Proton Therapy and Proton Imaging in Australia

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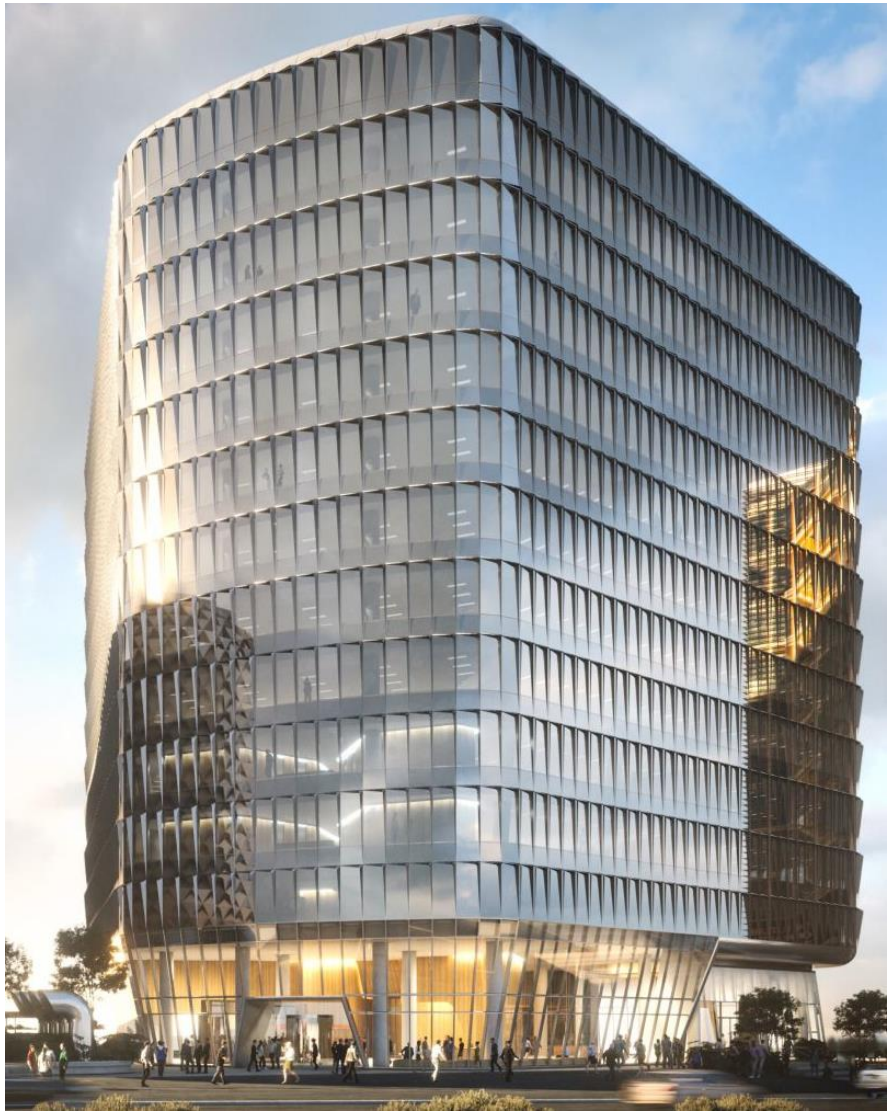
Lead Medical Physicist

Australian Bragg Centre for Proton Therapy and Research

Australian Bragg Centre

- Australia's first proton therapy
- Federal Government grant to South Australian Health and Medical Research Institute (SAHMRI) to purchase proton therapy equipment in 2017
- ProTom International selected in 2017
- Construction of 15 storey multi-purpose building commenced in 2020
- Acceptance testing to commence in 2024



Adelaide BioMed City Precinct

SAHMRI South Australian Health & Medical Research Institute | AUSTRALIAN BRAGG CENTRE FOR PROTON THERAPY AND RESEARCH

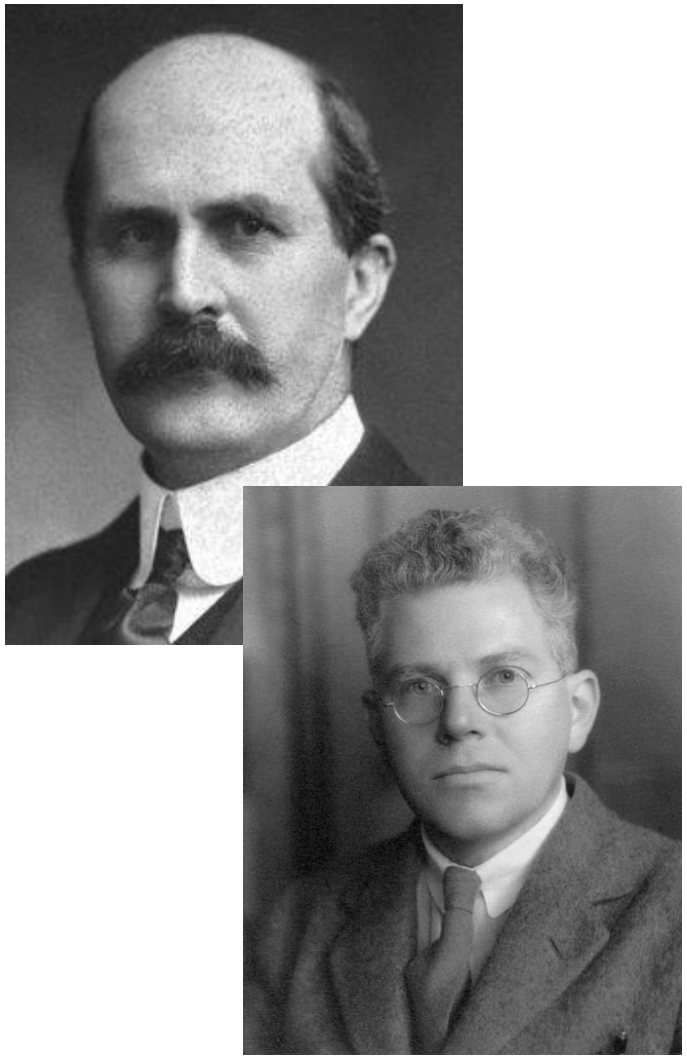
Site Progress

Adelaide

- Australia's 5th largest city
- Capital of South Australia
- 1.3 million people

EIU's Global Liveability Ranking 2021[6][8]		
	City	Country/Region
1	Auckland	New Zealand
2	Osaka	Japan
3	Adelaide	Australia
4	Wellington	New Zealand
5	Tokyo	Japan

Adelaide and Proton Therapy



- Home of Sir Marcus Oliphant – “inventor” of the synchrotron

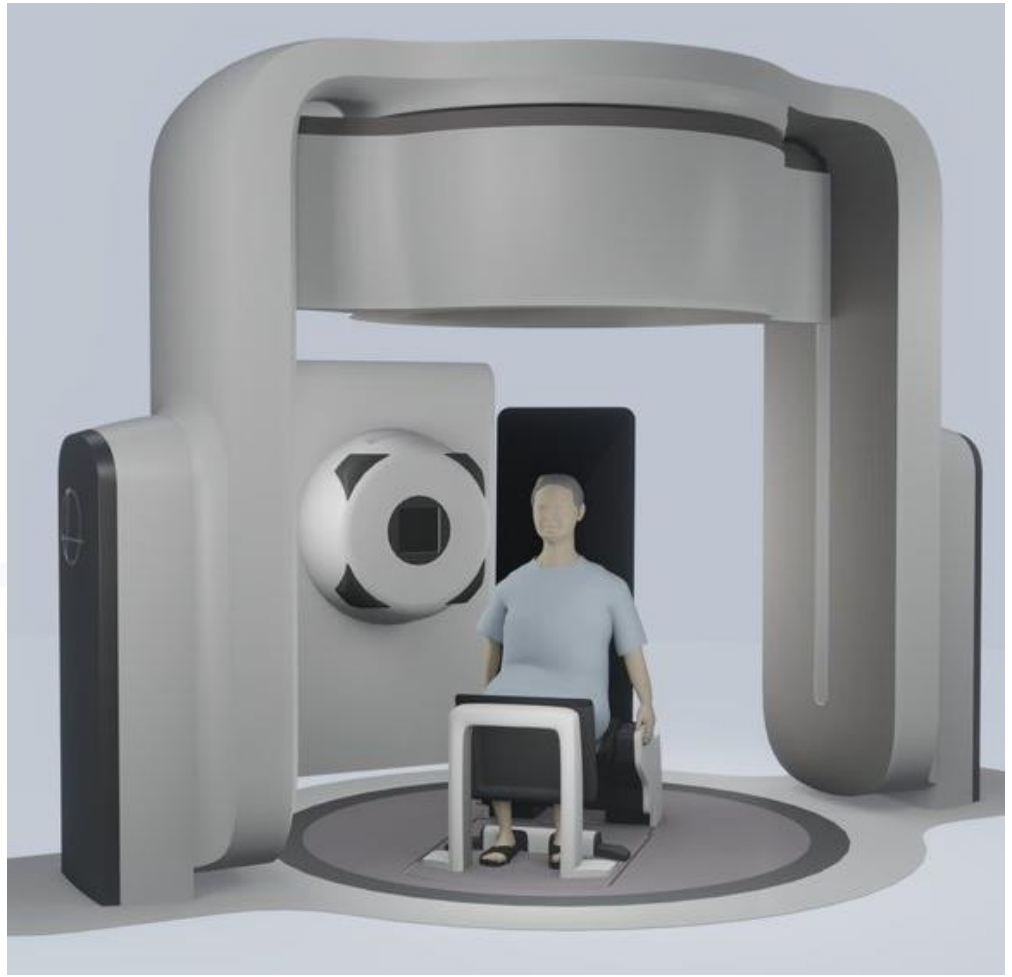
ProTom Radiance 330

- Same system installed at MGH
- Linear accelerator RFQ system for ion injection
- Accelerating protons to 70 – 250 MeV for treatment
  - Adjustable energy selection
- Accelerating protons to 70 – 330 MeV for proton imaging
  - Extraction current ~1000 less than treatment

ProTom Radiance 330

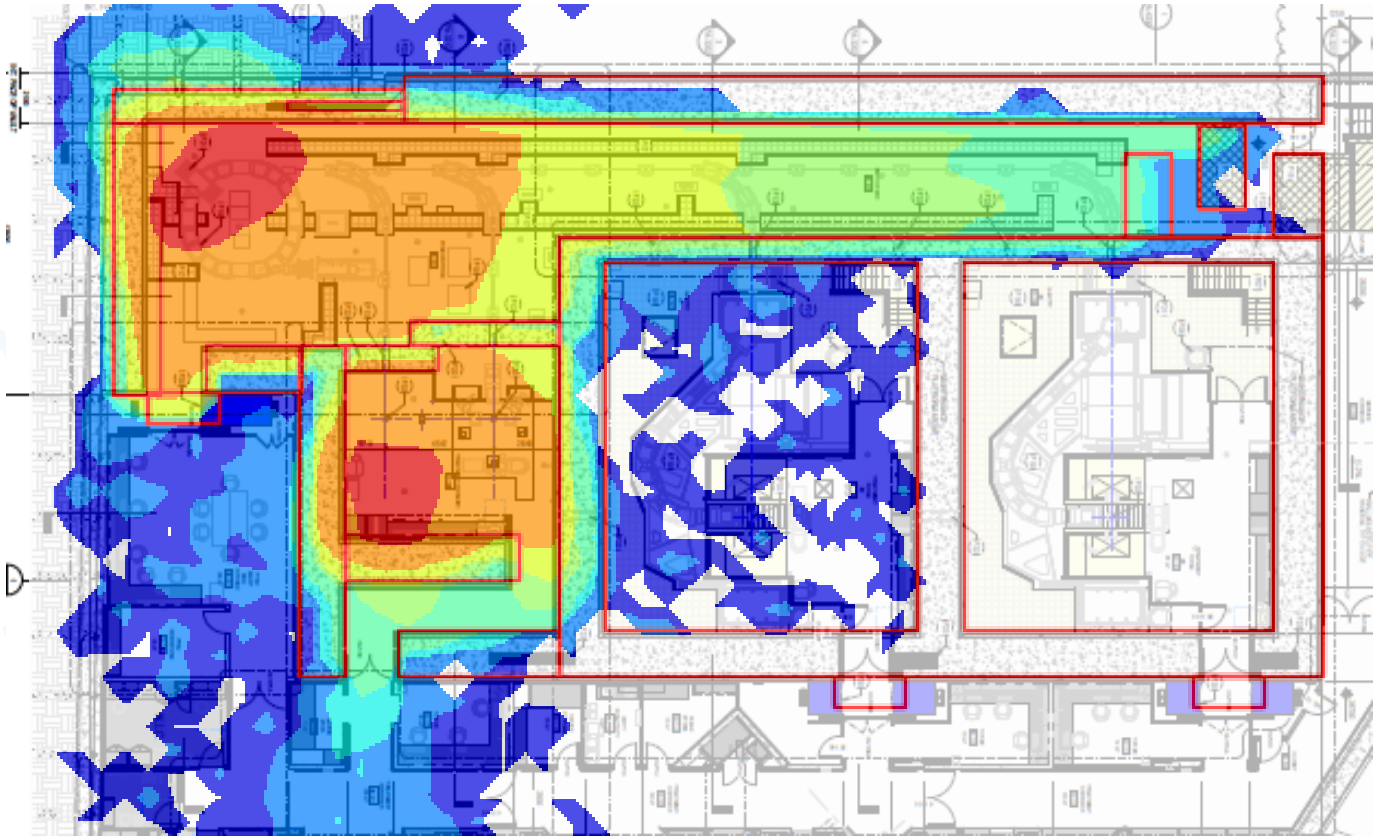
Proton Imaging Research

- Plan to install upright patient positioning system on research beamline
  - Integrated CBCT imaging system
- Spot scanning nozzle
- Integrated proton imaging system

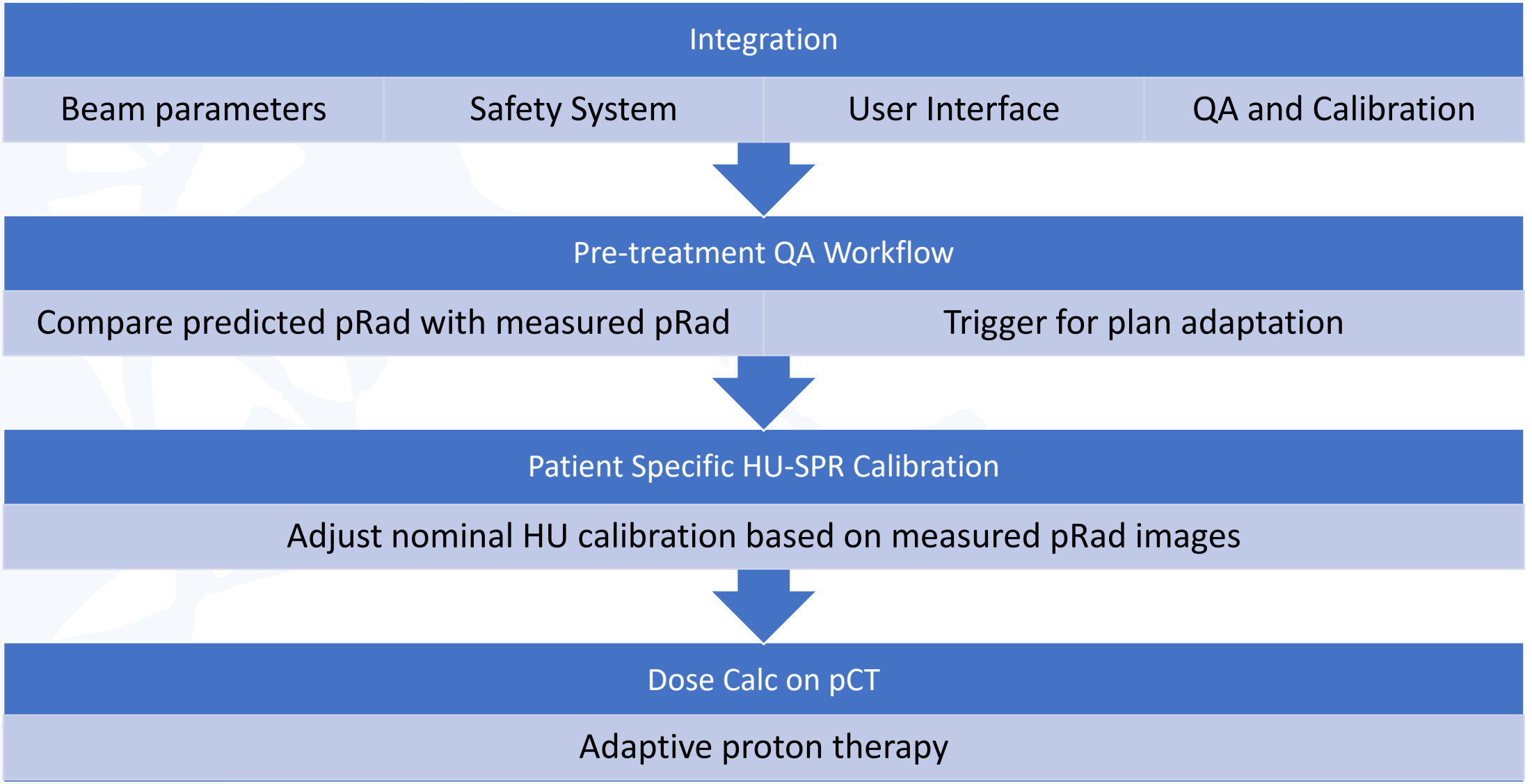


Radiation Safety in Proton Imaging

- Proton imaging workload incorporated in radiation shielding calculations
- NCRP 144 recommends pion production be considered above 300 MeV proton energy
  - Publication in progress demonstrating effect of pions
- Representative energies considered
  - 190 MeV – 40%
  - 250 MeV – 40%
  - 330 MeV – 20%
- Proton imaging adds negligible amount to annual dose estimates



Proton Imaging Translational Research



Thanks