



3rd Pillar

Business Case

Answer all the unknowns in radiobiology, usher in a new dawn of biology-physics-engineering cross disciplinary research and banish cancer for ever and ever...

until the next time (©Spike Milligan)

Skip joyfully into the new dawn

How?



Overarching strategic Plan

Build from CDR - Aim is large facility stuffed full of active research.

Requires 'political' campaign.

Starting gun was fired years ago

- Exhibition Road, Macron, politician engagement
- Royal Soc. Summer Exhibition and road trip - Glasgow Science Festival, events in Belfast and Swansea?

Also need to address how to get funding **now**

Exploit what we have already achieved.

- Find co-travellers in all areas
 - Build collaborative effort
 - Adjust targets to maximise 'returns'
 - Grow community with tentacles into the maximum number of funding sources.
 - Upsides
 - maximises opportunities
 - Spreads funding and improves robustness
 - Downsides
 - some applications are less 'utopian'
 - Charities need to have a care who they work with

What's been done to date ...

Initial contact for ion acoustic measurements. ***Needs more work*** including simulation of planar environment

Alternate proton beam use for radiation damage – requires low energy protons that can deposit significant dose in $<1\mu\text{m}$.

non-spherical focussing element to direct low energy protons to appropriate focus. Useful for other purposes.

What *have* we achieved?

This is the bit where an undergraduate lecture would risk descending into humiliation as the students refuse to speak....

So I'll start..

- We've built and operated a proton beam line that delivers:
 - 10^9 ? protons centred on 8MeV with FWHM of 2-3?MeV.
 - Beam uniformity of x% and we have 'some' understanding of that measure
 - RCF procedure developed.
 - Know how to kill cells with no need for protons - plan to reduce collaterals
 - Learned how to run Bayesian beamline optimisations.
 - Trapped far more electrons than expected....

Use next x minutes to bulk this list up.... brainstorm

I have a picture to help...

ITRF

Ion Therapy Research Facility

