

# **CCAP MB #2**

5<sup>th</sup> December 2017

# Centre for the Clinical Application of Particles

## Management Board Meeting #2

Room 539, Level 5, The Blackett Laboratory, Imperial College London

Tuesday, 5<sup>th</sup> December 2017, 09:30—12:00

### Preliminary agenda

1. Welcome and goals for the meeting
2. Notes and actions from previous meeting
3. Director's report
4. Manager's report
5. Business case
6. Opportunities for development of links with industry
7. Future meetings:
  - a. Visit to MedAustron: 23/24 January 2018
  - b. Clinician-led meeting: 5 February 2018
  - c. Seminar series
  - d. Next plenary meeting
8. Date of next meeting
9. Summary of actions
10. Any other business

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**1.**

**WELCOME AND GOALS FOR MTG**

# This meeting

- Take stock
- Discuss/launch drafting of business case:
  - Goal: good draft by February?
    - Will require:
      - Financial plan;
      - Timetable/schedule;
      - Risk analysis
- Scientific 'life' of Centre:
  - The next plenary (2<sup>nd</sup> half of next term?);
  - Clinician led meeting (05Feb18);
  - Peripatetic seminar series;

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**2.**

## **NOTES AND ACTIONS**

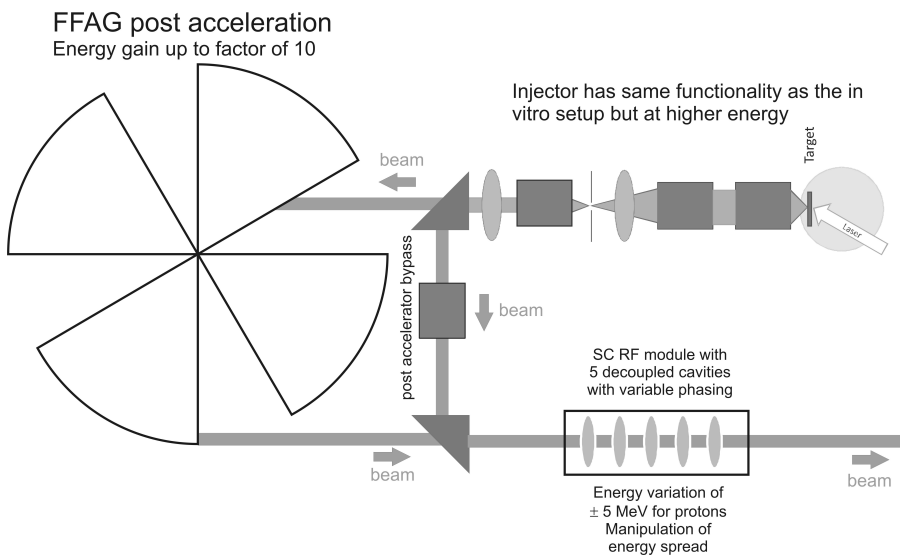
# Actions

- **BV:** Circulate list of s/w packages that simulate the passage of particle beams through tissue;
  - **Done.**
- **JY:** Circulate list of simulation packages presently in use within the ICR to simulate particle interactions with tissue;
  - **Done.**
- **VB:** survey the available treatment-planning software;
  - **Stands.**
- **VB:** Incorporate comments in the summary document tabled at the meeting and circulate for further amendment;
  - **Done.**
- **KL:** Seek volunteers to draft discussion documents outlining the programme to be carried out in each of the two themes outlined above;
  - **Superseded: will now be developed through drafting of business case.**
- **VB:** Organise “CCAP plenary meeting” in September 2017;
  - **Done.**
- **KL/VB:** Organise a “half-day” meeting to discuss the two themes outlined above;
  - **Superseded: will now be developed through drafting of business case.**
    - Such meetings may still be necessary, but, will be organised alongside the business case.
- **KL/VB:** Initiate organisation of peripatetic CCAP seminar series;
  - **Ongoing: see VB contribution.**
- **MH:** Invite CCAP members to take part in the MSc course on radiobiology that he runs at OIRO;
- **MW/DG:** Organise “clinician-led” CCAP programme-development meeting;
  - **Done: will take place 05Feb17 at CXH**
- **VB:** Circulate summary of industrial connections from R. Wilson
  - **Done.**
- **VB:** Identify date and time of the next MB meeting by Doodle
  - **Done.**
- **MW (with KL/VB):** Take forward the development of a concept for a paper that analyses the benefits of radical technological developments in the clinical use of particles.
  - **Ongoing.**

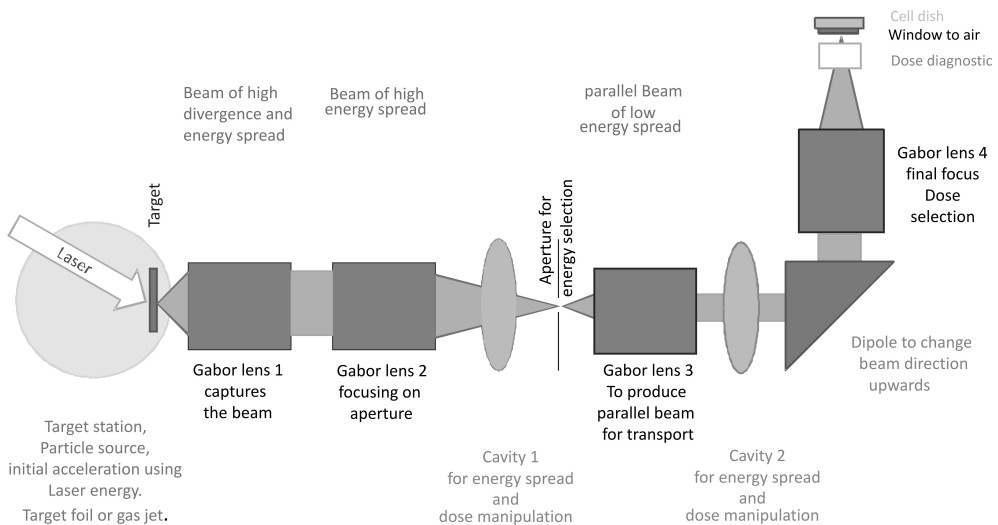
# 3.

## Director's report

### Ambition:



### Staging



# CCAP: approval

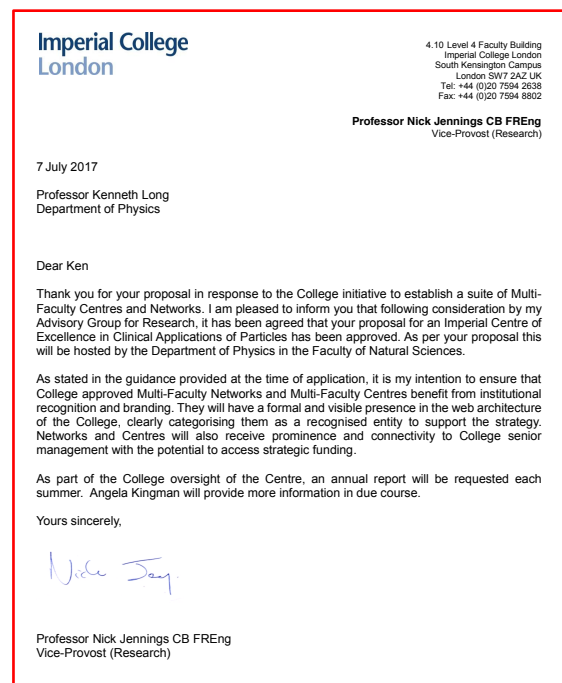
## Proposal (May17):

- Mission:

*“Develop the technologies, systems, techniques and capabilities necessary to deliver a paradigm shift in the clinical exploitation of particles.”*
- Principal goals:
  - Deliver a broad programme of measurement of the radiobiological effect of particle beams and systematic studies of radiobiological mechanisms;
  - Develop novel, compact, laser-driven accelerator systems for clinical applications; and
  - Develop novel diagnostic, imaging, data-processing, and machine-learning techniques.
- Context: CCAP within/under:
  - Cancer Research Centre of Excellence
  - CRUK Major Centre at Imperial:
    - Now approved;

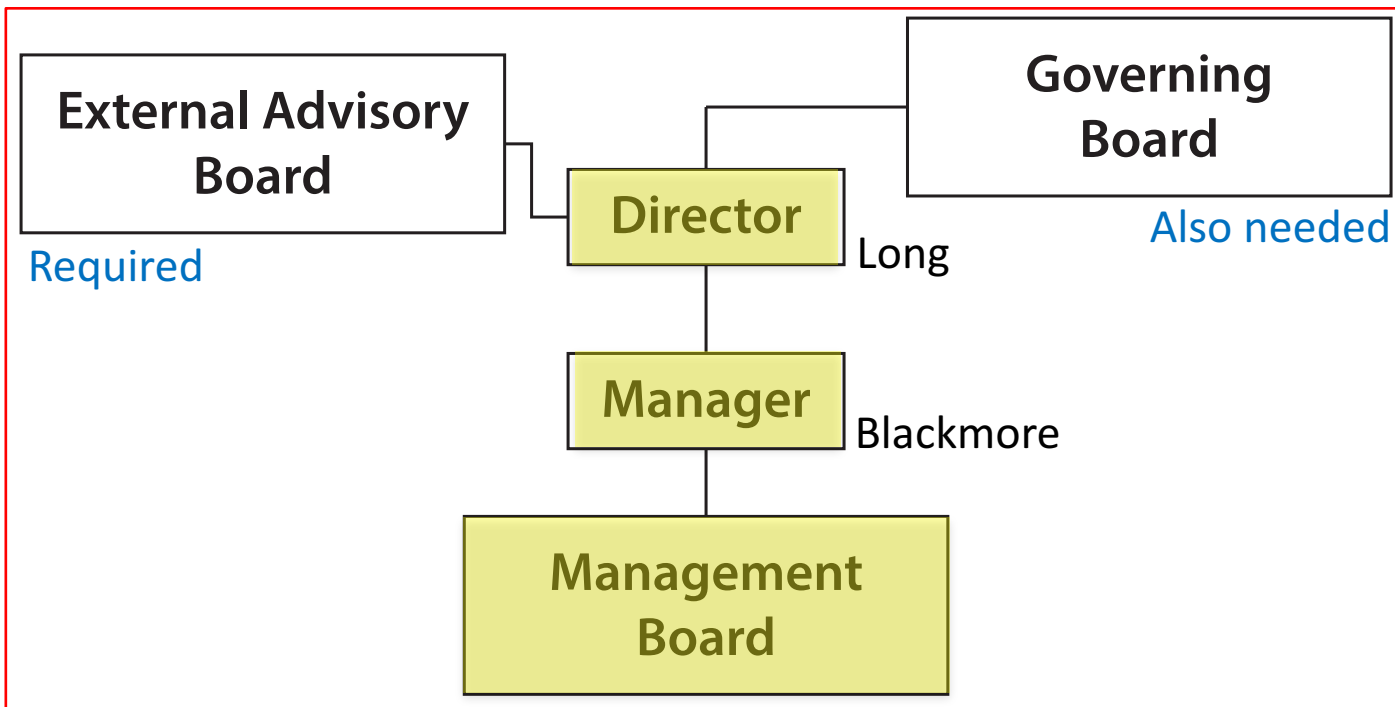
## Approval (Aug17):

- Effective start: beginning of this academic year





# The Centre now



- Management Board:
  - 2 persons per collaborating institute
- Urgently need:
  - “Business plan”, including:
    - Recapitulation of mission need;
    - Objectives:
      - Scientific, technical and education/training;
      - Including indicative time table
    - Targets for development:
      - Staff plan
      - Financial plan:
        - » Cost, schedule and risk
        - » Grant income, and who applies for what
    - Governance:
      - Governing Board:
        - » Stakeholder Board
      - External Advisory Board
        - » ~ 4 distinguished international figures:
          - Clinician, radiobiologist, accelerator, medical physicists?

# Proposals

Submitted since Centre approved:

- Imperial:
  - Excellence Fund for Frontier Research:
    - Leads:
      - Colling, Kurup, Pozimski, Gujral
        - » Possibly also McLauchlan & Richardson
    - Principal objectives:
      - Detect and reconstruct photons produced along track of beam;
      - Identify position of Bragg peak during treatment;
      - Image analysis/processing to allow beam tracking to be mapped onto anatomy
    - Value:
      - £250k
    - Status:
      - At top of Physics selection
- Rosetrees Trust:
  - Rosetrees Trust Interdisciplinary Prize:
    - Leads:
      - Long, Williams
        - » NPL: Romano, Shettino;
        - » OIRO: Hill;
        - » Physics: Najmudin, Pozimski
    - Principal objectives:
      - Construct a pre-production Gabor lens prototype and integrate it with the laser-driven particle source;
      - Devise and construct diagnostics and dosimetry capable of characterising the high-fluence, mono-energetic beams delivered by the system; and
      - Carry out a first set of in-vitro cell irradiations using laser-driven electron, proton and light-ion beams.
    - Value:
      - £250k
    - Status:
      - Submitted to Imperial by Physics Department

# Opportunities

- Gunnar Nielson Trust:
  - 50% funding for two lecturer positions
  - Matching funding:
    - Medicine: business case submitted (JM)
    - Physics: input to strategy round submitted (KL, ZN)
- Partnership with ISIS:
  - Strong relationship through existing joint appointments and joint projects
  - Timetable:
    - STFC accelerator strategy (now);
    - J.Thomason presentation to STFC FB (November);
    - Assuming green light:
      - Discuss MoU or exchange of letters
    - 50% funding for high-quality mechanical engineer/designer:
      - Mutual benefit; we can attract and retain higher quality personnel
- Industrial partner:
  - MedAustron:
    - Implementing a synchrotron for carbon ions
    - Want to carry out experiments to characterise
    - Well aligned with CCAP strategy
    - Ideally inject student into activity:
      - Low risk/entry-price
      - Valuable projects/experience now and in the future

# Other opportunities & contacts

- Daresbury Laboratory:
  - High-energy electron and photon beams;
    - Potential for experimentation
    - Potential to contribute to instrumentation and diagnostics:
      - Build our capability & credibility
- FOOT:
  - Fragmentation of target (Pavia)
- ERC MCSA ITN:
  - PhD/early career researchers
  - Pozimski to lead consideration
- CDT:
  - FoNS coordinated response to EPSRC call;
  - Have agreed to negotiate possibility of joining with separate bid from Bioengineering/Chemistry
- Collaboration with Uni Belfast?
  - VB will invite Kevin Prize (radio-biology, Belfast) for a seminar early next year;
    - Gd doped nano-particles:
  - Imperial Physics extant collaboration on laser acceleration
- White City Campus:
  - Meeting with J. Anderson and E. Roberts:
    - Awaiting feedback
- Imperial Advancement:
  - Contact (phone/email) M. Rees-Roberts:
    - Looking for an appointment

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# **MANAGER'S REPORT**

# Finance

- In progress:
  - Excellence Fund for Frontier Research
    - Ultra-fast prompt photon imaging for proton beam therapy
    - £250k over 2.5 years
    - Long/Colling/Pozimski
    - Submitted
  - Rosetrees Trust
    - Laser-driven ion beams for radiobiology
    - £250k over 3 years
    - Williams/Long/Romano (NPL)/Schettino (NPL)/Hill/Najmudin/Pozimski
    - Submitted
  - CCAP Strategy/Gunnar Nilsson Trust
    - Proposal to support two lecturer appointments to develop a radiobiology programme. One FoM, one FoNS.
  - Joint PhD student with MedAustron/Uni of Vienna
    - In discussion
    - Could also consider submission to European Partners Fund (below)?
- To consider
  - European Partners Fund
    - Imperial, deadline: 23/01/18
    - Supports collaborations within Europe, particularly new collaborations.
    - Up to £50k, can support institute visits/networking/training opportunities
    - Early career researchers particularly welcomed
  - FoNS Strategy Research Funding
    - Imperial, deadline: 25/02/18
    - Collaborative Initiatives Kickstart Funding, SME Engagement Funding
    - Small, short (<£20k, <12 months)
    - Kickstart funding for exploratory studies and short research projects with SME's that can lead to longer term, fully funded, collaborations.
  - CRUK Multidisciplinary Award
    - CRUK, 24/01/18 (preliminary submission)
    - Up to £500k over 4 years
    - Two PIs working in distinct scientific disciplines, at least one from cancer research and one from an engineering/physical science.
  - EPSRC Healthcare Technologies
    - Flexible closing dates, next batching for consideration in January 2018
    - Flexible funding amounts and period
    - Applications would be far stronger with a business case (see later)
    - Project must develop some novel physical science component with a multidisciplinary team that understands the science and clinical need. Project must align with the EPSRC Healthcare Technology Strategy (for which we tick many boxes)
  - MRC Highlight Notices
    - Specifically calls out radiation oncology and biology as an area of interest to the MRC
    - Multiple grants with deadlines on 04/01/18
  - Marie Curie Actions: Innovative Training Networks
    - Horizon 2020, deadline 17/01/18
    - Application would be far stronger with a business case (see later)
    - Joint research training and PhD programmes, fostering relationships between universities, research institutes and businesses.

# Schedule

- Business Case
  - Will help articulate the vision and clinical need
  - Set out:
    - Our goals/ambitions – how do we defined a successful outcome?
    - What we have/what can we do now
    - What we need
    - Where do we add value?
    - Who we're working with (key partners, academic and industrial)
    - Work packages to achieve those goals, timescales
  - Will be very useful for Marie Curie ITN
    - (And every other funding call!)
    - January as an ambitious deadline? (ITN deadline: Jan 17<sup>th</sup>)
- Future Meetings
  - MedAustron visit: 23<sup>rd</sup>/24<sup>th</sup> January 2018
  - Clinician-led meeting: Feb 5<sup>th</sup> 2018
  - Next “plenary” meeting: TBD
  - Seminar series: Termly?
  - Next MB meeting: TBD
- Web
  - How we present ourselves to the world/collaborators
    - Ideally, want this live before seminar series begins so we can advertise it widely
    - Short bio's of members a simple place to begin (to A. Kurup/me by Dec 20<sup>th</sup>)
  - Needs structure and content
    - Then about a week to make the website live
    - Must have completed an Imperial training course to be allowed to edit the website (A. Kurup has done this)
- Wiki
  - Provide a space where we can keep track of proposals and non-public information
  - Imperial will provide and manage a wiki, but it requires non-Imperial members to get a guest account via A. Kurup
  - Should **use** the wiki and decide if it suits our needs
    - Trial its use while writing business case
    - If not fit for our purpose, need to identify an alternative before next MB

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## **BUSINESS CASE**



# Discussion

- Mission need
- Scientific programme
- Development programme:
  - Including 'aspirational' schedule
- Financial plan
- Staffing plan
- Risk/benefit
  - Technical, financial, reputational ...