

ENLIGHT 2018:

University College

London

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- 7th highest ranked university in the world for research.
- Most highly cited university in Europe for medical research.
- 45,000 research staff and students.
- Annual research income £530M.
- Over 300 PIs in cancer research.

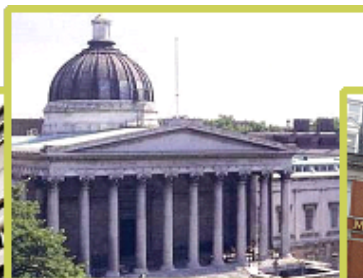
- Largest academic health sciences partnership in Europe.
- Largest neurosurgical centre in Europe.
- Largest sarcoma service in Europe.
- 3rd largest paediatric cancer clinic in the world.



UCLH



Royal Free



UCL



Moorfields



GOSH

Biotherapeutics

Mechanistic understanding of response and resistance in models and humans

Cancer Evolution

Evolutionary dynamics of immune-tumour interactions

Imaging and monitoring

Micro-environment, biotherapies, treatment response, adaptive therapies

Personalised drug manufacture

Large scale, efficient production of personalised therapies

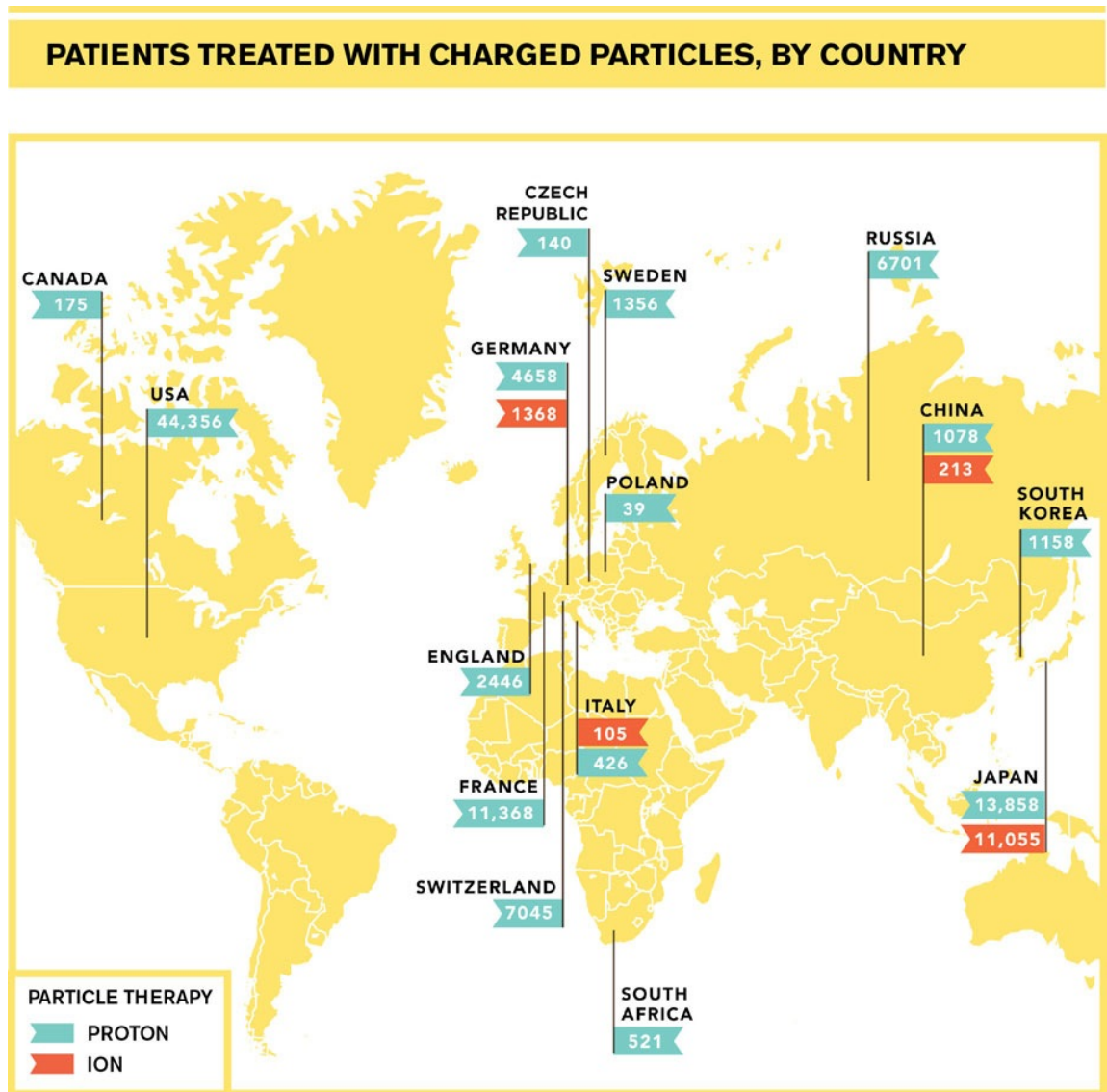
Targeted therapies

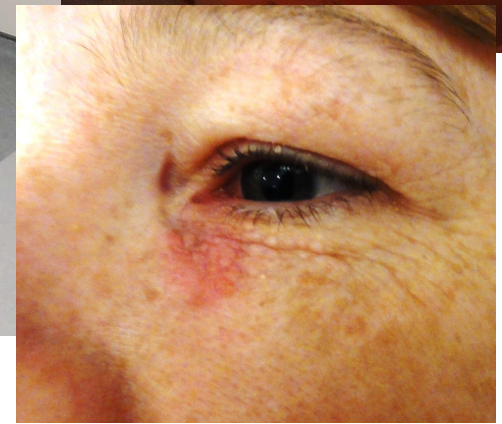
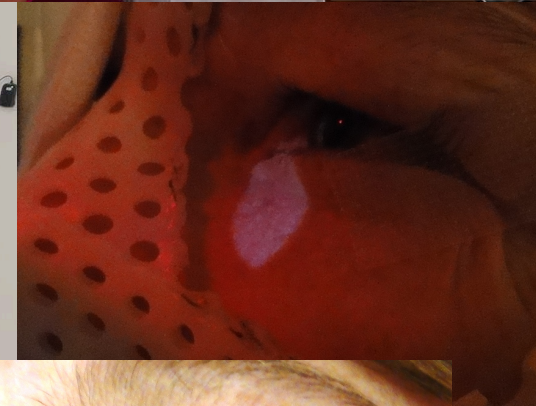
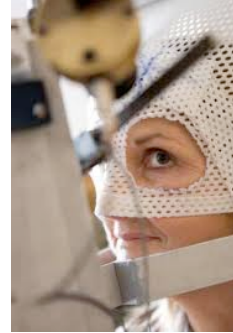
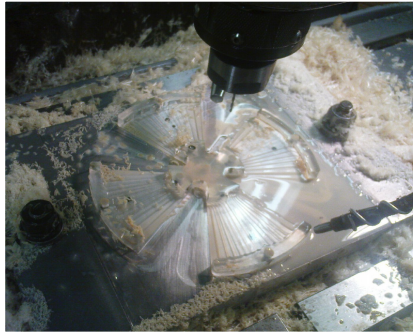
Conformal radiotherapy, **proton therapy**, associated technology

Combination trials

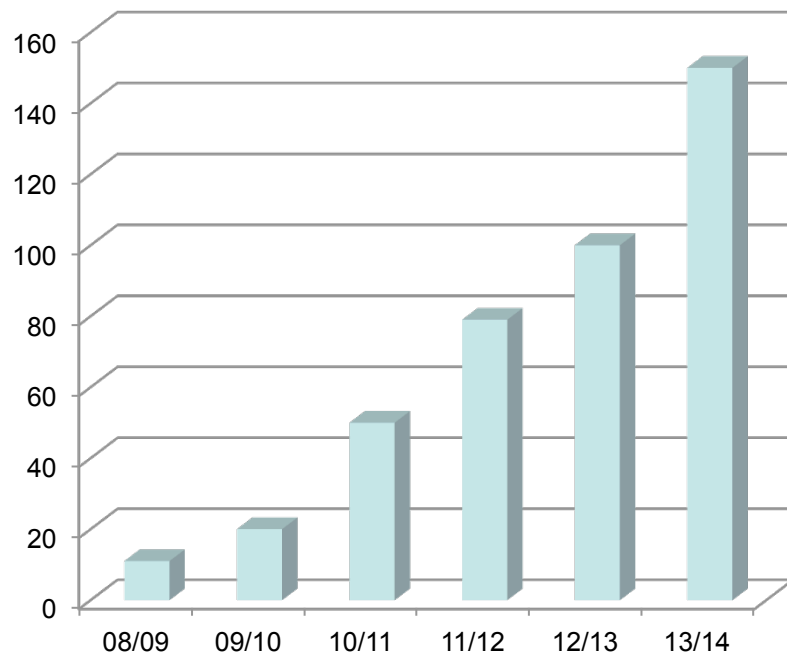
Proof of concept of precision combinations

- To date, all PBT patients treated in the UK are for eyes (choroidal melanoma).
- Clatterbridge 1989: world's first hospital based cyclotron
- Over 3000 patients
- Excellent Results:
 - 95% local control
 - 90% preservation of eye
 - 80% preservation sight
- Complex service.
- Durability of expensive equipment





- Since 2008 NHS England has approved:
 - 345 Adults
 - 791 Children
- Quality Inspections – 3 Overseas Centres
- Commissioning via Evidence Based Policies
- All cases reviewed by National Expert Panel
 - Outcomes tracking programme
- **Adult:**
 - Base of Skull & Spinal Chordoma
 - Base of Skull Chondrosarcoma
 - Spinal & Paraspinal Bone and Soft Tissue Sarcomas (Non Ewing's)



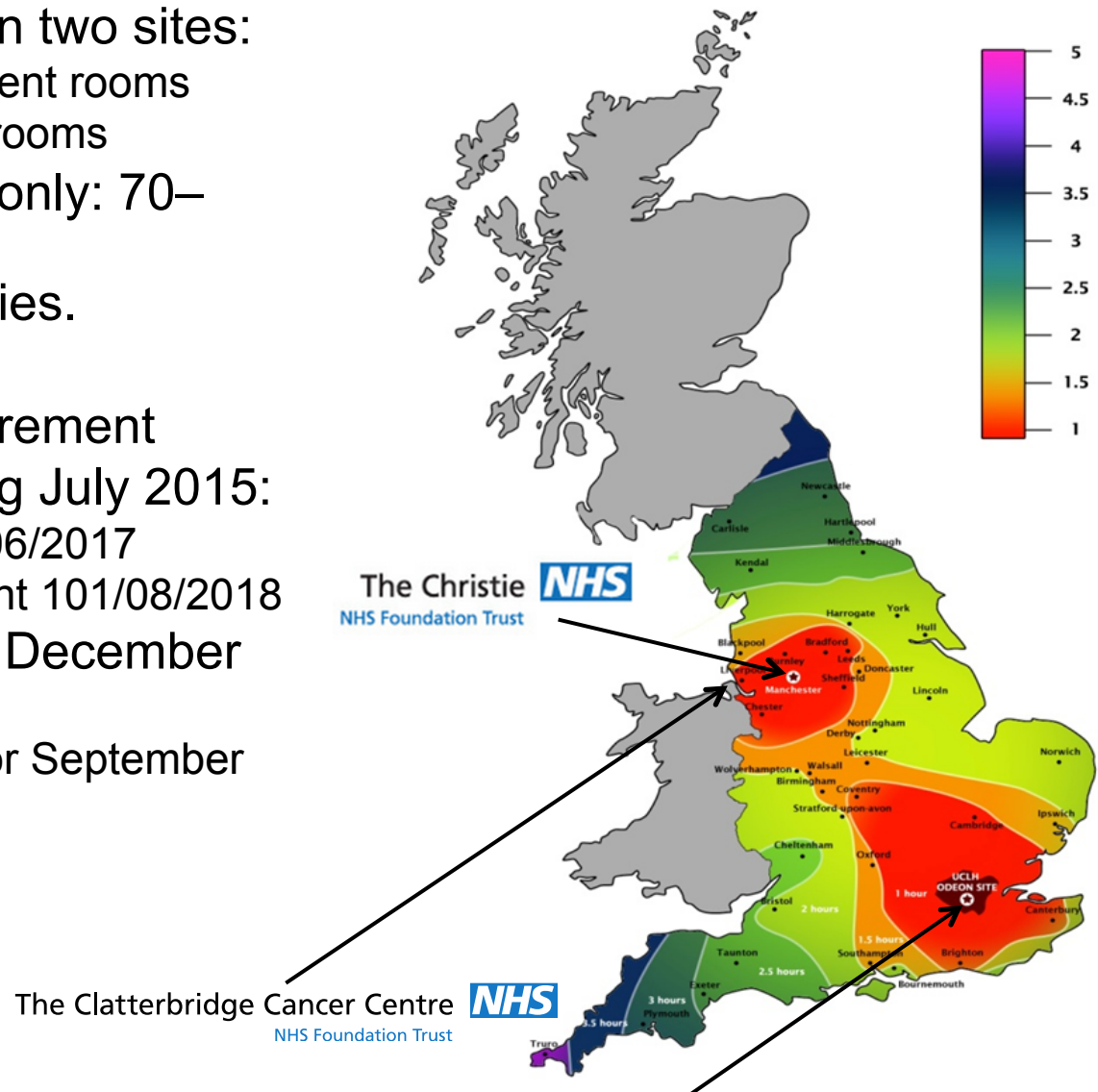
- **Paediatric:**

- Base of Skull & Spinal Chordoma
- Base of Skull Chondrosarcoma
- Spinal & Paraspinal 'adult type' Bone and Soft Tissue Sarcomas
- Rhabdomyosarcoma
- Orbit
- Parameningeal & Head & Neck
- Pelvis
- Ependymoma
- Ewing's Sarcoma
- Retinoblastoma
- Pelvic Sarcoma
- Optic Pathway and other selected Low Grade Glioma
- Craniopharyngioma
- Pineal Parenchymal Tumours (not Pineoblastoma)
- Esthesioneuroblastoma

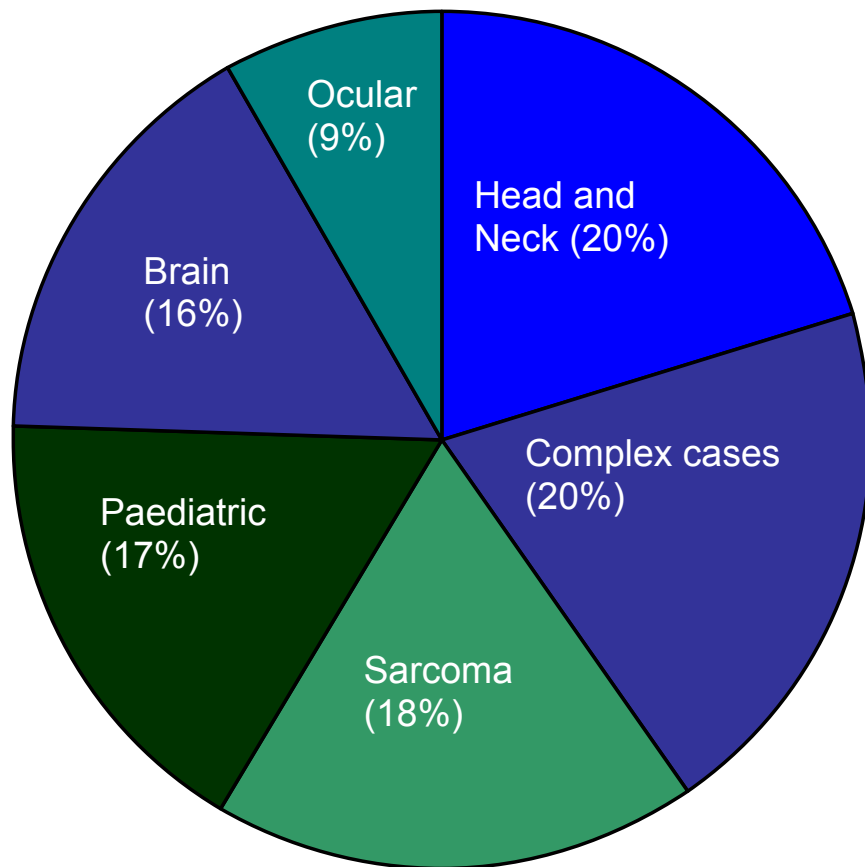


- 2007 Cancer Reform Strategy
 - Recommended Treatment Overseas and Explore Business Case UK based centre(s).
- 2008 Overseas Programme
 - Within NHS Highly Specialised Commissioning.
- 2010 the ‘Trust Beauty Contest’:
 - The Christie Hospital, Manchester.
 - UCLH, London.
- 2011 Strategic Outline Case England.
- Ministerial Approval.
- 2015 Full Business Case Approved.

- New national service on two sites:
 - Manchester – 3 treatment rooms
 - London – 3 treatment rooms
- Pencil beam scanning only: 70–245 MeV.
- Full 360° rotating gantries.
- Joint Equipment Procurement
- Christie Started building July 2015:
 - Cyclotron delivery 22/06/2017
 - On Track for first patient 101/08/2018
- UCLH Started building December 2015:
 - First patient planned for September 2020
- First patients:
 - Manchester: 2018
 - London: 2020



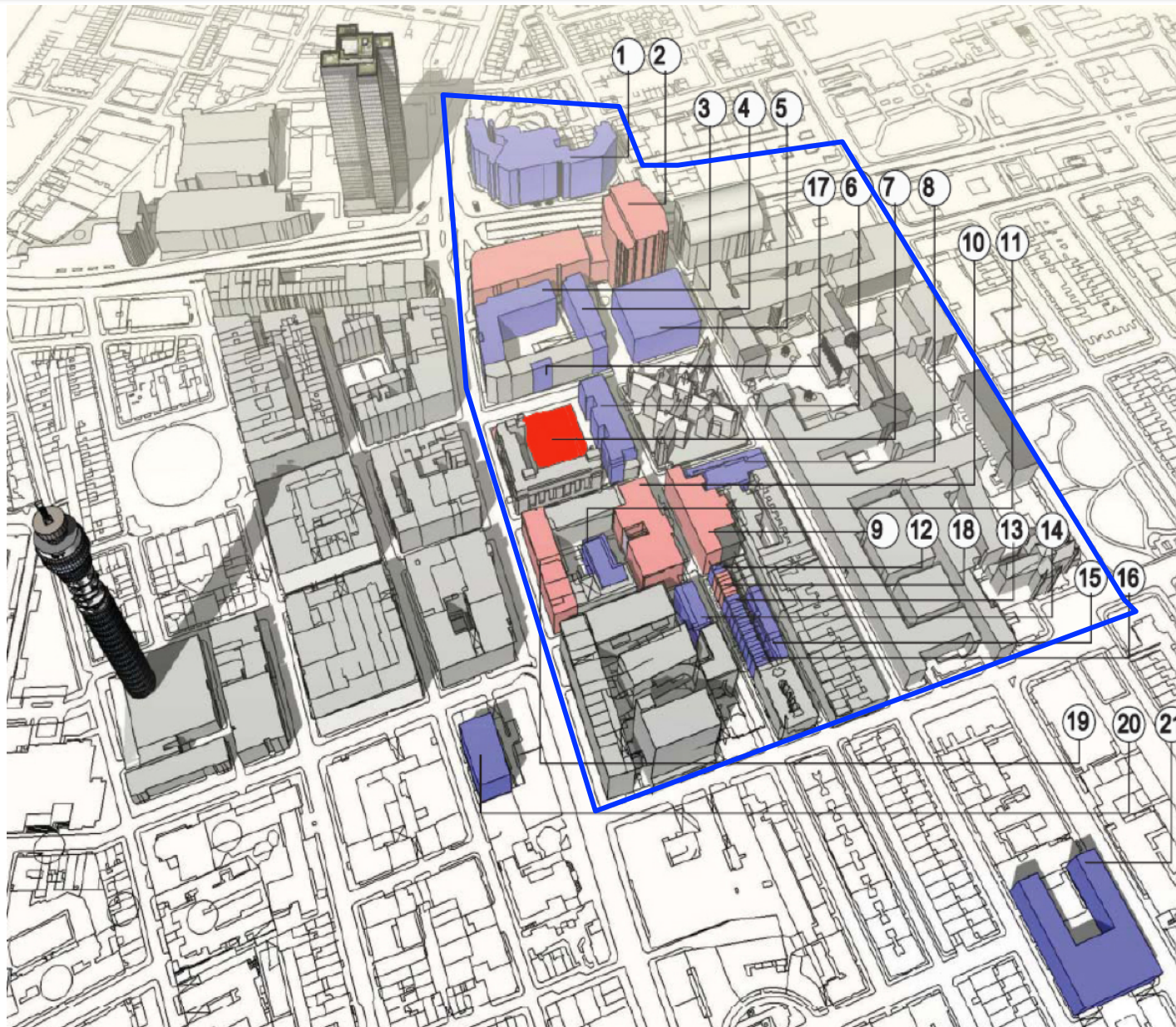
Cancers approved for proton therapy in England
(Total = 1,666)







- Paediatric:
 - Chordoma
 - Chondrosarcoma
 - Rhabdomyosarcoma
 - Parameningeal
 - Pelvic
 - Orbit
 - H&N
 - Osteosarcoma
 - Ewing's
 - PPNET
 - Ependymoma
 - Low Grade Glioma
 - Optic pathway Glioma
 - Craniopharyngioma
 - Medulloblastoma
 - Hodgkins
 - Retinoblastoma
- Adult:
 - Choroidal Melanoma
 - Ocular / Orbital
 - Chordoma
 - Chondrosarcoma
 - Para-spinal Sarcoma
 - Paranasal Sinuses
 - Meningioma
 - Acoustic Neuroma
 - Craniospinal RT – pineal
 - Teenage & Young Adult
 - Atypical Cases Common Indications

UCL Cancer Campus

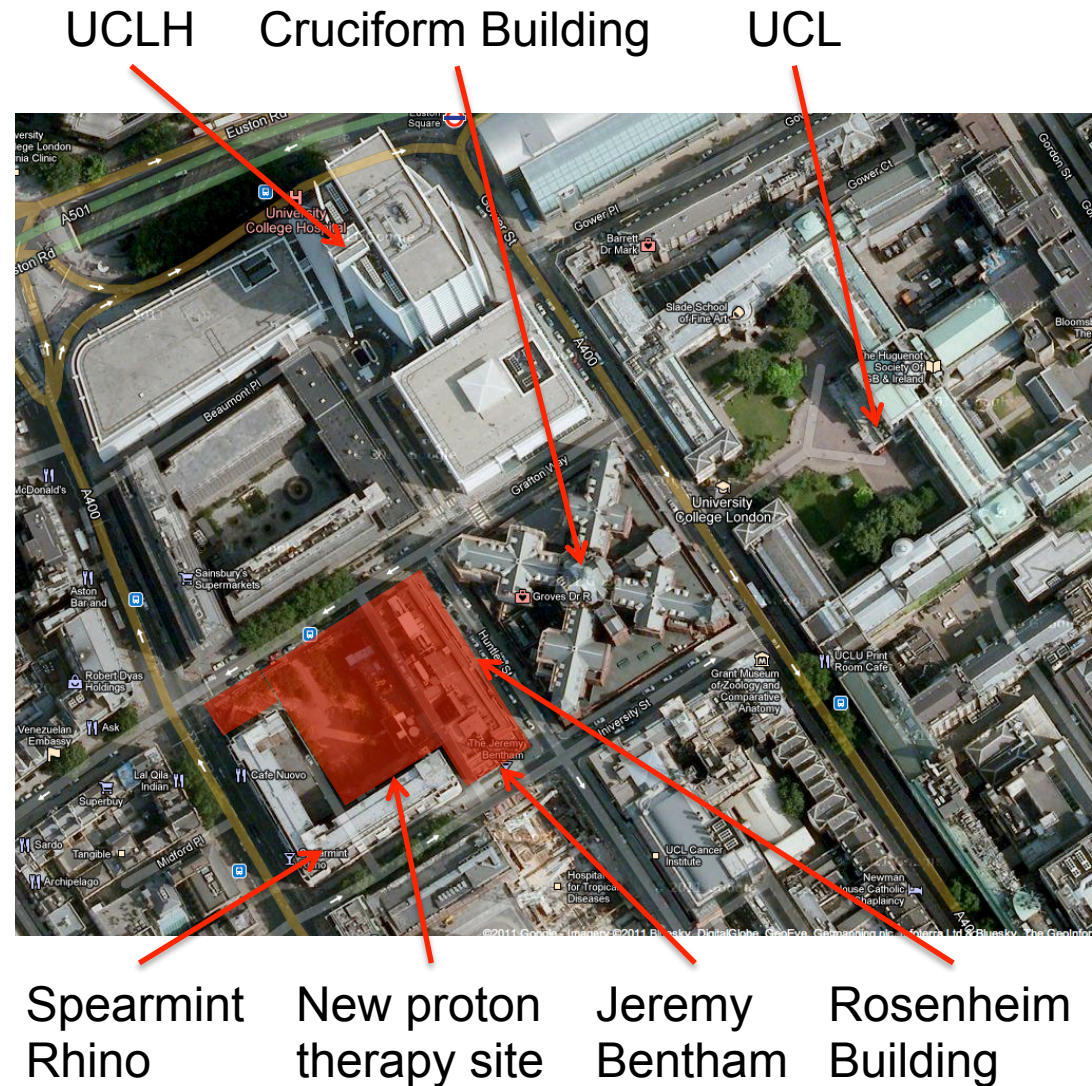
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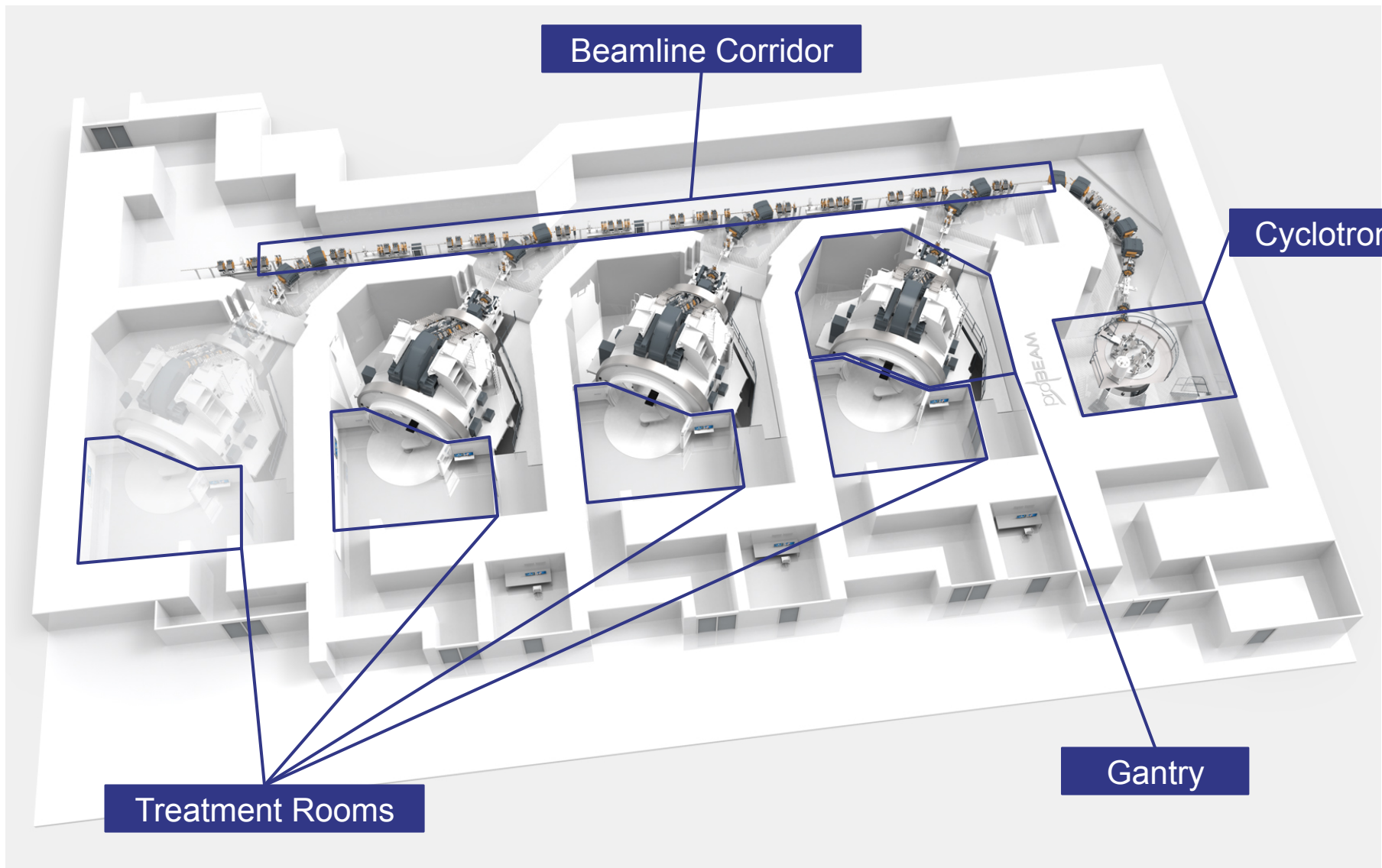


-  UCLH CAMPUS
-  UCL CAMPUS
-  Clinical cancer
-  Proton centre

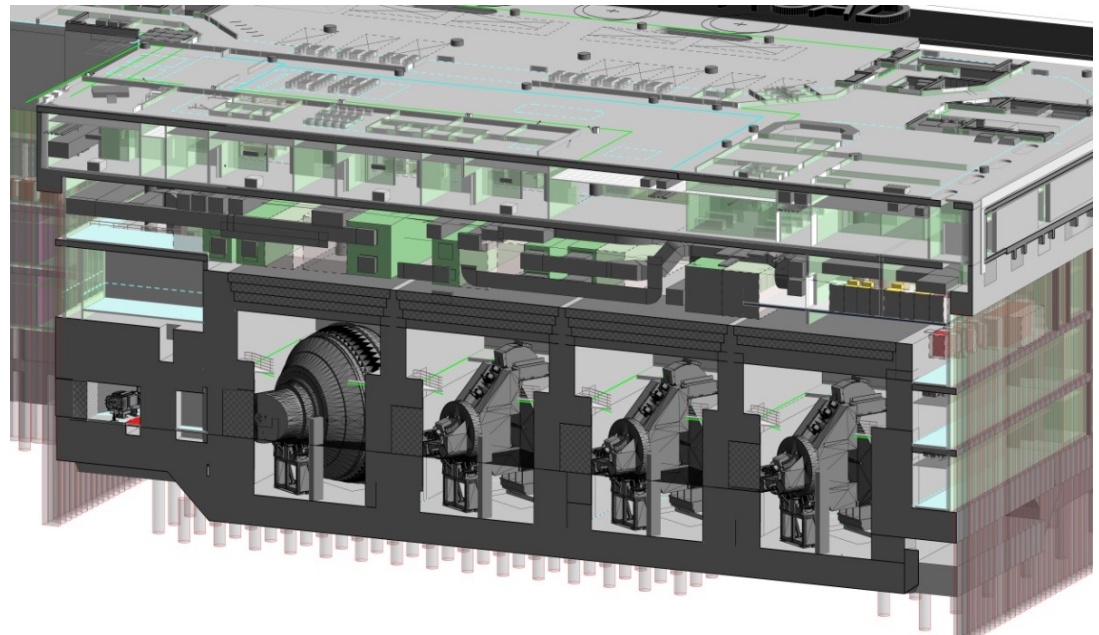
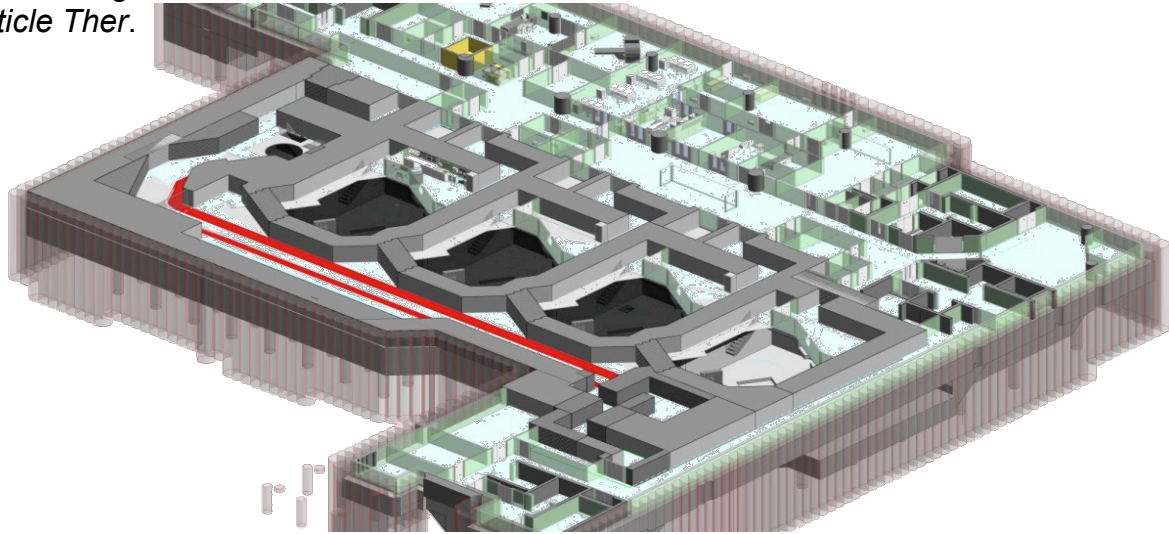
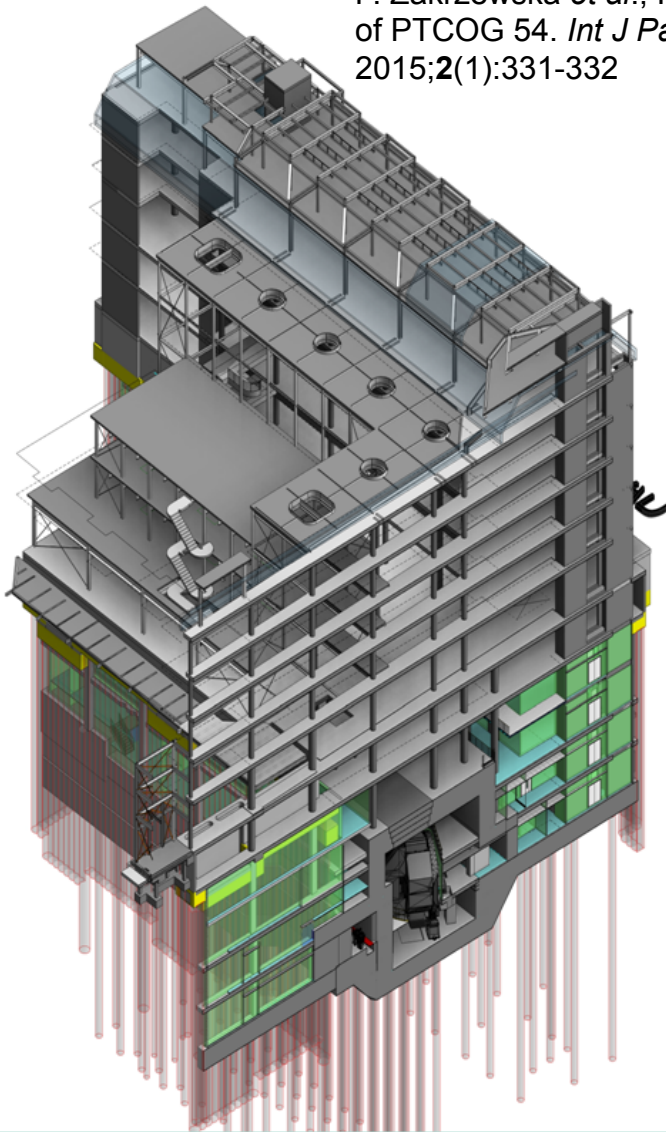
UCLH Proton Beam Therapy Site

- New facility will be on existing UCLH site, next to Tottenham Court Road.
- Linked to UCLH via walkways to allow easy patient transfer.
- Due to open 2020 (2 years after The Christie).
- Varian cyclotron and 4 360° gantries.



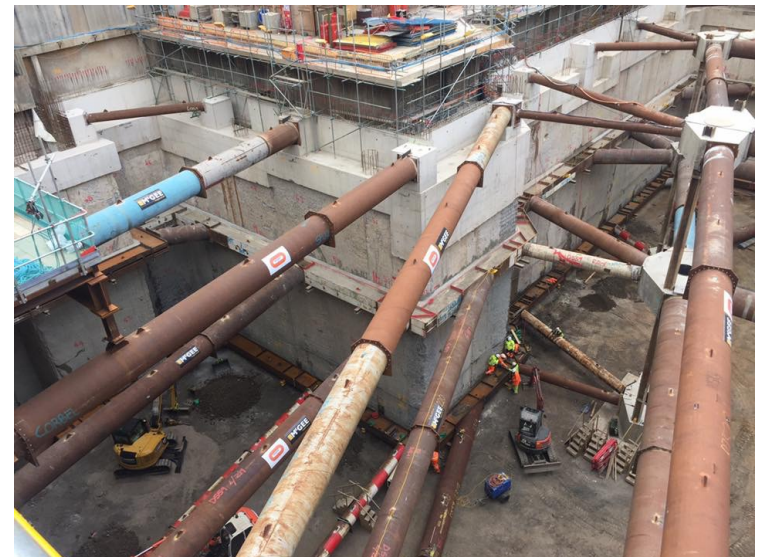
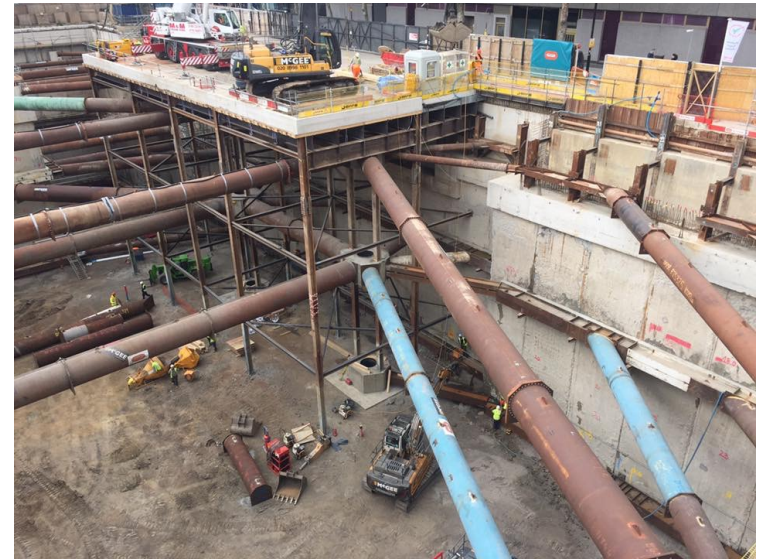


P. Zakrzewska *et al.*, Proceedings
of PTCOG 54. *Int J Particle Ther.*
2015;2(1):331-332



UCLH PBT: The Big Dig...

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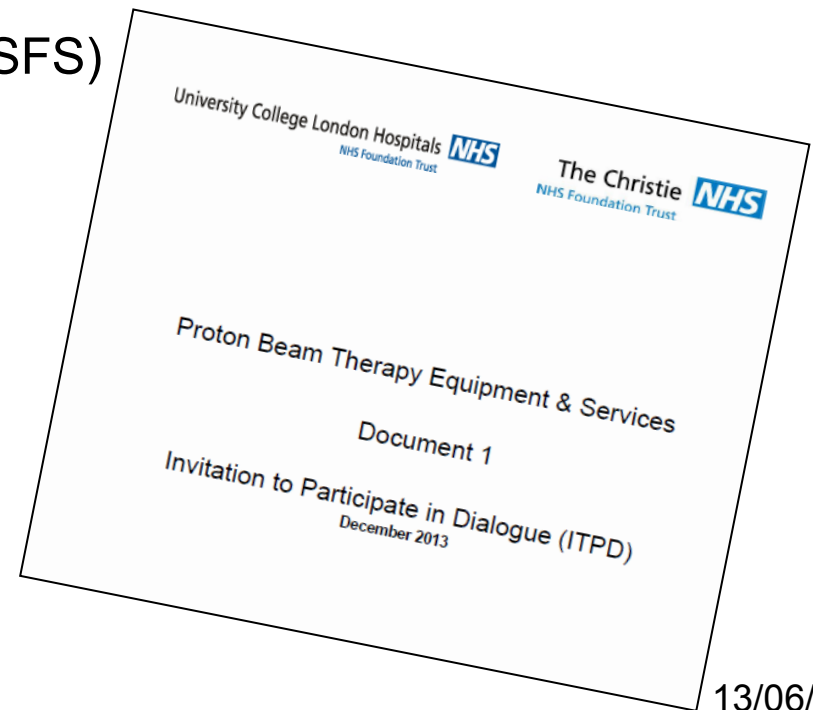
Onwards to 2020...

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Spare Slides

- Competitive Process
- OJEU tender under European procurement laws
- Pre-qualifying questionnaire (PQQ)
- Invitation to participate in competitive dialogue process
- Three vendors:
 - Initation to Submit Outline Solution (ISOS)
- Two vendors:
 - Initation to Submit Final Solution (ISFS)
- Preferred bidder status
- Full business case approval
- Overall evaluation:
 - Technical 70%
 - Financial 30%
 - Capital 15%
 - Maintenance contracts 15%



NHS Procurement Scoring

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Document 4 - Technical Questionnaire

2.1 Conditions of Supply of Equipment

2.2 Support & Training

2.3 General Facility Environmental Specifications

2.4 Electricity and power & Building Infrastructure

2.5 Equipment Reliability, Efficiency and Uptime Specifications

2.6 Installation & Beam Transport Commissioning

2.7 Radiation Protection

2.8 General Safety / Interlocks

2.9 Control and Monitoring Systems

2.10 Operations, Maintenance and Quality Assurance

2.11 Proton Accelerator and Beamline Parameters

2.12 Clinical Beam Characteristics

2.13 Clinical Cases

2.14 Dosimetry

2.15 Treatment Room Specifications

2.16 In-Room Image Guidance Systems

2.17 Treatment Planning, Verification and Oncology Management Systems

2.18 Upgrades, Innovations and Retrofits

2.19 Fourth Room Option and Research

130 Questions:

- 31 Pass/Fail
- 35 For information only (needed for compliant bid)
- 64 Scored
 - 4 - Excellent confidence
 - 3 - Very good confidence
 - **2 - Good confidence**
 - 1 - Minor concerns
 - 0 - Major concerns

Facility opening times:

- 24 Hours/day
- Clinical time:
 - 5 days per week
 - 14 Hours per day
- Outside treatment hours:
 - Quality Assurance Checks
 - Maintenance Requirements
 - Research



