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Genomics research and population genetics in EU Framework Programmes

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FP6 (2002-2006) Thematic Priority 1: Life sciences, genomics and biotechnology for health

Advanced genomics and its applications for health - 1100 million €

- Fundamental knowledge and basic tools for functional genomics in all organisms
- Applications of knowledge and technologies in the field of genomics and biotechnology for health

Combating major diseases - 1155 million €

- Application oriented genomic approaches to medical knowledge and technologies
- Combating cancer
- Confronting the major communicable diseases linked to poverty

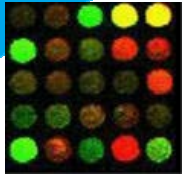




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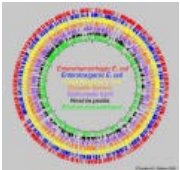
FP6 (2002-2006) -Thematic Priority 1: Fundamental Genomics



Gene expression and proteomics



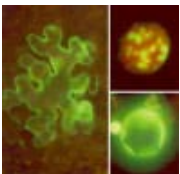
Structural genomics



Comparative genomics and population genetics



Bioinformatics



Multidisciplinary functional genomics approaches
to basic biological processes





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FP6:

Types of projects/modalities

Integrated Projects (IP) aims at generating knowledge to increase Europe's competitiveness or solving major societal needs (average: 3-5 years, 5-20 million €)

Network of Excellence (NoE) durable integration of research capacities / restructuring and reshaping the way research is carried out in Europe (average: 3-7 years, 5-20 million €)

Specific Targeted Research Projects (STREP) research, demo, or innovation projects, same objectives as for IP, (average: 2-4 years, 1-4 million €)

Co-ordination Action (CA) co-ordination of research and innovation (average: 2-4 years, 1-3 million €)

Specific Support Actions (SSA) activities complementing the funded research such as workshops, conferences, studies, etc. (average: 6 months-3 years, 0.1-2 million €)

In addition **fellowships, infrastructures, co-operative research, ERA-net,**
funded by other parts of FP6





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Fundamental genomics - population genetics projects funded in FP6

Contact Dr. Bill BAIG for details (shahid.baig@cec.eu.int)





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Funded so far in FP6: Research –networking-structuring -training

- **GENOMEUTWIN (IP) Genome-wide analyses of European twin and population cohorts to identify genes predisposing to common diseases (Leena Peltonen, Helsinki)**
- **MOLPAGE (IP) Molecular Phenotyping to Accelerate Genomic Epidemiology (John Bell, Oxford)**
- **MOLTOOLS (IP) Advanced molecular tools for array-based analyses of genomes, transcriptomes, proteomes and cells (Ulf Landergren, Uppsala)**
- **EUROSPAN (STREP) European Special Populations research Network: quantifying and harnessing genetic variation for gene discovery (Harry Campbell, Edinburgh)**
- **GenOSept (STREP) Genetics of Sepsis in Europe (ESICM, Brussels)**





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Funded so far in FP6: Policy-Networking-co-ordination

- **COGENE (FP5) Co-ordination of genomes research across Europe** (Eero Vuorio, Turku on behalf of genomes programmes managers from across Europe)
- **DanuBiobank (SSA) The Danubian Bank Initiative – Towards Information-based Medicine** (Gerd Schmitz, Regensburg)
- **HUMGERI (SSA) Human genomic research integration** (Laszlo Fesus, Debrecen)
- **POPULATION BIOBANKS (CA) Harmonising population-based biobanks and cohorts studies to strengthen the foundation of European biomedical science in the post-genome era** (Camilla Stoltenberg, Oslo)
- **EUHealthGen (SSA) Wellcome Trust/EU Commission conference 'FROM BIOBANKS TO BIOMARKERS': *Translating the Potential of Human Population Genetics Research*** (20 – 22 September 2005 (Alan Doyle, Wellcome Trust, London)





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Fundamental genomics – bioinformatics projects related to population genetics

**Contact Dr Frederick Marcus for details
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Bioinformatics/population genetics - projects funded in in FP5 & 6

- TEMBLOR (FP5) - Major databases and tools for population genetics studies (e.g. ArrayExpress for expression data analysis)
- BioBabel (FP5) - Ontologies used in all population genetics databases
- BioMinT (FP5) - Annotation tools for population genetics
- BIOSAPIENS (FP6 network of excellence) -Major work package dedicated to population genetics issues - SNP, HAPMAP, etc.
- EMBRACE (FP6 network of excellence) - Bioinformatics grid for efficient use of population genetics databases

- Systems Biology projects (FP6) - Studies relating to genetic aspects of complex diseases





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4th Call for Proposals

Thematic Priority 1, Life sciences, Genomics and Biotechnology for Health

- Areas involving population genomics

Publication date: ? June/july 2005

Closing date: ? November 2005

Draft text- <http://www.cordis.lu/lifescihealth/workprogramme.htm>





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4th call Thematic Priority 1: draft text

- i) *Advanced genomics and its applications for health*
- a) **Fundamental knowledge and basic tools for functional genomics in all organisms:**
 - **LSH-2005-1.1.3-3: Population cohorts for molecular epidemiological studies in European and other populations – INTEGRATED PROJECT.**

“The focus should be on molecular epidemiological studies using well characterised and comprehensive population cohorts, with an emphasis on standardising genotyping protocols, sample collection and data storage and analysis. The project should focus on generating new knowledge relevant to health and disease”.





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4th call Thematic Priority 1: draft text

- **LSH-2005-1.1.0-3: Specific targeted research projects (STREPs) dedicated to SMEs**

“Proposals concerned with the development of tools and technologies for functional genomics (proteomics, gene expression, structural genomics, comparative genomics, population genetics, bioinformatics etc) will be eligible. Furthermore, research focusing on multidisciplinary functional genomics approaches to study basic biological processes will be considered”
- **LSH-2005-1.1.0-1: Coordination Action (CA)** - proposals in any relevant area of fundamental genomics.
- **LSH-2004-1.1.0-2: Specific Support Actions (SSA)** -proposals in any relevant area of fundamental genomics





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4th call Thematic Priority 1: draft text

- **LSH-2005-1.1.0-1: Coordination Action (CA)** - proposals in any relevant area of fundamental genomics.
- **LSH-2004-1.1.0-2: Specific Support Actions (SSA)** -proposals in any relevant area of fundamental genomics





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4th call Thematic priority 1: draft text

Check also other parts of priority 1 for several epidemiology- related topics (diagnostics, diseases)

i) Advanced genomics and its applications for health:

b) Application of knowledge and technologies in the field of genomics and biotechnology for health

ii) Combating major diseases:

a) Application-orientated genomic approaches to medical knowledge and technologies

b) Combating Cancer

c) Confronting the major communicable diseases linked to poverty





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Commission proposal for the Seventh Framework Programme 2007-2013

Building the Europe of Knowledge

http://europa.eu.int/comm/research/future/index_en.cfm





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Why research at the European level?

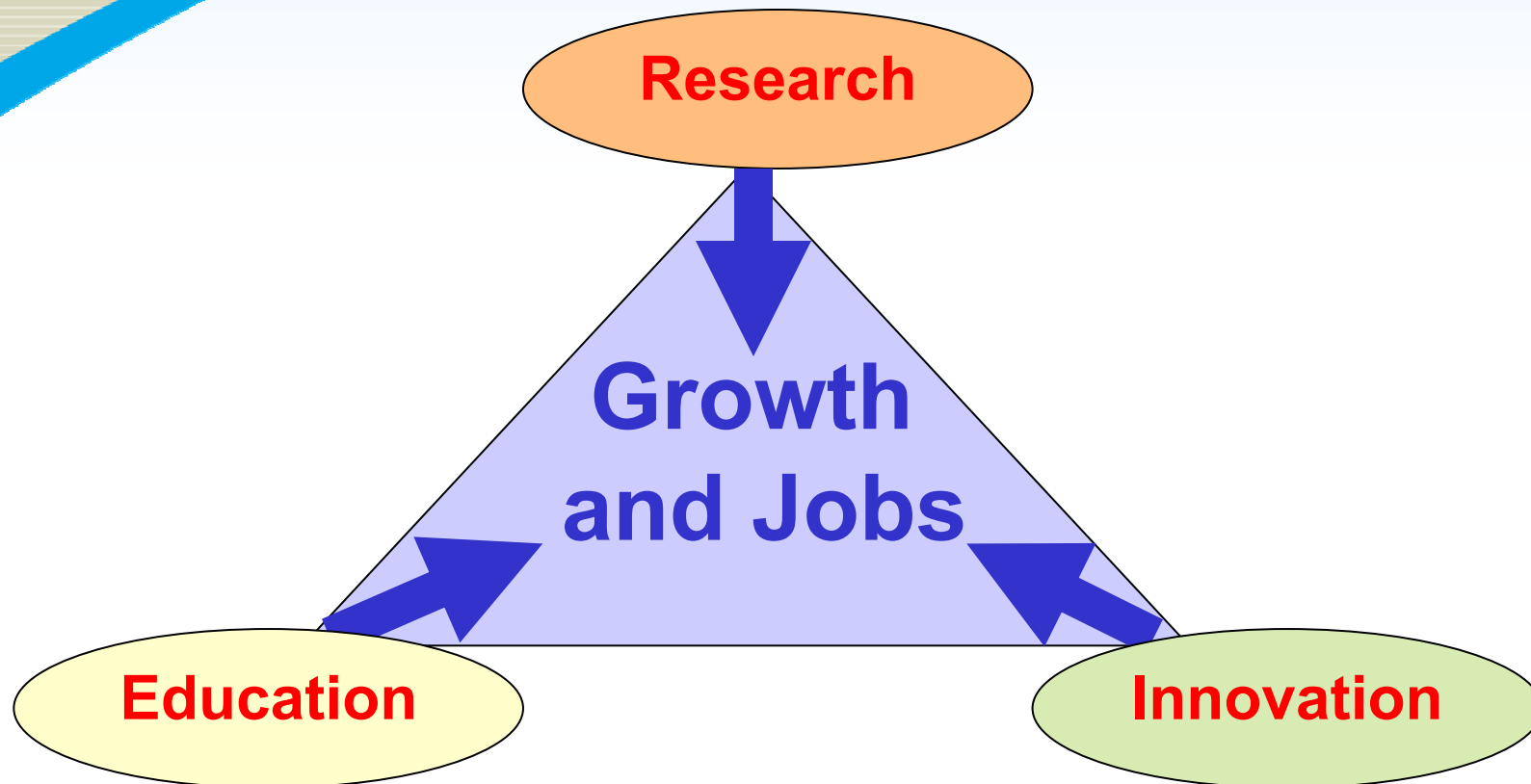
- **Pooling and leveraging resources**
 - Resources are pooled to achieve critical mass
 - Leverage effect on private investments
 - Interoperability and complementarity of big science
- **Fostering human capacity and excellence in S&T**
 - Stimulate training and international mobility of researchers
 - Improve S&T capabilities
 - Stimulate competition in research
- **Better integration of European R&D**
 - Create scientific base for pan-European policy challenges
 - Encourage coordination of national policies
 - Effective comparative research at EU-level
 - Efficient dissemination of research results



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Lisbon strategy



S&T contributes to the **Lisbon** objectives: economic **growth**, **employment** creation, **environmental** protection, **social** challenges: fight **poverty**, improve human **health** and **quality** of life (GSM, remote working, safe roads, etc.)





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What's new in FP7?

Main new elements compared to FP6:

- **Annual budget doubled (EUR 5 billion ► 10 billion)**
- **Basic research (~ EUR 1.5 billion per year)**
- **Simplification of procedures**
- **Logistical and administrative tasks transferred to external structures**





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Why double the FP7 budget?

- **Tackle under-investment by exerting leverage on national and private investment**
 - Increase EU spending on R&D : 1.97% of GDP vs 2.59% (US)
 - Help leverage business R&D (EU wide projects, solutions and market)
 - Brings EU public R&D spending to 0.96% of GDP (close to 1% target)
 - Encourage Member States





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Why double the FP7 budget?

- **Tackle fragmentation of research effort in the EU and enhance its efficiency and effectiveness**
 - Achieve critical mass, share knowledge and facilities
 - Better dissemination across the EU
 - More excellence through EU wide competition
 - Less fragmentation through stronger coordination





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Why double the FP7 budget?

- **Widen the scope of the FP**
 - Launch essential new initiatives
 - Reinforce existing successful actions
- **Help to meet new S&T challenges**
 - Rising costs of research mean that higher funding is needed to produce same impacts
 - New research fields are emerging (hydrogen economy etc)





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Why double the FP7 budget?

- **Reinvigorate the Lisbon strategy**
 - Objective: to become the most dynamic knowledge-based economy
 - Supports the integration and attractiveness of the ERA
 - Contributes to increased competitiveness
 - Contributes to sustainable development





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FP7 2007-2013 Specific Programmes

***Cooperation* – Collaborative research**

***Ideas* – Frontier Research**

***People* – Human Potential**

***Capacities* – Research Capacity**

+

JRC (non-nuclear)

JRC (nuclear)

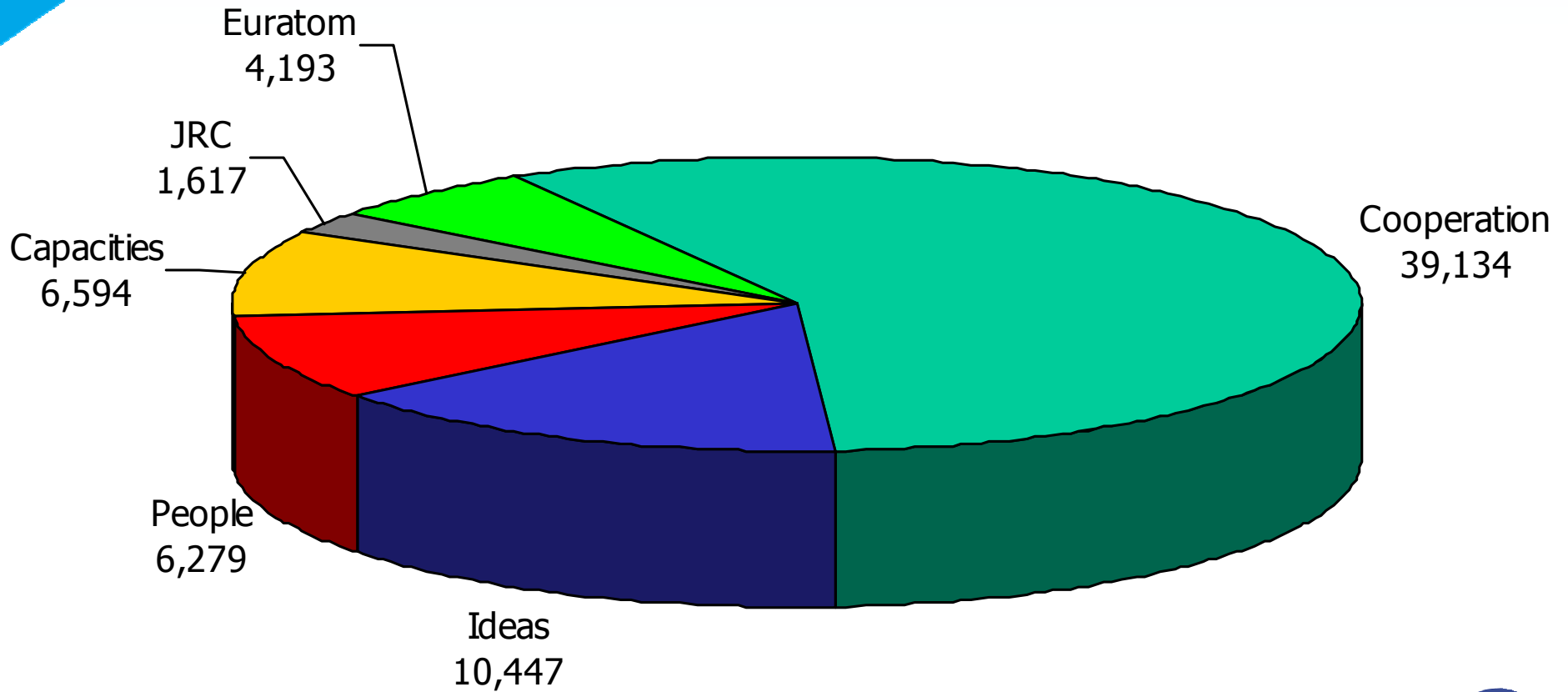
Euratom



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FP7 budget (EUR billion, 2004 constant prices)





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***Cooperation* – Collaborative research**

9 Thematic Priorities

1. Health
2. Food, agriculture and biotechnology
3. Information and communication technologies
4. Nanosciences, nanotechnologies, materials and new production technologies
5. Energy
6. Environment (including climate change)
7. Transport (including aeronautics)
8. Socio-economic sciences and the humanities
9. Security and space





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1. Health

Biotechnology, generic tools and technologies for human health

Translating research for human health

Optimising the delivery of healthcare to European citizens





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HEALTH RESEARCH FP7

Objective:

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





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HEALTH RESEARCH FP7

Rationale (I):

- **Sequencing of human genome and recent advances in post-genomics ⇒ vast amounts of data**
- **Translational research (translation of basic discoveries in clinical applications) ⇒ to combat diseases of global importance**
- **Clinical research ⇒ international multi-centre trials**
- **Health policy-driven research ⇒ comparisons of the national models & data**





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HEALTH RESEARCH FP7

Rationale (II):

- **Strong EU-based biomedical and research ⇒ to strengthen the competitiveness of large industries (pharma) as well as SMEs (healthcare biotech & medical technology)**
- **Child health and the health of the ageing population ⇒ strategic issues across activities**
- **European Technology Platform on Innovative Medicines ⇒ to remove bottlenecks hampering the efficiency of the development of new medicines and where research is the key**





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HEALTH RESEARCH FP7

Activities:

- **Biotechnology, generic tools and technologies for human health**
- **Translating research for human health**
- **Optimising the delivery of health care to European citizens**





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HEALTH RESEARCH FP7

Biotechnology, generic tools and technologies for human health

- **High-throughput research**
- **Detection, diagnosis and monitoring.**
- **Predicting suitability, safety and efficacy of therapies (incl. alternatives to animal testing)**
- **Innovative therapeutic approaches and intervention**





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HEALTH RESEARCH FP7

Translating research for human health

- **Integrating biological data and processes: large-scale data gathering, systems biology**
- **Research on the brain and related diseases, human development and ageing**
- **Translational research in infectious diseases (incl. HIV/AIDS, malaria, tuberculosis, SARS, etc.)**
- **Translational research in major diseases: cancer, cardiovascular disease, diabetes/obesity; rare diseases; and other chronic diseases (e.g. osteoarthritis).**





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HEALTH RESEARCH FP7

Optimising the delivery of health care to European citizens

- **Translating clinical outcome into clinical practice**
- **Quality, efficiency and solidarity of health systems including transitional health systems (i.e. health systems that are currently under a reform process)**
- **Enhanced disease prevention and better use of medicines**
- **Appropriate use of new health therapies and technologies**

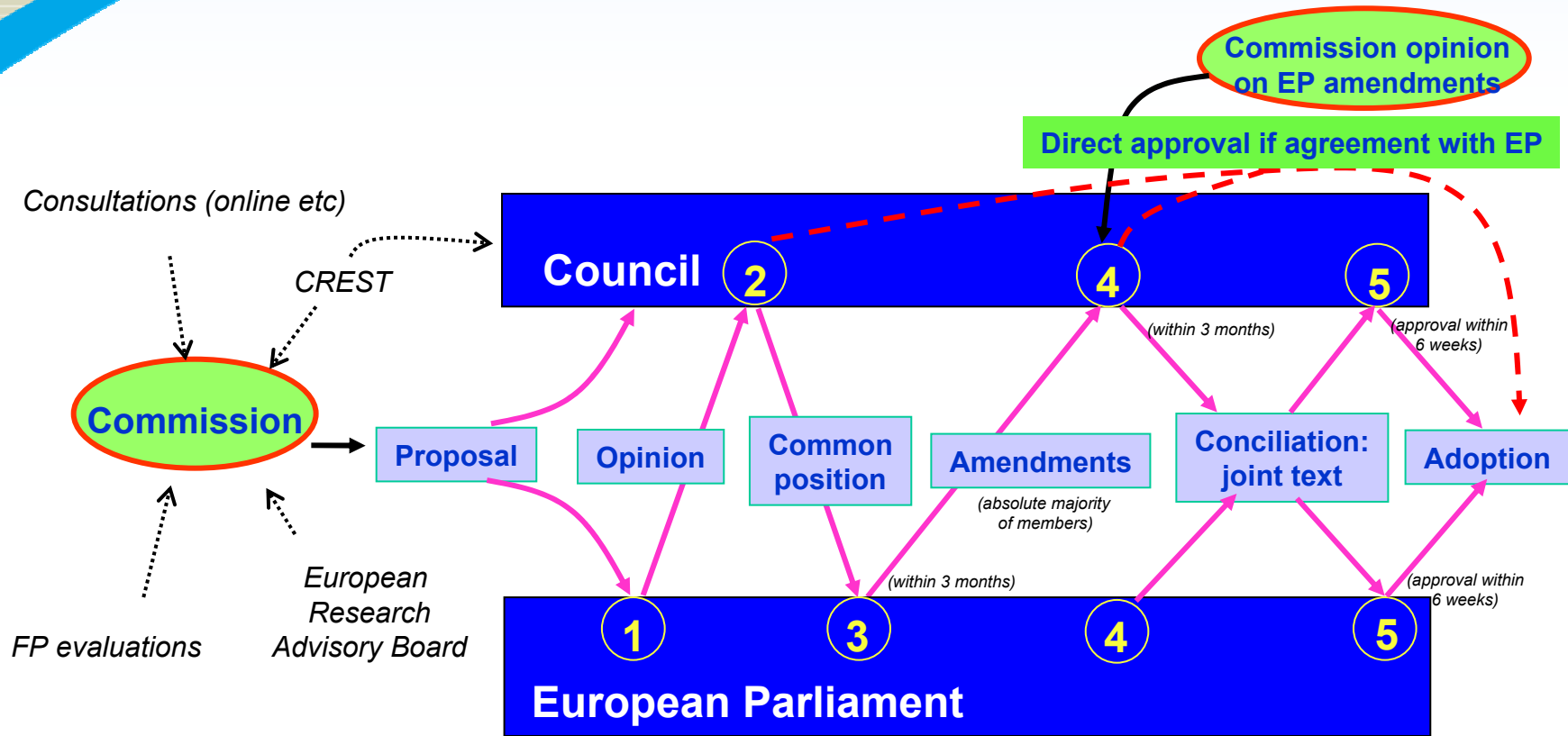




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Towards the Seventh Framework Programme 2007-2013 ("co-decision")



Council decides by qualified majority except on EP amendments not approved by the Commission



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FP7 Timetable

6 April 2005	Commission's proposal
September 2005 ?	Specific programmes' proposal
December 2005 ?	First reading at EP
January 2006 ?	Common position at Council
March 2006 ?	Second reading and approval at EP
June 2006 ?	Adoption
November 2006 ?	First calls for proposals
December 2006 ?	Launch Conference





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Information on FP7

- EU research:
<http://europa.eu.int/comm/research>
- Seventh Framework Programme:
http://europa.eu.int/comm/research/future/index_en.cfm
- Information on research programmes and projects:
<http://www.cordis.lu>
- RTD info magazine:
<http://europa.eu.int/comm/research/rtdinfo>
- Information requests:
research@cec.eu.int

