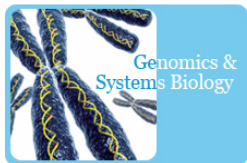
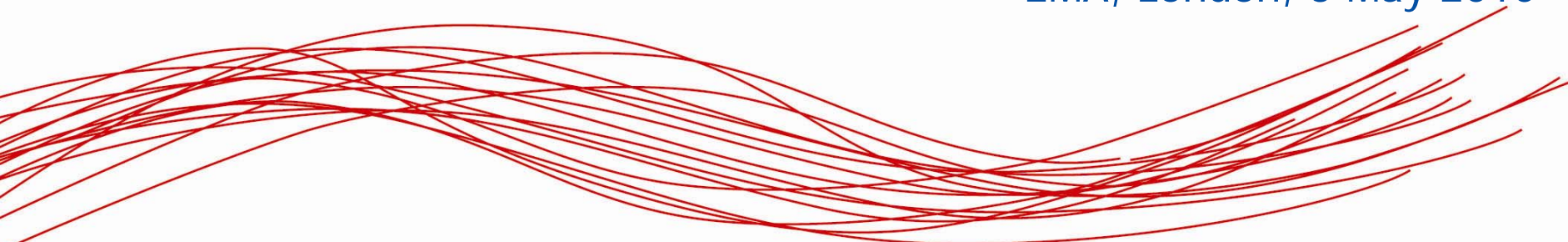


EU initiatives for research on rare diseases

EMA, London, 3 May 2010



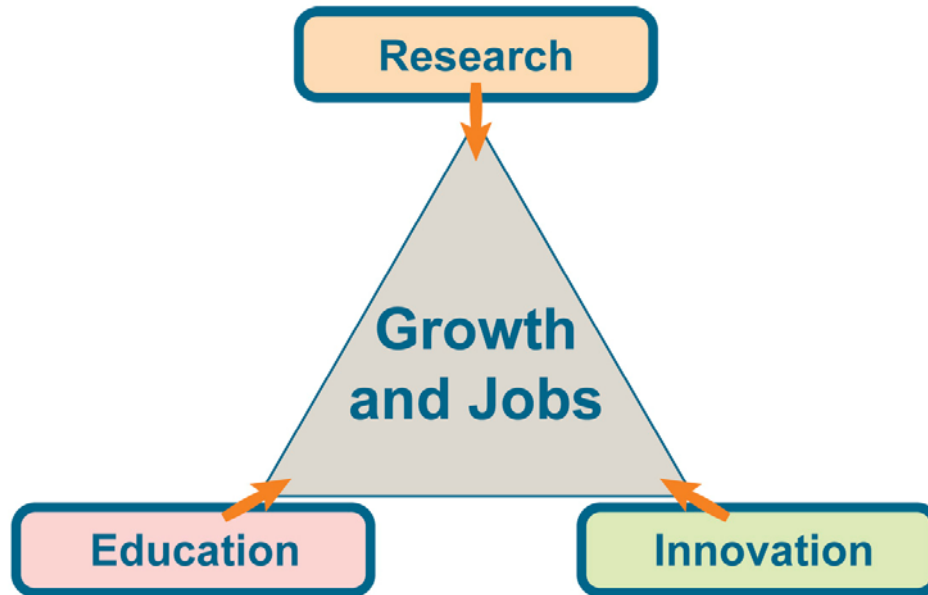
Charles Kessler, PhD
Health Biotechnology
DG Research
European Commission



Outline of presentation

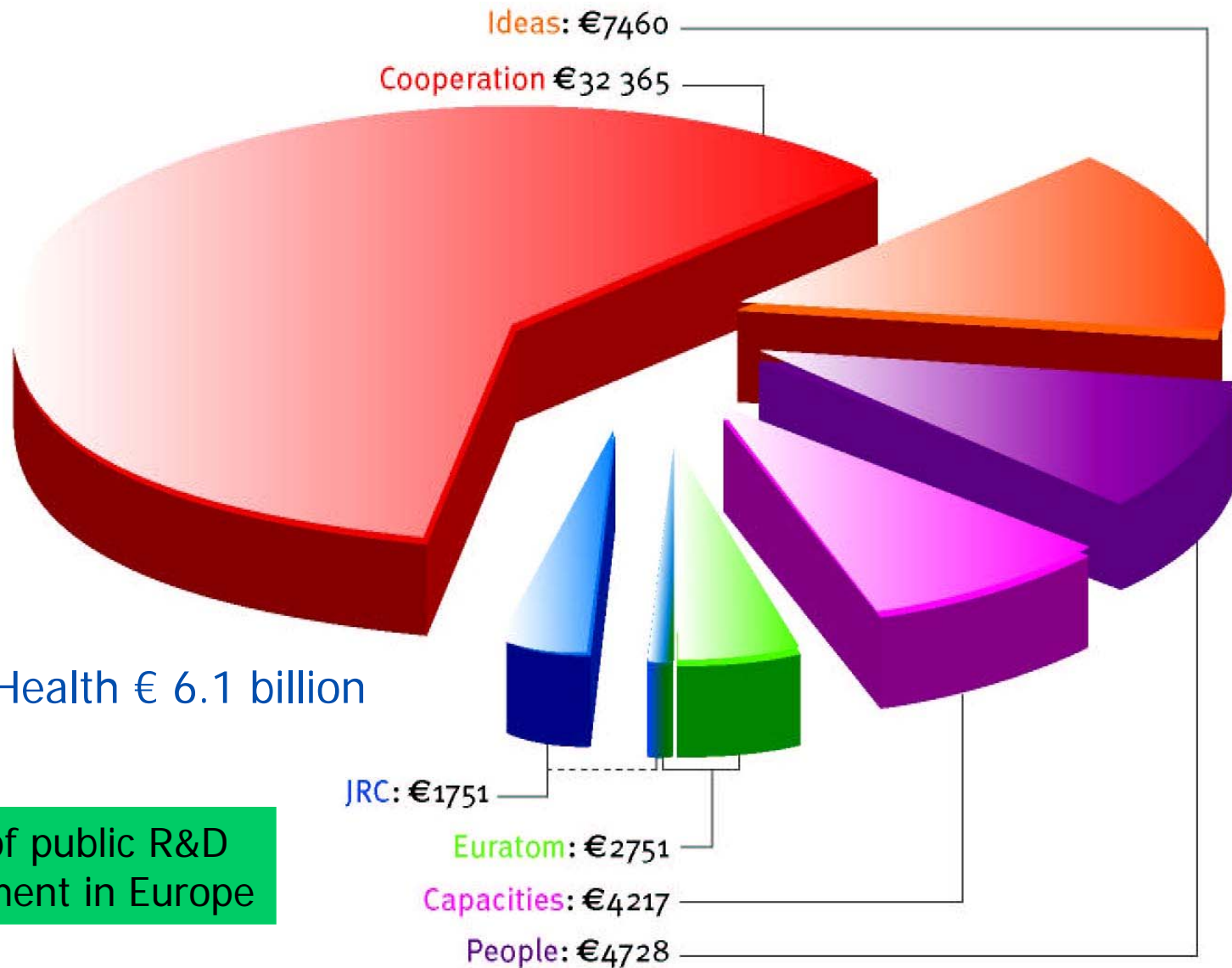
- **Main features of EU research programmes**
- **EU support to rare diseases research**
 - ▶ Policy background
 - ▶ Examples of projects
- **Future perspectives**

Lisbon Strategy



Objectives: economic **growth**, **employment** creation, **environmental** protection, **social** challenges: fight **poverty**, improve human **health** and **quality** of life

FP7 budget (2007-2013): € 55 billion*



*of which Health € 6.1 billion

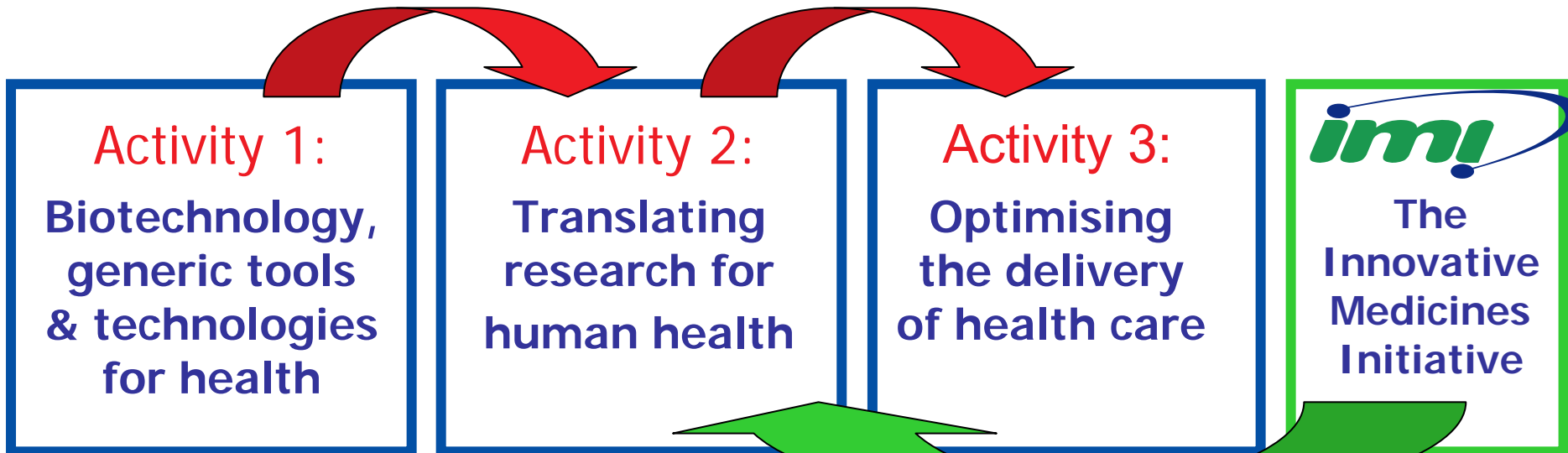
= ~6% of public R&D investment in Europe

FP7 Health Programme

- **Main Policy Drivers:**

- ▶ **Improving health** of European citizens
- ▶ **Increasing competitiveness** of European health-related industries and businesses
- ▶ Addressing **global health issues**, including emerging epidemics

The Health Theme



cross-cutting issues: **international cooperation, SMEs, child health, ageing populations, gender-related health issues**

Activity 4: Support actions & response to policy needs

EU research projects

- **Networks (min 3 countries; av 7 partners)**
- **Multidisciplinary**
- **Competitive calls for proposals, peer review**
 - ▶ Scientific excellence
 - ▶ Potential impact
- **Industry/SMEs**
- **75% funding for public bodies, SMEs; 50% others**
- **Third country participation**
- **Outreach/training/ethics, etc**

● Towards FP7: April 2005 EC workshop

Aim:

- ▶ identify the future needs of the rare diseases scientific community (types/size of projects, potential priorities in fields to be covered, specific topics...)

● Conference “Rare Diseases Research: Building on Success” - Brussels, September 2007

Aim:

- ▶ increase visibility of RD research
- ▶ RD community to express their needs
- ▶ Sound basis for future calls for proposals



Focus of Rare Diseases Research in FP7

- Europe-wide studies of their **natural history, pathophysiology**
- Development of **preventative, diagnostic and therapeutic interventions.**
- This sector includes rare Mendelian phenotypes of common diseases.

Expected Impact of Rare Diseases Research in FP7

- This area should help identifying and mobilising the critical mass of expertise in order to:
 - ▶ shed light on the course and/or mechanisms of rare diseases, or
 - ▶ test preventative, diagnostic and/or therapeutic approaches to alleviate the negative impact of the disease on the quality of life of the patients and their families, as appropriate, depending on the level of knowledge concerning the specific (group of) disease(s) under study.

Rare diseases: FP7 1st call for proposals

HEALTH-2007-2.4.4-1: Natural course and pathophysiology of rare diseases.

HEALTH-2007-2.4.4-2: Research capacity-building in the field of rare diseases.

→ 11 projects selected for funding for a global budget of € 30 million

Natural course and pathophysiology of rare diseases (1)

- **Pemphigus** - From autoimmunity to disease (www.pemphigus.eu)
- Natural course, pathophysiology, models for early diagnosis, prevention and innovative treatment of **TNF Receptor Associated Periodic Syndrome TRAPS** (<http://fmf.igh.cnrs.fr/ISSAID/EUROTRAPS>)
- The pathophysiology and natural course of patients with **Primary Antibody Deficiencies** (PAD) (www.europadnet.eu)
- European initiative to improve knowledge, treatment and survival of **haemophagocytic syndromes** in children (www.uke.de/curehlh)
- Pathophysiology and natural course of **autoimmune adrenal failure** (www.euradrenal.org)
- A European Consortium for **Lysosomal Disorders** (www.euclid.eu)
- Investigation of the molecular pathogenesis and pathophysiology of **Disorders of Sex Development** (DSD) (www.eurodsd.eu)

Natural course and pathophysiology of rare diseases (2)

- European IPF Network: natural course, patho-mechanisms and novel treatment options in **Idiopathic Pulmonary Fibrosis** (www.pulmonary-fibrosis.net)
- Pathophysiology of rare diseases due to **ciliary dysfunction**: nephronophthisis, Oral-facial-digital type 1 and Bardet-Biedl syndromes (www.eucilia.eu)
- European Network for the Study of **Orphan Nephropathies** (www.eunefron.org)

Research capacity-building in the field of rare diseases

- European Platform of **Integrated Information Services for Researchers** in the Field of Rare Diseases and Orphan Drugs Supporting Team and Project Building (www.rdplatform.org)



Rare diseases FP7: 3rd call for proposals

HEALTH-2009-2.4.4-1: Rare neurological diseases.

HEALTH-2009-2.4.4-2: Preclinical development of substances with a clear potential as orphan drugs.

→ 9 projects selected for funding for a global budget of € 45 million

Rare neurological diseases

- Identifying and validating pre-clinical biomarkers for diagnostics and therapeutics of **Neuromuscular Disorders** (www.bio-nmd.eu)
- **Myasthenias**, a group of immune mediated neurological diseases: from aetiology to therapy
- Fighting **blindness of Usher syndrome**: diagnosis, pathogenesis and retinal treatment
- Therapeutic challenge in **Leukodystrophies**: Translational and ethical research towards clinical trials
- European Project on **Mendelian forms of Parkinson's Disease**
- European **Friedreich's Ataxia** Consortium for Translational Studies
- **Nuclease Immune Mediated Brain and Lupus-like conditions** (NIMBL): natural history, pathophysiology, diagnostic and therapeutic modalities with application to other disorders of autoimmunity



Preclinical development of substances with a clear potential as orphan drugs

- Preclinical study of recombinant human anti-C5 for the treatment of **atypical haemolytic uraemic syndrome**
- Rod-derived **Cone Viability Factor**

Rare diseases: 4th call for proposals

- HEALTH.2010.2.4.4-1: **Clinical development of substances with a clear potential as orphan drugs.** Collaborative projects (small or medium-scale focused research projects; max EC contribution € 6 million).
 - HEALTH.2010.2.4.4-2: **ERA-Net on rare diseases.** Coordinating action (max EC contribution € 2 million).
- ➔ **4 projects (2.4.4-1) and 1 ERA-Net selected for funding for a global budget of € 23 million (negotiations starting)**

Alpha-mannosidosis: from FP5 to FP7 (1)

Successive FP5 and FP6 projects, EURAMAN and HUE-MAN, allowed:

- Development of simple diagnostic tests for all disease causing mutations
- Spectrum of European mutations in the alpha-Mannosidase gene (*MAN2B1*)
- Biochemical characterization of the consequences of alpha-Mannosidosis mutations
- Phenotype/Genotype correlation
- Industrial production various therapeutic agents for alpha-Mannosidosis
- Preclinical studies on the effect of three therapeutic enzymes in mouse model
- Detailed characterization of the behavioural phenotype of alpha-Mannosidosis mice, and..



Alpha-mannosidosis: from FP5 to FP7 (2)

and:

- Large scale production of recombinant human LAMAN as a therapeutic agent
- Determination of the most effective dose in preclinical trials using rhLAMAN in mouse
- Generation of an immune-tolerant mouse model that will allow chronic ERT treatment
- Natural history study of 45 alpha-Mannosidosis patients
- Determination of clinical endpoints for future clinical trials
- Collection of patient and mutational data in a database accessible to the public

Negotiations now starting for ALPHA-MAN - Clinical development of Enzyme Replacement Therapy in alpha-mannosidosis patients using recombinant human enzyme.



Examples of rare diseases research in other parts of the work programme (Topics)

- HEALTH-2007-1.2-6: High throughput molecular diagnostics in individual patients for genetic diseases with heterogeneous clinical presentation
- HEALTH-2007-1.4-5: Gene therapy tools targeting the central nervous system
- HEALTH.2010.2.4.1-5: Structuring clinical research on rare cancers in adults

Examples of rare diseases research in other parts of the work programme (Projects)

- **CONCERT** Concerted safety and efficiency evaluation of retroviral transgenesis for gene therapy of inherited diseases (www.gene-therapy.eu)
- **OPTISTEM** Optimisation of stem cell therapy for clinical trials of degenerative skin and muscle diseases (www.optistem.org)
- Integrated projects, €12 million each

Rare diseases research in future calls for proposals (1)

- Specific area closed 2011 on rotation basis
- Opportunities under:
 - Regenerative medicine
 - Cancer, notably rare cancers
 - Others, examine work programme – to be published before summer

Rare diseases research in future calls for proposals (2)

- Possible gaps in research portfolio
- Results from previous calls
- Contribution to EU policy objectives
- Priorities discussed with:
 - Health Theme Advisory Group (scientific community independent advice)
 - Health Theme Programme Committee (Member State representatives)

Council Recommendation of 8 June 2009 on an action in the field of rare diseases

Point III = research on rare diseases:

- Assess research landscape, and **improve coordination** of Community, national and regional programmes
- Identify **needs and priorities**, and promote interdisciplinary co-operative approaches
- Foster **participation** of national researchers in RD research projects
- Include in national plans or strategies provisions aimed at **fostering research** in the field of RD
- Facilitate the development of RD research **cooperation with 3rd countries** active in RD research, incl. exchange of information and sharing of expertise.

+ participation of DG RTD in the new European Union committee of experts on rare diseases





- EU research: <http://ec.europa.eu/research>
- Seventh Framework Programme: <http://ec.europa.eu/research/fp7>
- Information on research programmes and projects: <http://cordis.europa.eu/>

● **research eu**
the magazine of the european research area

<http://ec.europa.eu/research/research-eu/>

- Information requests: <http://ec.europa.eu/research/enquiries/>



**THANK YOU FOR YOUR
ATTENTION**

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