PARTNER

Particle Training Network for European Radiotherapy

http://cern.ch/PARTNER

Hadrontherapy uses particle beams to treat tumours located near critical organs and tumours that respond poorly to conventional radiation therapy.

It has become evident that there is an emerging need for reinforcing research in hadrontherapy and it is essential to train professionals in this rapidly developing field.

PARTNER is a 4-year Marie Curie Training project funded by the European Commission with 5.6 million Euros aimed at the creation of the next generation of experts. Ten academic institutes and research centres and two leading companies are participating in PARTNER, that is coordinated by CERN, forming a unique multidisciplinary and multinational European network.

The project offers research and training opportunities to 25 young biologists, engineers, physicians and physicists and is allowing them to actively develop modern techniques for treating cancer in close collaboration with leading European Institutions. For this purpose PARTNER relies on cutting edge research and technology development, effective networking, and open access to national facilities as well as providing training by specialists in this field.

Ongoing PARTNER activities aim to:

- Create new knowledge through multidisciplinary studies
- Enhance clinical research
- Implement the most recent developments from e-Health
- Develop the next generation of monitors and detectors
- Advance the European common demonstration platform
- Train and educate through workshops and courses the European clinicians and medical physicists.

PARTNER course "Detectors and Accelerators Applied in Medicine", held at IFIC, Valencia, Spain in June 2009

Multidisciplinary PARTNERships to fight cancer

PARTNER research projects focus on the following areas:

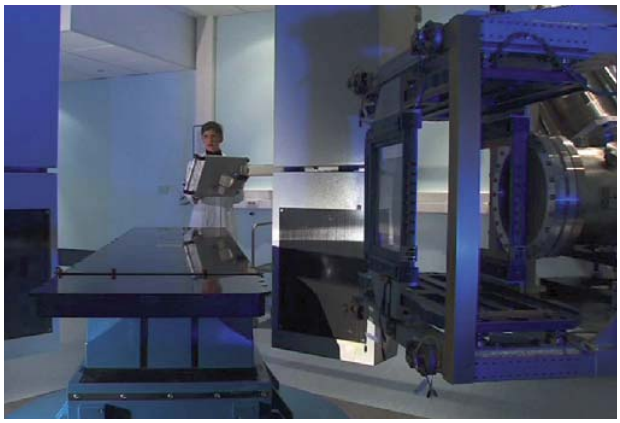
Clinical Studies and Epidemiology
Research focusing on the effect of hadrontherapy on tumour control, overall survival and quality of life for a wide range of cancer types.

Radiobiology
Biological experiments for hadrontherapy with the purpose of elucidating the underlying biological mechanisms and discovering pathways to increase the effectiveness of treatment while protecting the healthy tissues.

Simulation, Dosimetry and Treatment Planning
Development and tuning of the physics simulation codes for their direct implementation in the Treatment Planning systems for hadrontherapy in the clinical environment.

Image Guided Hadron Therapy and PET Prototype
Application of high-tech systems for optimizing patient treatment in hadrontherapy and increasing the accuracy in localization of the tumour during the treatment protocol.

Novel Accelerator and Gantry Studies
Development and design of new accelerator-related technologies with affordable cost, reduced dimensions and optimal performance for clinical requirements.



Hadrontherapy treatment room (courtesy of CNAO)

Information and Communication Technologies and Networking
Research and collaboration between different European centres towards the creation of a prototype GRID test-bed for hadrontherapy and the promotion of common tools and strategies in Europe.

Layout of a hadrontherapy clinical facility (courtesy of IBA)

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Contact: Manjit Dosanjh – ENLIGHT Coordinator

Email: enlight@cern.ch