

The Role of the ISC on OpenMED (bioLEIR)

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The 7 CERN Initiatives

- Radio-Isotopes (imaging and possibly treatment)
- **Detectors** for beam control and medical applications
- **Diagnostics and Dosimetry (pot)** for radiation therapy
- Biomedical Facility
 - creation of a facility at CERN that provides **beams of different types and energies to external users** for radiotherapy and detector development
 - Iterative experimental verification and optimization results
- Large Scale Computing for simulations, treatment planning telemedicine
- Computer Simulations for Medical Applications
- New Updates for Accelerator Design
 - coordinating international collaboration to design a **new compact, cost-effective facility**, using the most advanced technologies
- “C” Applications; Ablative Therapies...

Each Initiative is part of a package but also is important as a stand-alone project

We have many accelerators at CERN

But, one is a perfect bio-medical test-bed, LEIR

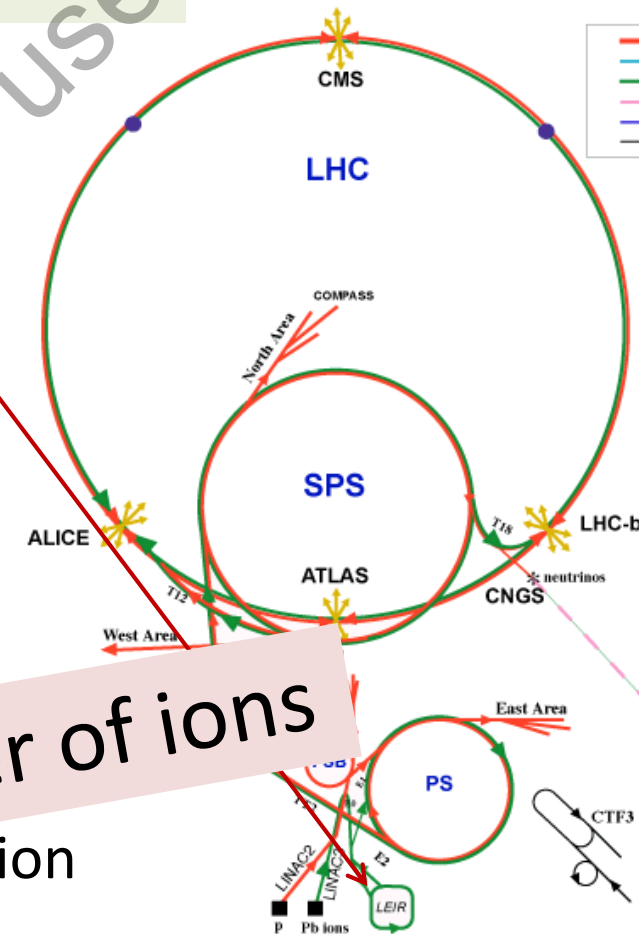
LEIR (Low Energy Ion Ring)

- part of LHC injection chain
- accumulator for LHC ion programme (lead ions)
 - only used for several weeks / year

• Facility

- Test-bed for medical instrumentation
 - **Diagnostics and dosimetry**
- **Radiobiology:**
 - **verification of medical simulations** with many different particles
 - basic physics and characterization of ion

Unique feature is the range/number of ions



Biomedical Research Facility at LEIR



My Requests to members of the ISC

- Endorse the **need** for the facility
 - Consider and suggest other possible uses
- Contribute to the conceptual design report
 - Medical and technical input
- Help **lobby** for funding: advise on funding options (later)
- Encourage the **use** of the facility
- Propose **experiments** on the facility
- **Promote collaborations** between the various centres world wide which will be performing similar experiments

OPENMED Facility Summary

- Need a new Front End (Source)
 - LEIR can provide ions of interest for biomedical studies up to <430 MeV for fully stripped ^{12}C or ^{16}O ions
 - Study well under way:
 - (Re-)implementation of slow ejection with longitudinal and/or transverse excitation
 - New extraction channel (septa) and transfer line to experiment
- Need the **Funding (~15MCHF) for Implementation**

Endorsement for OPENMED (bio-LEIR)

So far we have endorsements from

- **ISC members (25 prominent medical specialists)**
- **Editors in Chief of Radiotherapy and Oncology; M. Baumann, and Jens Overgaard**
- **President/Vice Chancellor of Queens' University Belfast**
who also wrote to:
 - Lee Helman, Norm Coleman and Doug lowy at **NCI**.
- **Christie, Manchester (Karen Kirkby, Hywel Owen, Simon Jolly)**

- **Vikram (NCI)** who also suggested
 - **Dr. Abdel-Wahab**. Director - Division of Human Health IAEA
 - **Dr. Varghese**, Coordinator, Management of Noncommunicable Diseases (MND) Management of Noncommunicable Diseases, Disability, Violence and Injury Prevention Department (NVI) World Health Organization
- IAEA **Oleg Belyakov** who wrote to
 - International Association for Radiation Research (IARR), the current President Prof Mary Helen Barcellos-Hoff;
 - (USA) Radiation Research Society, the current President Prof Gayle E Woloschak ;
 - European Radiation Research Society (ERRS), the current President Prof Wolfgang Dörr,
 - **Dr Hans-Georg Menzel**, ex CERN member of staff and current ICRU Chairman.
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- **Radhe Mohan (MD Anderson) wrote to**
 1. Stephen Hahn, Head and Professor, Division of Radiation Oncology, MD Anderson Cancer Center
 2. Steven Frank, Professor and Director, Proton Therapy Center, MDACC
 3. David Grosshans, Associate Professor, MDACC
 4. Hak Choy, Professor and Head, Department Radiation OPncology, UT Southwestern, Dalla, TX
 5. Michael Story, Professor, UTSW
- **France-Hadron: Denis Dauvergne, and Jacques Balosso.**
- **IFIMED Valencia, Jose Bernabeu** (suggested by A. Faus-Golfe)
- **John Adams Institute (Oxford)**
- **Cockcroft Institute (Daresbury UK)**

Advice on Funding

- Sources already investigated
 - CERN (...unlikely)
 - EU (no funding so far, but still trying)
 - Through the CERN Technology transfer office (already 0.65MCHF)
 - Donations: Philanthropists, cancer foundations etc (via CERN fundraising unit, already 1MCHF)
- Other Possibilities
 - EFSI (European Fund for Strategic Investment): **Loan from EC,** needs a business plan.
 - ?other ideas

Logic behind a Business Plan

- CERN/EU may not fund
- EU/EIB have shown interest in providing a **LOAN** (EFSI)
- EU have indicated that they would consider funding for **experiments** on the facility but **NOT** for the conversion **(infrastructure)**
- Is **charging for beam time** an option? (Business Plan)
 - The cost of the beam time could be part of the funding for experiments from the EU

Thank you for your
attention

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