

New alliances, new partnerships, new networks

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Conclusions from epidemiological analyses

- Cancer incidence will increase with about 60% within the next two decades
- The number of deaths caused by cancer will also increase about 60%
- Patients living with a cancer disease will increase still more
- Thus, present preventive, health care and research strategies are not able to balance an increasing cancer problem

How to counteract the increasing cancer problem?

Cancer medicine should be:

Predictive

Personalized

Preemptive

Participative

(P4-medicine)

We need new strategies for prevention, early detection and therapeutics

Personalized cancer medicine - treatment

- **Treatment at an early stage of the disease**
- **Personalized cancer medicine based on biology of the tumour and normal tissues**
- **“The right treatment to the right patient at the right time”**
- **Advanced research on identification and validation of biomarkers (biomics, bioinformatics, systems biology, prospective validation) and molecular pathways driven clinical trials**

Personalized cancer medicine – early detection

- Premalignant lesions
- Early invasive disease
- Early metastatic disease

- Discovery and validation of biomarkers in tumours, body fluids, circulating tumour cells, peripheral blood cells

Personalized cancer medicine - prevention

- **Prevention of high risk individuals - stratification of prevention**
- **Molecular genetics**
- **Exposome – exposures and adaptive responses and effects of exposures (“two ways translational research”, Chris Wild)**

Present barriers in European cancer research

- **The large number of subgroups of tumours**
- **The cancer research continuum is fragmented**
- **Lack of critical mass: patients, biological materials, technological resources and competences**

EUROCAN-Plus project

A key message from the EUROCAN-Plus project

- **Collaboration between individual research groups is no longer the solution**
- **Collaboration between Comprehensive Cancer Centres and basic/preclinical cancer research centres is mandatory to guarantee the infrastructure support, critical mass of expertise and resources, as well as to improve coordination**

Translational cancer research – integration of the cancer research continuum

- **Early translational cancer research** – bridging basic/preclinical research and clinical research
- **Late translational cancer research** - bridging clinical research and implementation/evaluation of innovations in the health care systems (a prerequisite for adoption)
- **Outcomes research** is an obligatory part of the translational cancer research



Personalized cancer medicine – research continuum

(Molecular Oncology Vol 6, No 2, april, 2012)

- Cancer biology
- Target discovery and validation
- Drug development
- Treatment predictive biomarker discovery and validation
- Bioinformatics and systems biology
- Molecular pathology
- Molecular imaging
- Molecular pathways driven clinical trials
- Pharmacogenetics – side effects
- Outcomes research and health economy
- Personalized cancer medicine is cost-effective!

Late translational cancer research – an unmet need

- Clinical effectiveness of specific treatments
- A complete outcomes research for evaluation of innovations
- Health economy – cost-effectiveness

Consequences:

- Increased availability of effective treatments for patients
- Decreased availability of less good treatments for patients
- Cost-effectiveness to prioritize in the health care

Comprehensive clinical registries are required

Collaboration between centres – harmonized infrastructures are required

Molecular pathways driven clinical trials

- **Omics technologies – screening of patients**
- **Bioinformatics/systems biology – combinations of targeted drugs**
- **Molecular pathology (spatial resolution), molecular imaging**
- **Clinical data bases, biobanks**
- **Biomarker discovery and retrospective validation**
- **Linkage to preclinical research – tumour cell heterogeneity, inherent and acquired drug resistance**
- **Clinical effectiveness and health economy**

Industry – academia – health care systems: collaboration is suboptimal

- **Industry is increasingly dependent on academic research centres for:**
 - Target discovery and drug development**
 - Biomarker discovery and validation**
 - Molecular pathways driven clinical trials**
- **Clinical effectiveness, outcomes research and health economy – involvement of health care systems, payers**
- **Collaboration between companies is an unmet need – present iteration of activities should be avoided**

Collaboration with patient organisations

- **Availability of patients for clinical trials is an increasing problem when approaching personalized medicine**
- **Availability of new diagnostic methods and treatments for patients a problem**
- **International collaboration must be extended**
- **Regulatory issues regarding international sharing of clinical data and biological materials – support from patient organisations is important**

National networks of cancer research centres

- **France – INCA: 16 early clinical trial centres and 28 technical platforms for stratification of patients**
- **UK – network of cancer research centres**
- **Germany – a consortium of centres for translational cancer research**

EurocanPlatform – a consortium for translational cancer research

- **Improve translational cancer research by linking Comprehensive Cancer Centres and basic/preclinical cancer research centers**
- **Overcome the problem with lack of critical mass: patients, biological materials, technological resources and competences**
- **A structure for research covering the cancer research continuum from cancer biology to adoption of innovations in the cancer care**
- **A comprehensive strategy for development of personalized cancer medicine**

Centres behind the Stockholm Declaration – founder centres

- **CNIO, Madrid**
- **NKI, Amsterdam**
- **Norwegian Radiumhospital..**
- **Cambridge Research Inst...**
- **Danish Cancer Society**
- **Inst Jules Bordet**
- **Erasmus... Rotterdam**
- **Manchester Cancer Res...**
- **EIO, Milan**
- **Istituto Nazionale... Milan**
- **Institute Curie, Paris**
- **IGR, Villejuif**
- **DKFZ, Heidelberg**
- **NIO, Budapest**
- **Oxford University**
- **IARC, Lyon**
- **EMBL, Heidelberg**
- **Karolinska Inst, Stockholm**

Additional participants

- **ICR, Royal Marsden**
- **Leiden Univ Med center**
- **FIVO, Valencia**
- **Istituto tumori Bari**
- **De Vall Hebron,
Barcelona**
- **eCancer.eu**
- **ECCO**
- **OEI**
- **ECPC**
- **EORTC**

Summary of structural changes for development of personalized cancer medicine

- **Collaboration between cancer research centres to guarantee the infrastructure and critical mass**
- **Research funding should support translational cancer research and international collaboration**
- **Collaboration between academia and industry is necessary to increase effectiveness and decrease costs – public/private partnership**

Structural changes... cont.

- **Involvement of health care systems in clinical research, including late translational cancer research for outcomes research and health economy**
- **Expand the roles of patient organisations – availability of patients for research, regulatory issues**
- **Vision and strategies should be shared between academia, health care systems, industry and patient organisations**

European activities supporting development of personalized cancer medicine

- **EU – FP8: Horizon 2020 – Innovation Union – personalized medicine**
- **EurocanPlatform**
- **ENCA – network for pediatric oncology**
- **TRANSCAN – network of funders to support international translational cancer research**
- **European Academy of Cancer Sciences**
- **European Partnership on Actions Against Cancer (EPAAC)**
- **European Council for Health Research**
- **European Alliance for Personalised Medicine (EAPM)**