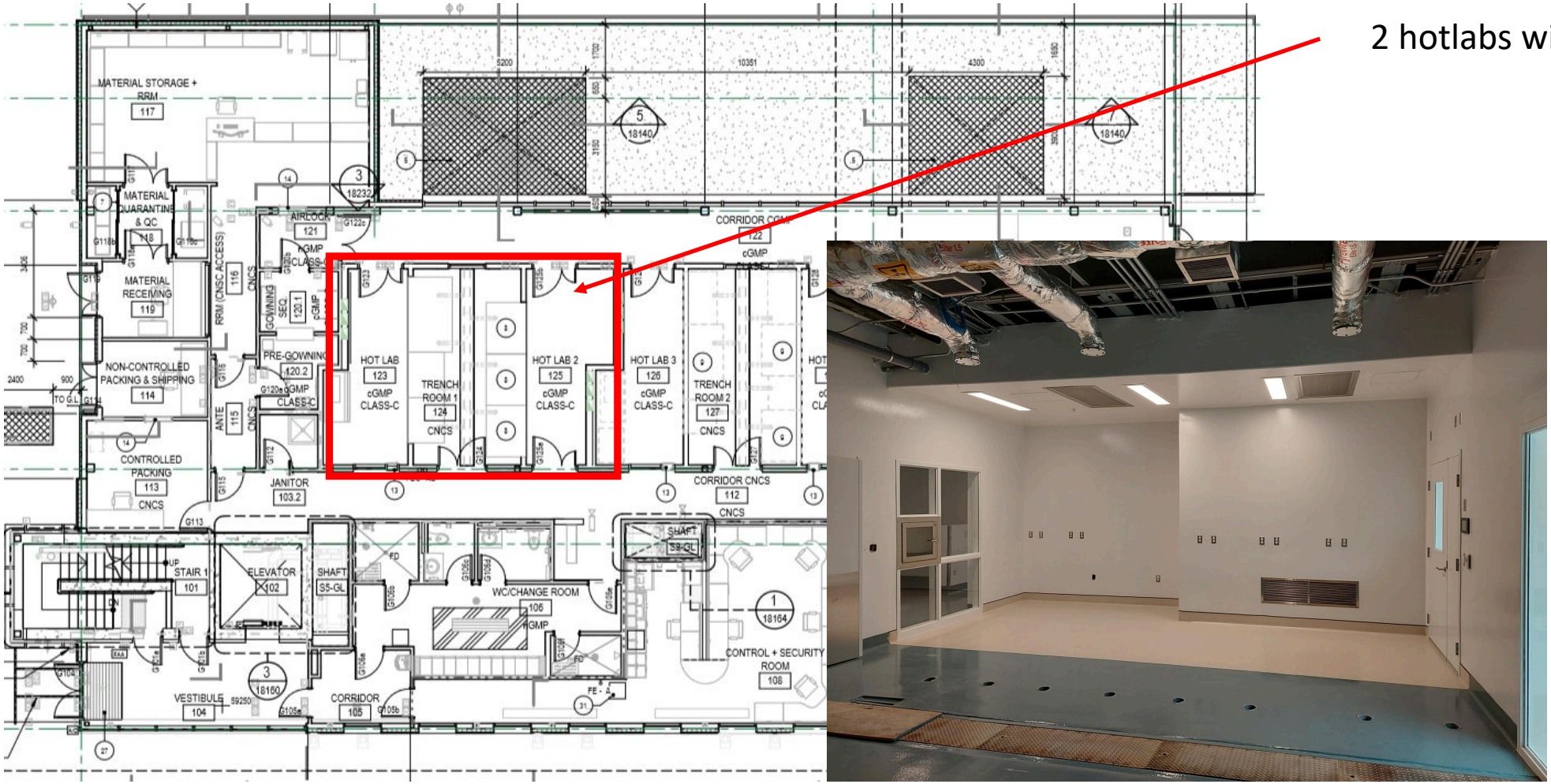


TR24

2 (1) solid target stations

2 target selectors with liquid targets

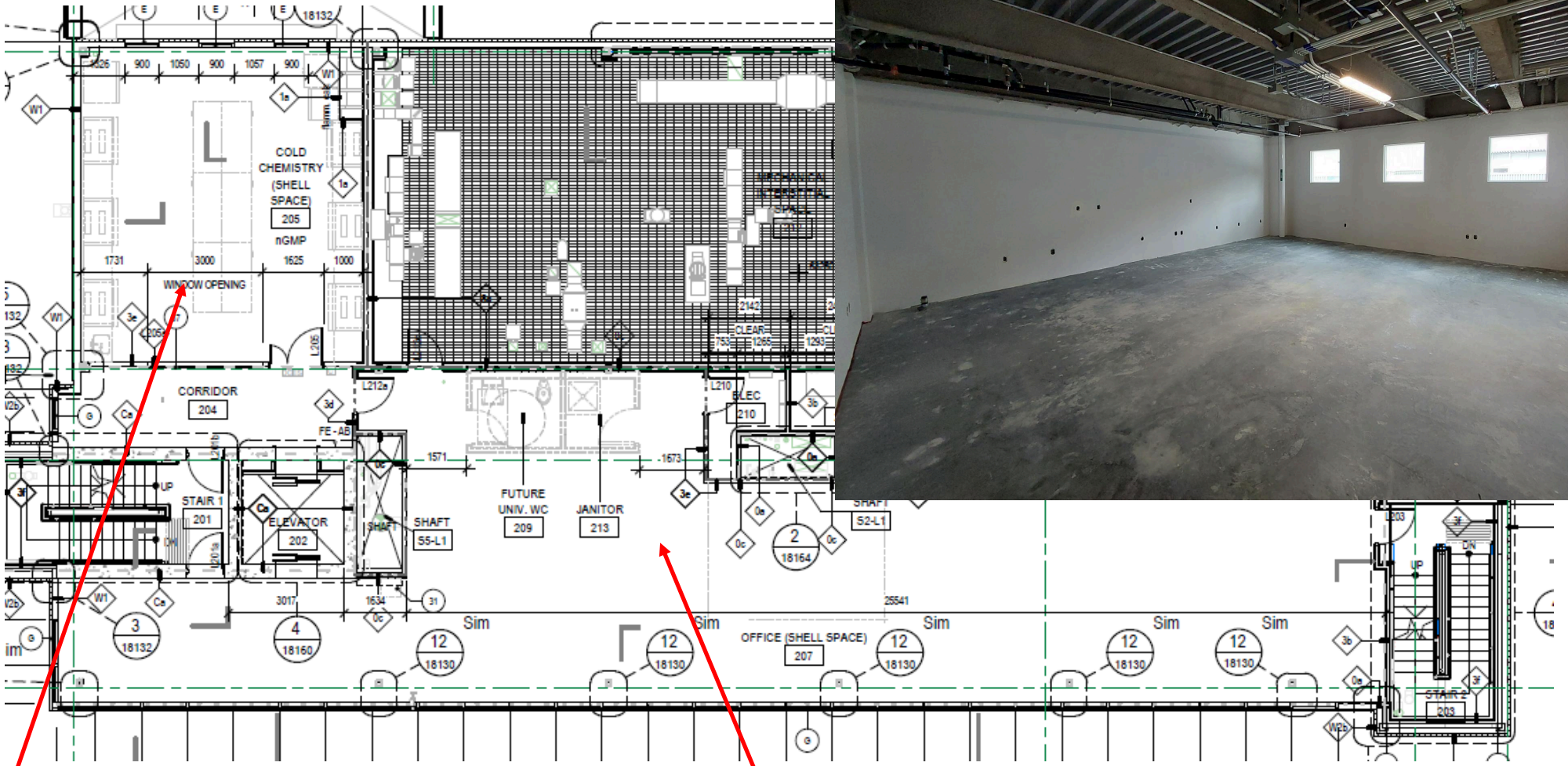
IAMI: Hotlab Space



2 hotlabs with hotcells

Remaining hotlabs will be fitted out once budget is available (2 will be leased to partners)

IAMI: Other spaces…



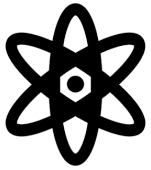
Cold chemistry lab

Office space

All of that to come when funding is available

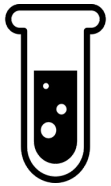
What is IAMI to TRIUMF?

IAMI will be a multidisciplinary R&D and clinical translation facility working across five key areas



Medical isotope production

Clinical imaging



Radiopharmaceutical development

Cancer therapies

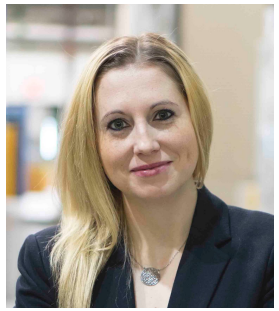
Accelerated drug development

IAMI: What will we do?

1. ^{99m}Tc production for the Province
2. ^{18}F production for BCC (back-up) and for UBC Tracer Program
3. Support existing and new partners to manufacture isotopes and/or tracers for R&D and clinical purposes (from equipment to lab space to knowledge to lab work by FTEs to regulatory expertise)
4. Use the space and the infrastructure to support LS research goals
   - By alleviating pressures on research infrastructure in other LS facilities
   - By introducing novel/intensifying existing programs

Life Sciences at TRIUMF

Applied Ion Beams



Monika Stachura

Cornelia Hoehr

Nuclear Chemistry

Valery Radchenko

Paul Schaffer

Applied Isotopes

Hua Yang

Caterina Ramogida
(joint SFU)

IAMI: Enabling LS research

1. Provide access to TR24&targets for research into targetry
2. Produce a variety of radioisotopes, mainly radiometals, as well as perform the isolation/purification in hotcells
   - Possibility to scale up
   - Possibility to provide a GMP-quality for clinical translation
3. Re-build the expertise to make targets in-house
4. Attempting to free up valuable shielded fumehood space (for manual radiolabelling) in RCR2
5. Building and strengthening ties to clinical research to allow translation of LS research

IAMI: High-level Goals

- Satisfy stakeholders, funders and partners by
  - Providing isotope security
  - Providing space for clinical translation
  - Train HQP
  - Create Life Sciences area jobs
  - Provide radiopharmaceuticals to partners to support research
- Satisfy TRIUMF researchers in conjunction with TRIUMF and LS's goals by
  - Provide access to cyclotron and targets
  - Provide isotopes for research purposes (incl. GMP-grade for clinical translation)
  - Alleviate space issues for researchers and students

IAMI: Potential bottle necks to achieve goals

- Access to machine/irradiation (beam) time
- Beam energy
- Availability of a target station to accept beam
- Laboratory space to perform post irradiation target processing
- Radiopharmaceutical manufacturing space capacity
- Manpower availability to operate equipment/spaces

Product	SOB	EOB	Tgt	CurrentμA	Dissolution Hotcell	Processing Hotcell	Dispensing Hotcell	QC	Package	Ship
^{99m}Tc	20:05	02:05	^{100}Mo	500	02:15	03:25	04:15	04:30	05:00	05:30
^{18}F FDG	04:00	06:00	^{18}O-H_20	125	N/A	06:10	06:45	06:50	07:00	07:30
^{18}F FDG	06:20	08:20	^{18}O-H_20	125	N/A	08:30	09:05	09:10	09:20	09:50
^{18}F FDG	08:25	10:25	^{18}O-H_20	125	N/A	10:35	11:10	11:15	11:25	11:55

Example of clinical runs (can be considered worst case for quite some time)

IAMI: Further Building Milestones

- Cyclotron Installation
- Hotcell Installation
- Commissioning

- Phase 2 of the Building for a potential partner (construction in the basement, on the Ground floor (for 2 hotlabs and a QC lab),a s well as L1 (office space)

- Getting a second target station?

- Phase 2 of the Building for TRIUMF (remaining hotlabs, QC space and office spaces)

Questions?

Thank you
Merci

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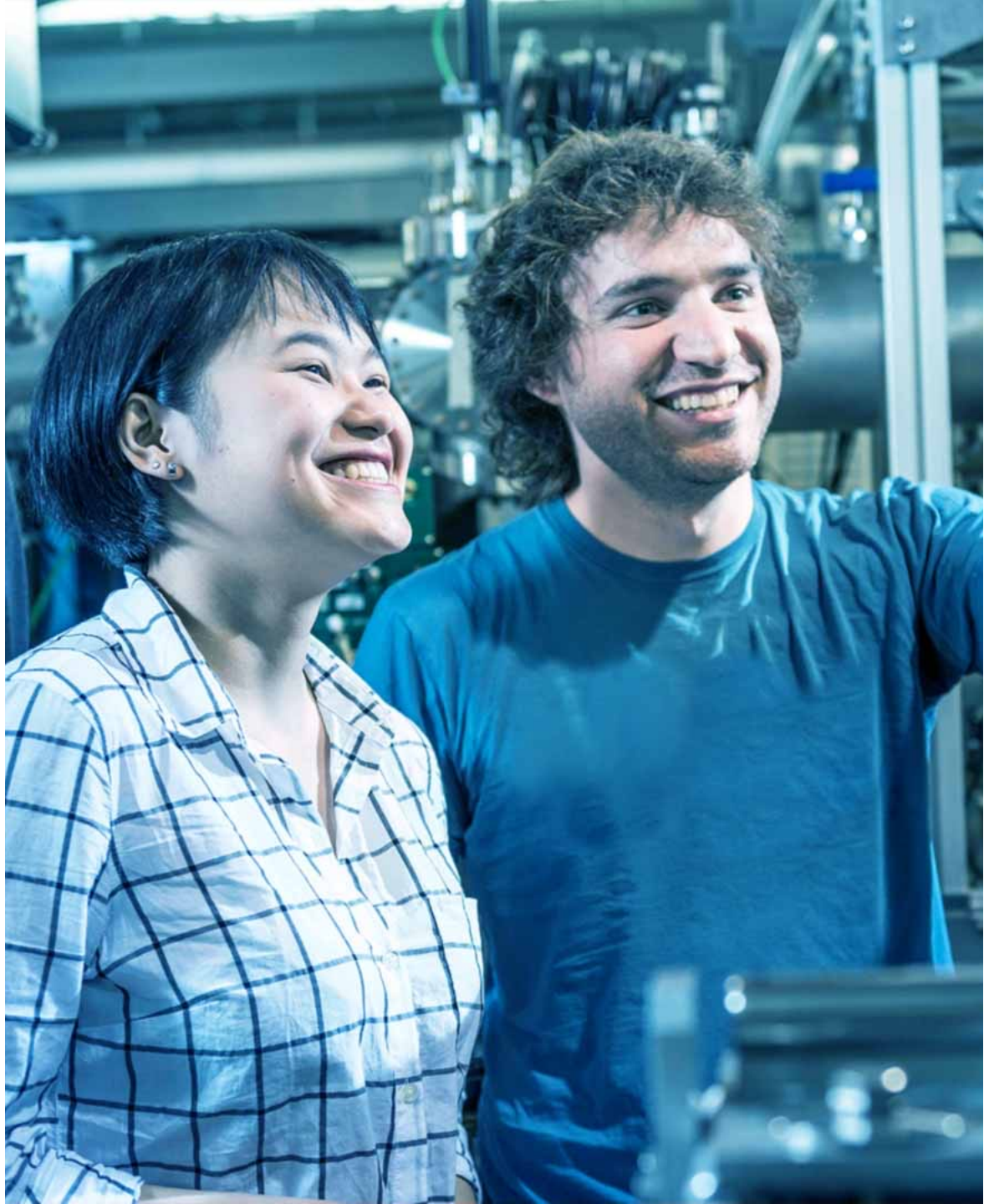

Discovery, accelerated