Bridging the Gap Between Basic and Clinical Research

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Barriers and Opportunities in Translational Research

- Promise of the new technologies
- What is Europe doing?
- Challenges ahead
- Are we conveying a coherent message?
May you live in interesting times!

Clinical data

Pathology

Gene mutation

RNA profiling

Protein profiling

Protein network

DNA damage

ATM

ATR

Nbs1

Mre11

Rad50

Chk2

Chk1

p53

p21

Cyclin E

Cdk2

Tlk1

Snc1

Cdc25A
The completion of the human genome project and the explosion of technologies within genomics, proteomics and functional genomics promise to have a major impact on clinical practice, as these developments are likely to change the way in which cancer will be diagnosed, treated, and monitored in the near future.
Detecting cancer at an early stage, predicting how a tumour will behave and act in response to therapy, as well as the identification of novel targets for therapeutic intervention are among the main areas of research that will benefit from the new technologies.
As a consequence of these developments we are rapidly moving from population-based risk assessment to a predictive, personalized approach of cancer care that will be based on molecular classification of disease and targeted therapy.
Personalized Therapy

Better biological understanding of the disease

Tumor classification (contribution of multiple data sets)

Derive predictions customized to the individual patient

Who can be spared therapy?

Which therapy will work best?

Therapy to which the patient may respond

Molecular Pathology

Molecular Oncology
What is Europe Doing?
Europe (FP7; 2007-20013) has placed the patient at the centre of cancer research

Translating Research for Human Health
Cornerstones in Reaching the Patient

A global vision for cancer research (EUROCAN+)

Multi-disciplinarity (team work)

Infrastructures and resources
Patient

- Industry
- Legal and ethical issues
- Patient organizations
- Member States
- European Commission (FP7)
- European Research Council (ERC)

Clinical Trials

Discovery-driven Translational Research

Basic Research ↔ Clinical Research

Infrastructures

Bioinformatics, structural biology, repositories, bioimaging, technology platforms, clinical trial units, biobanks, patient databases, etc.
Challenges

- Funding
- Infrastructures/sustainability
- A more realistic approach from basic researchers to the real clinical problems
- Sharp divide between academia and industry
- Human resources
- New technologies
- Legal issues
- IPR issues
- Career development
Funding Opportunities in FP7

- **ERC grants**: Individual investigator grants ala NIH or NSF, first call out for junior investigators
- **Normal research calls, Health**: Biotechnology, generic tools and medical technologies for human health
- Translating research for human health
Funding

• Develop mechanisms that allow translational research to compete effectively against basic research
• Long-term, flexible funding without strings attached
• Coordination of EU and National Programmes
Infrastructures
FP7 BMS Research Infrastructures

- European Advanced Translational Research Infrastructure in Medicine **EATRIS**: 50 M/year
- Biobanking and Biomolecular Resources: 15 M/year
- **Infrafrontier** (mouse): Phenomefrontier, Archivefrontier (mouse): 36M/year
- Infrastructure for clinical trials & biotherapy facilities: 5M/year
- Integrated **Structural Biology** Infrastructure: 25M/year:
  - Protein production, NMR, crystallography, different forms of microscopy
- Upgrade of **EBI**: 7M/year: Shared biological data collection, storage, annotation, validation, dissemination
The ESFRI Process: Towards Research Infrastructures

- Proposals from Member States
- ESFRI Roadmap
- FP7 call
- Deadline
- Preparatory Phase
- Construction Phase
- Operation Phase

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- Evaluation by Expert groups and BMS RMWG
- Proposal
- Funding

L. Peltonen, Biobanks-Lyon 2007
CRC = Clinical Research Centre
DC = Data centre
GMP = GMP facility for biotherapy
EC = European Correspondent
NNC = National Network Coordination
Green Paper: What is Next in Infrastructures?

- To assess progress made to date and to discuss future orientations of a core element of the Lisbon Strategy: European Research Area (ERA)

- 6 features have been identified as key elements for implementing a successful ERA
6 Key Features of the Green Paper

• An adequate flow of competent researchers
• World-class research infrastructures (incl. e-infrastructures)
• Excellent research institutions
• Effective knowledge-sharing
• Well-coordinated research programmes and priorities
• A wide opening of ERA to the world
Issues to be Debated

- Building on the RIs Roadmap and making the most of all sources of funding: complement the roadmap in areas not yet identified: endorse proposal at the political level, and mobilize the necessary funding (incl. structural funds);
- Necessity for a new legal framework: to facilitate the setting up new forms of pan-European research infrastructures including e-infrastructures;
- Necessity for common, transparent principles: for management of and access to pan-European RIs
Issues to be Debated

- Contribution of public R&D funding to long-term, continuous improvement of RIs: e.g. through specific S&T programmes at both European and MS level;

- Policy and/or legal measures required to encourage private sector investment in RIs: in terms of e.g. ownership, IPR, advantages; other;

- Development of RIs of global function and EU involvement: assess the need for a global forum and if so its composition, so as to ensure Europe’s one “voice” (e.g. SKA)
Timetable

- **24 July 2007, Brussels**: Assess progress and tackle “troubleshooting” (if applicable) after 1 month’s work;

- **20 September 2007, Brussels**: Presentation-discussion of a 1st draft of the Policy Option Paper to be presented at the **PT Presidency conference in Lisbon** (October 2007)


  Linked to financial perspectives revision in 2009
A more realistic approach from basic researchers to the real clinical problems
The further we go down the pyramid, sample are accessed more easily, faster and cheaper.
How best to apply the “omic” technologies to clinically relevant samples in a well-defined pathological and clinical framework
Are we Conveying a Coherent Message?

Basic researchers and clinicians should speak with a single voice.

OECI  EUROCAN+  EORTC  CCCs
EUROHORCS  ECRIN  NOCI  ESF
IARC  FECS  National Cancer Centers
A main feature of the Journal will be to provide an International forum for debating cancer issues, as well as for integrating the input of all the stakeholders in the cancer ordeal.

http://www.molecularoncology.org/