



Genomics Research in European Programmes



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« **The Future of Science** »
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Food, **A**griculture and **F**isheries, and **B**iotechnology
Knowledge - Based Bio - Economy (K B B E)

This presentation shall neither be binding nor construed as constituting a commitment by the European Commission





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The 7th EU Framework Programme (2007-2013)

	<u>Cooperation</u> Collaborative Research 32 365 M€	<u>Ideas</u> Frontier Research 7 460 M€	
	<u>People</u> Human Potential 4 728 M€	<u>Capacities</u> Research Capacity 4 217 M€	
<u>Euratom</u>		<u>JRC</u>	

Specific Programmes: Total 53 billion €

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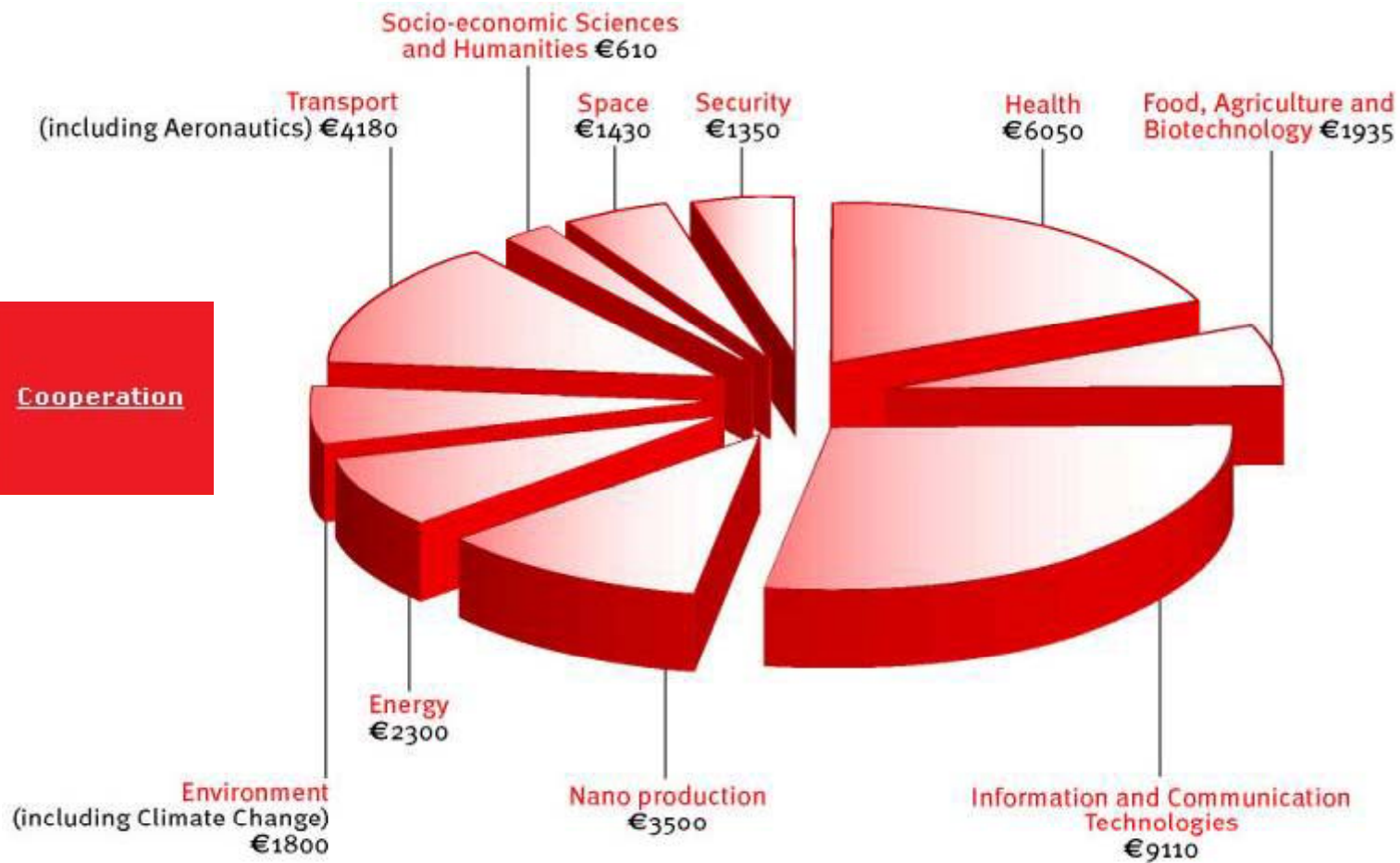




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Cooperation specific programme 10 themes



Budget in million €

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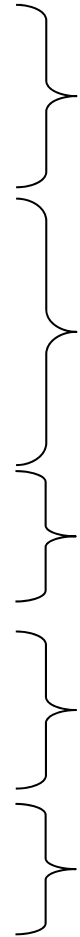


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Human Genome Research in EU Framework Programmes

FP2 (1987-1991) Human Genome Analysis Programme
FP3 (1990-1994) Biomed 1
FP4 (1994-1998) Biomed 2
FP5 (1998-2002) Quality of Life Programme
FP6 (2002-2006) Life sciences, genomics and biotechnology for health
FP7 (2007-2013) Health Theme



- Improvement of research infrastructure
- Genetic and physical maps of human genome, genetic basis of diseases
- Tools, technologies and knowledge to benefit from human genome
- Functional genomics and post-genomics research
- Translation of genomic knowledge to health research





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Highlights of ongoing FP6 Health projects

- **EUROSPAN:** Investigates 5 genetically isolated populations in Europe to identify novel variants influencing complex diseases.
- **AnEUploidy:** Understanding gene dosage imbalance in human health using genetics, functional genomics and systems biology.
- **CAPABILITY:** Contributes to the efforts to establish and sustain a world-wide harmonisation process for quality standards for the integration of genetic tests/genomic knowledge applications into practice and prevention. It bridges between another large project (EUROGENTEST) and research centres from developing countries.



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Highlights of ongoing FP7 Health projects

- **ENGAGE:** ‘European Network for Genetic and Genomic Epidemiology’ will integrate results of many large scale genetic studies currently underway in Europe and Australia to identify novel disease and trait susceptibility variants for multifactorial diseases.
- **CHERISH:** Improving Diagnosis of Mental Retardation in Children in Eastern Europe and Central Asia through genetic characterisation and bioinformatics/statistics.
- **MetaHIT:** ‘Genes of intestinal microbes, human health and disease’ will establish associations between the genes of human intestinal microbiota and our health and disease.



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Genomic research in Agriculture and Forestry

- How can genomics research contribute to enhancing the quality and quantity of plant products?
- How can genomic information be best applied in a breeding context? (Concept of genomics assisted breeding integrating genomic, genetic and phenotypic data)



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Genomic research in Agriculture and Forestry

- To gain insight into relevant biological questions

? Molecular components involved in durable resistance against major fungal diseases in wheat and potato



? Factors that determine meiotic recombination frequency and distribution in higher plants

MeioSys

? Mechanisms underlying environmentally-induced epialleles and their inheritance

AENEAS





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Genomic research in Agriculture and Forestry

- To understand plant genomes and genetic relationships between crops and their relatives

Contribution to international sequencing efforts for

➔ Medicago



➔ Tomato



➔ Wheat





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Genomic research in Agriculture and Forestry

- To understand and make use of genetic diversity in plants and the agro-ecosystem
 - ➔ Valorize and characterise Andean soil microbial diversity in potato-based cropping systems.
- Use of metagenomic, genomic, proteomic and metabolomic analysis to identify novel traits of microorganisms and characterize beneficial soil microbial communities





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Genomic research in Agriculture and Forestry

- To provide tools and resources to bring more precision, predictability and “speed” in breeding process (e.g. dissection of DNA polymorphisms for Marker Assisted selection)

⇒ New breeding strategies for forest trees pines, spruces and poplar to improve wood properties, water use and drought tolerance



⇒ Knowledge, models and tools to develop crops (wheat, oilseed rape, potato, maize) with increased nutrient-use efficiency

NUE-CROPS





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Highlights in Animal genomics

- **Quantomics:** From sequence to consequence- tools for the exploitation of livestock genomes.
- **EADGENE:** Network of Excellence concentrating on the genomics of animal-pathogen interactions.
- **AQUAFIRST:** Combined genetic and functional genomic approaches for stress and disease resistance marker assisted selection in fish



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Highlights of ongoing FP6 Environment projects

- **MARINE GENOMICS:** Network of Excellence for the implementation of high through-put genomic approaches to investigate the functioning of marine ecosystems and the biology of marine organisms. Applicable to the management of marine resources (prediction of global changes in marine populations, conservation of biodiversity, fisheries management etc) and to bioprospecting.
- **FISH&CHIPS:** DNA chips as a standard analytical tool for the identification of marine organisms in biodiversity and ecosystem science



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Opportunities for collaborative research

Health: main calls

(single evaluation stage) 333M € deadline 19 Nov 2009

(two-stage evaluation) 205M€ deadline 29 Oct 2009

Food, Agriculture & Fisheries, and Biotechnology : main call
190 M€ deadline 14 Jan 2010

Environment (inc Climate Change): main call
175M€ deadline 5 Jan 2010



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Information



- 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/>

