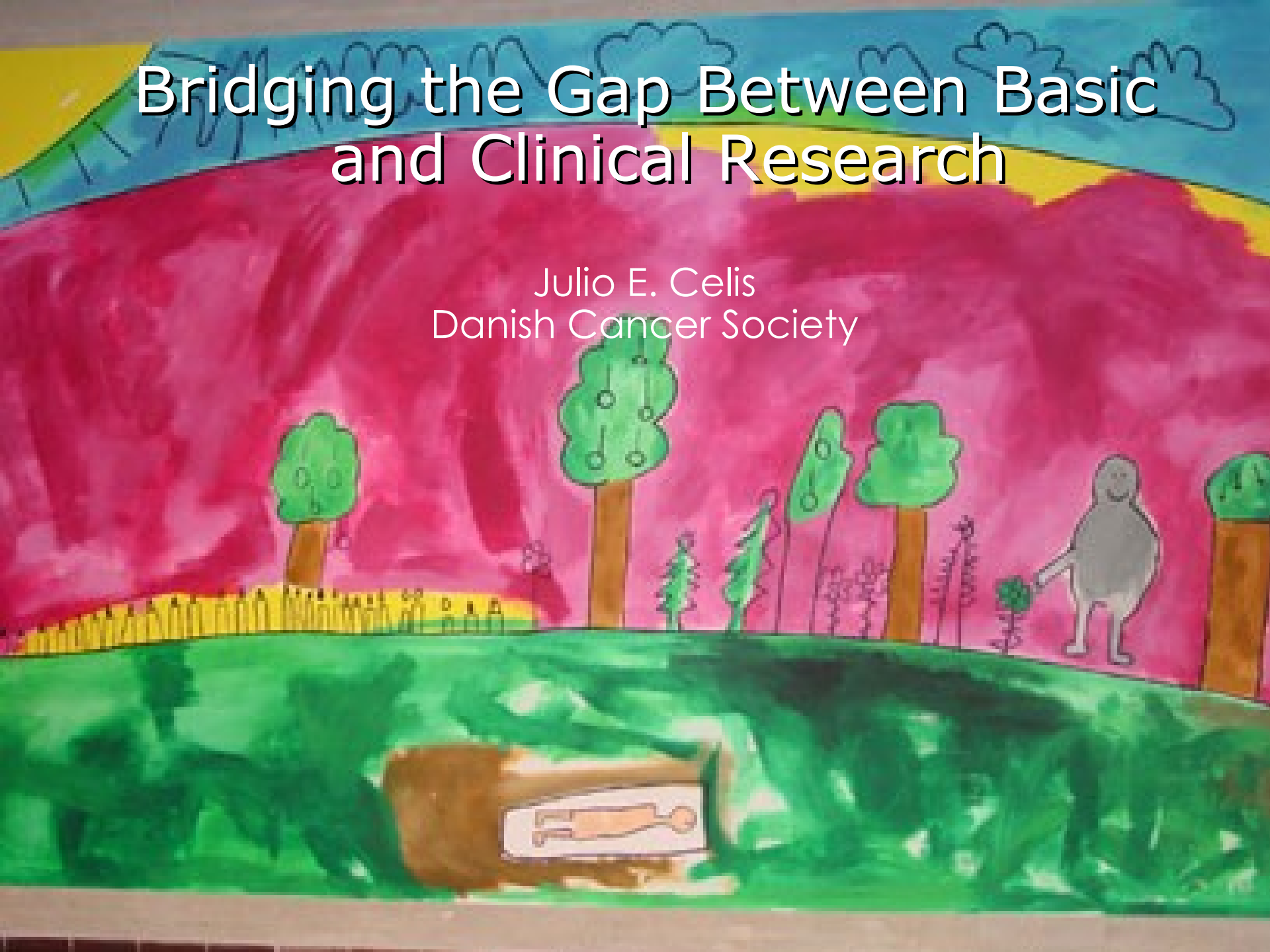


# Bridging the Gap Between Basic and Clinical Research

Julio E. Celis  
Danish Cancer Society



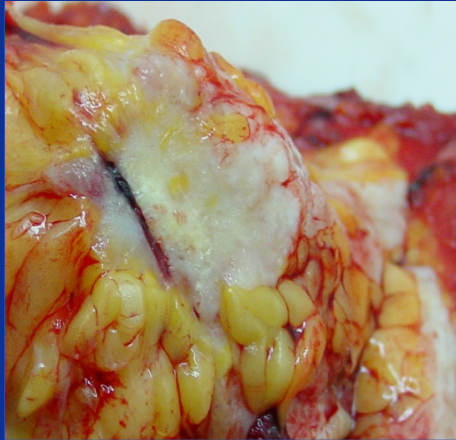
# Barriers and Opportunities in Translational Research

- Promise of the new technologies
- What is Europe doing?
- Challenges ahead
- Are we conveying a coherent message?

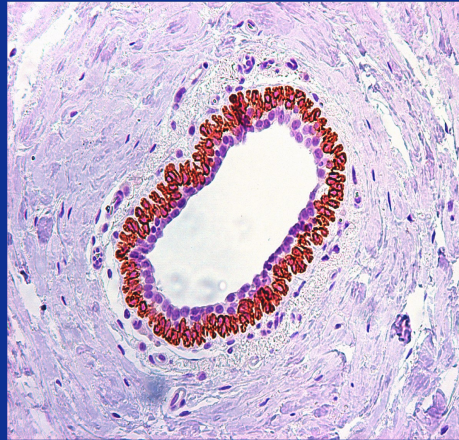


# May you live in interesting times!

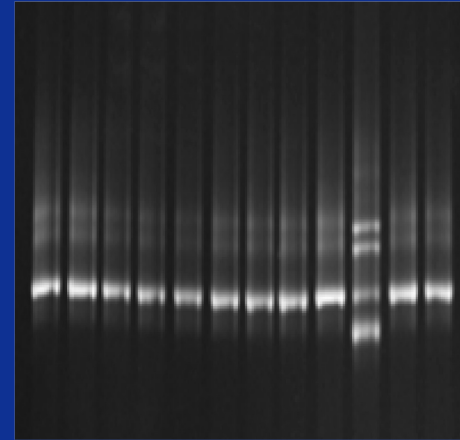
Clinical data



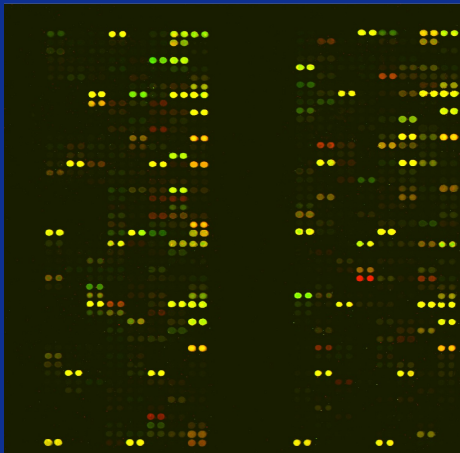
Pathology



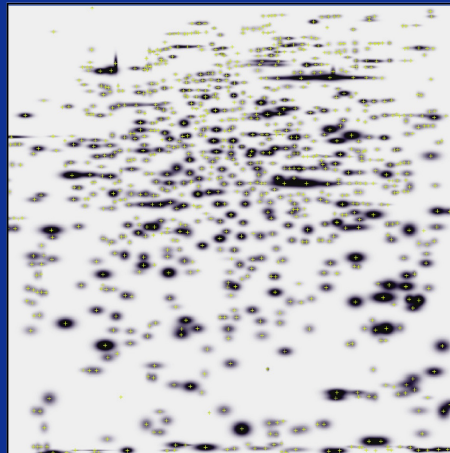
Gene mutation



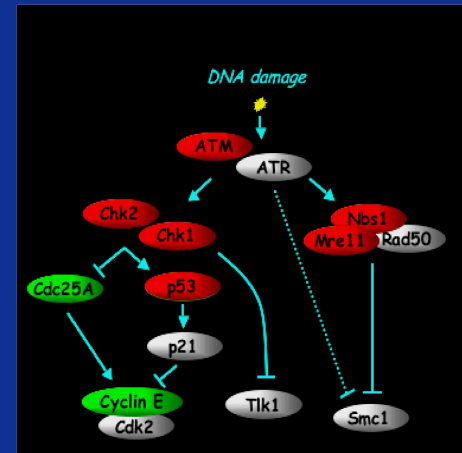
RNA profiling



Protein profiling



Protein network



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

Who can be spared therapy?

Which therapy will work best?

**Tumor classification** →  
(contribution of multiple data sets)

**Derive predictions** →  
customized to the individual patient

**Therapy to which the patient may respond**

Molecular Pathology

Molecular Oncology



# What is Europe Doing?





Europe (FP7; 2007-2013) 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

CCCs

Basic Research



Clinical Research



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
- **Research infrastructure calls:** ESFRI Roadmap:  
[http:// cordis.europa.eu/esfri](http://cordis.europa.eu/esfri)



# 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



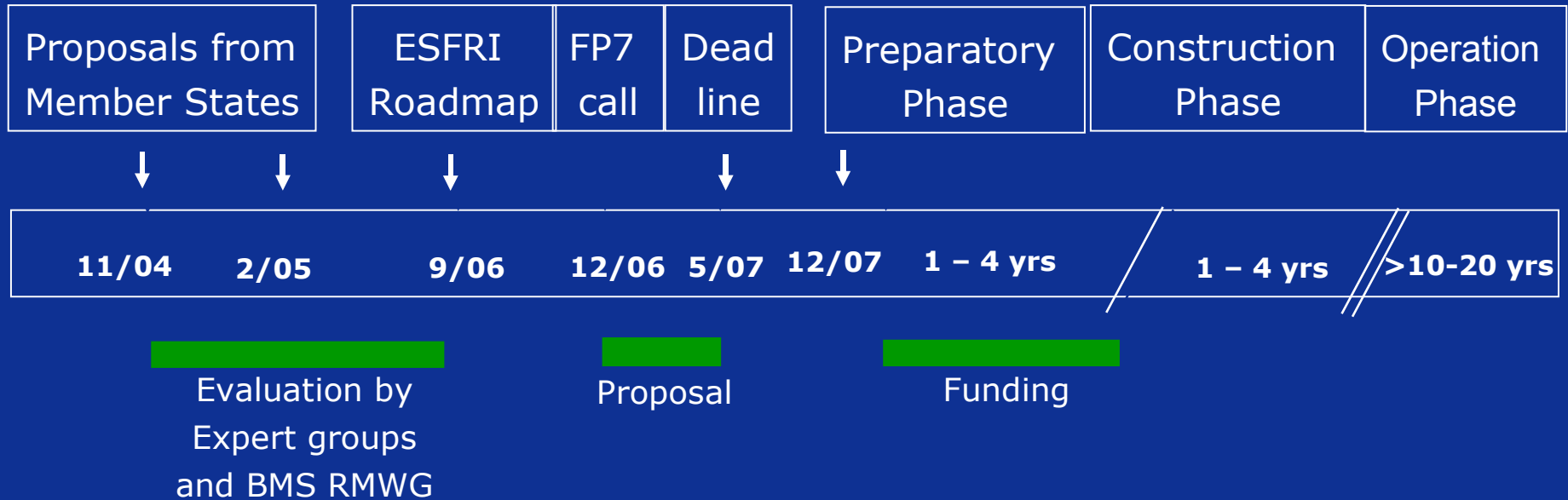
# FP7 BMS Research Infrastructures

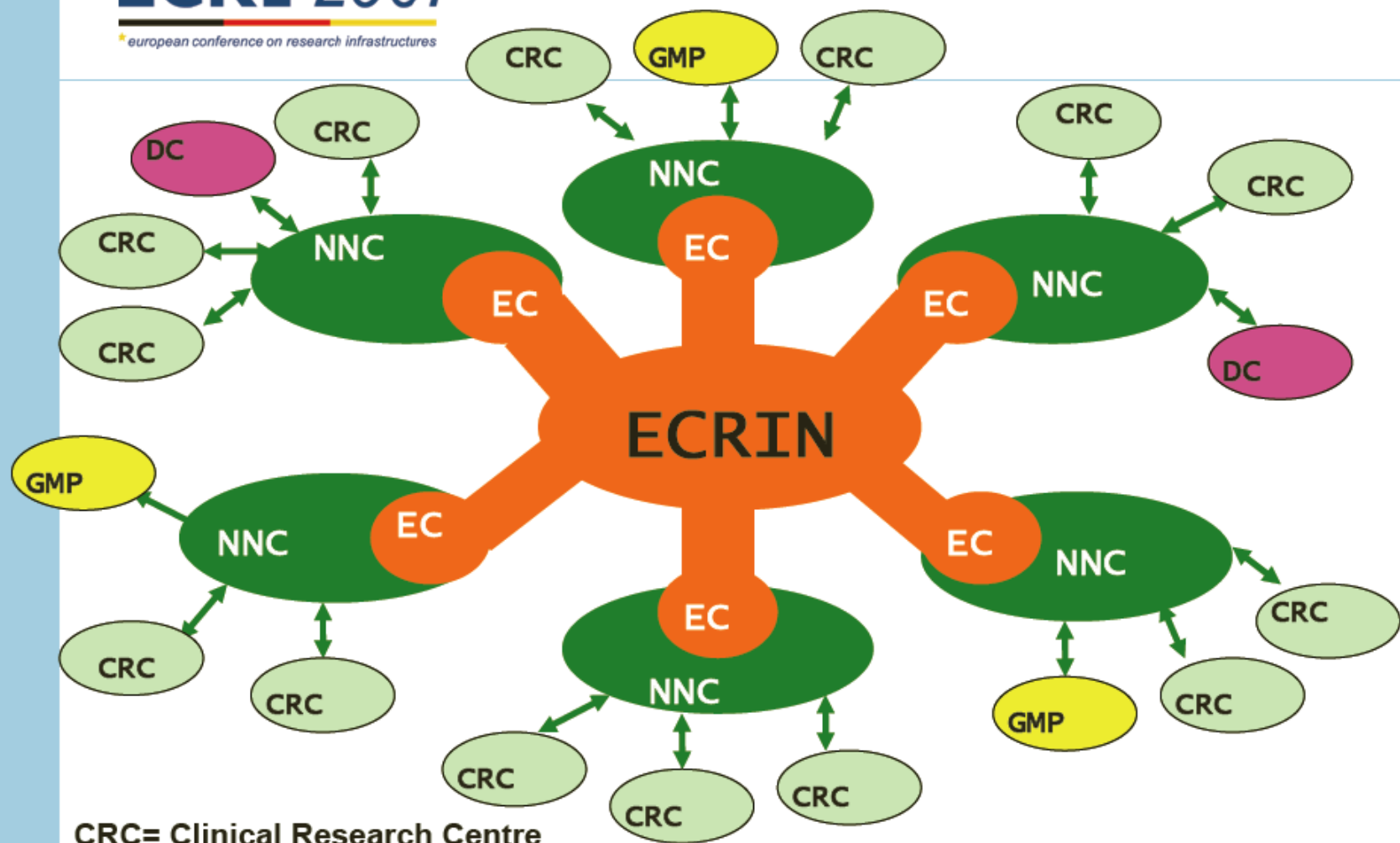
- European Advanced Translational Research Infrastructure in Medicine **EATRIS**: 50 M/year
- **Biobanking and Biomolecular Resources**: 15 M/year
- **Infrafrontier** (mouse): Phenomefrontier, Archivefrontier (mouse): 36M/year
- **Infrastructure for clinical trials & biotherapy facilities**: 5M/year
- 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





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)**
- 16 November 2007, Brussels: Presentation-discussion of feed back obtained at Lisbon Conference and preparation of the Final Policy Recommendation Report (31/1/2008)

Linked to financial perspectives revision in 2009

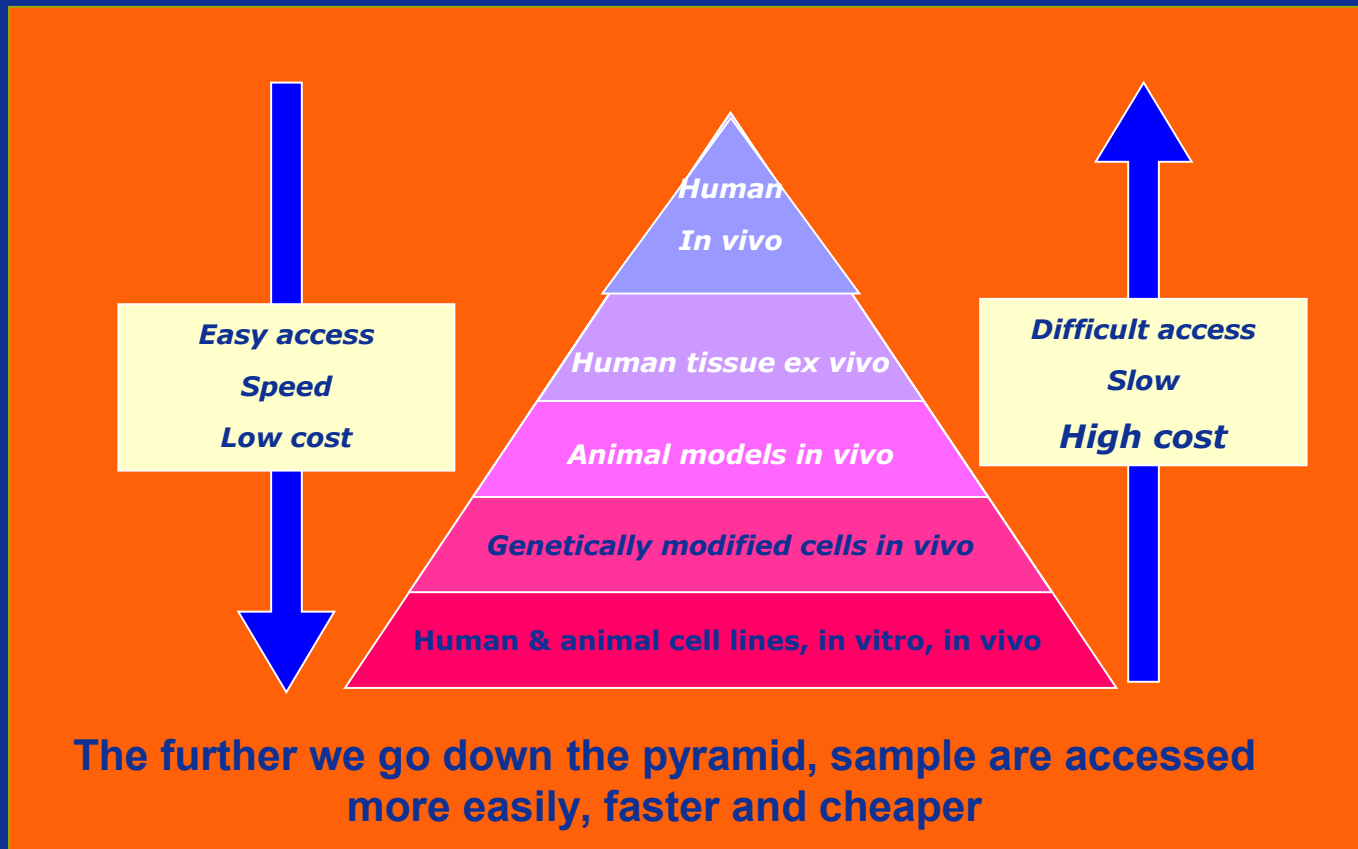


A more realistic approach from  
basic researchers to the real  
clinical problems





# Clinical Relevance



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?

OECI EUROCAN+ EORTC CCCs

EUROHORCS ECRIN NOCI ESF

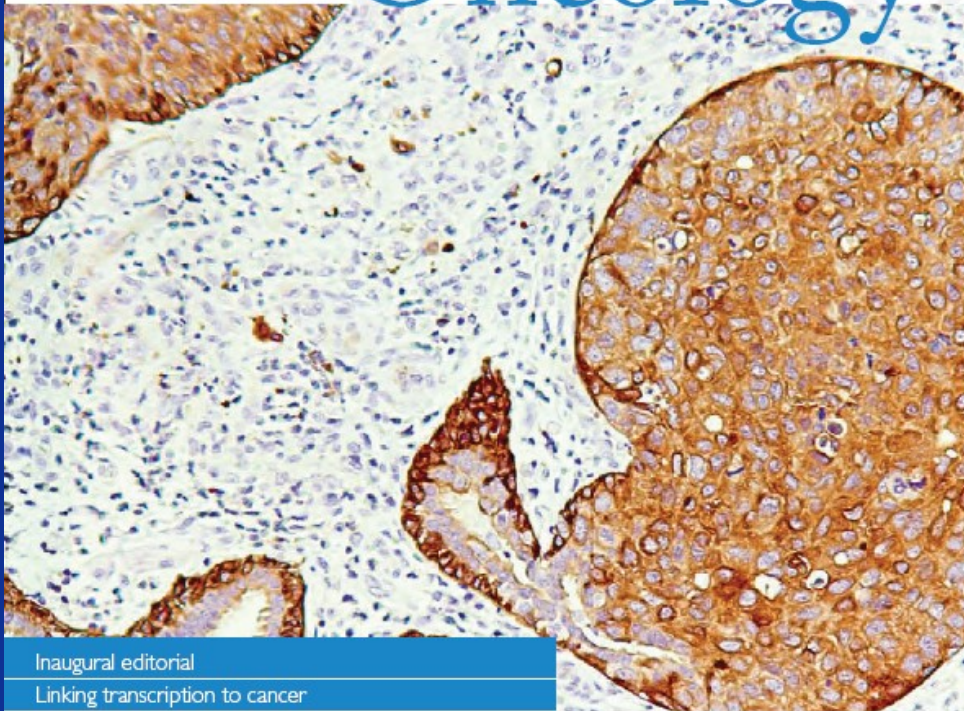
IARC FECS National Cancer Centers

Basic researchers and clinicians should speak with a single voice



# Molecular Oncology

A journal for discovery-driven  
translational cancer research



Inaugural editorial

Linking transcription to cancer

New targeted therapies

Breast cancer and proteomics

[www.molonc.net](http://www.molonc.net) | Volume 1 | Issue 1 | March 2007

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/>