Brain disorders

**A global challenge at all age groups**

1. **Depression:** 350 million people, in all communities across the world (Source: WHO Fact sheet nr 369, 2012)

2. **Dementia:** 47.5 million people worldwide, 2010 global costs of care $ 604 billion
   - **By 2050 the estimate is 135.5 million people worldwide**
   - **58% of people living with dementia are in low- and middle-income countries**
   (Source: WHO Fact sheet nr 362, 2015)

3. **Traumatic brain injuries:** most important cause of disability under the age of 45 (source: InTBIR) and to become the third leading cause of global mortality and disability by 2020 (The changing landscape of traumatic brain injury research, Lancet Neurol., 2012)

4. One child in 160 with an **autism spectrum disorder** and subsequent disability, associated costs $2.3 million per person (Elsabbagh et al., Autism Res., 2012)
FP7 brain research

EUR 3 billion
Collaborative research / Frontier research / Training and mobility

Funding by type of research

Over 19,000 Connections

FP7 brain research

A typical EU collaborative brain project

13 participants
A private partner in 83% projects
7% projects created an SME
65% projects submitted a patent
37 Articles per project of 9.0 average IF
EU Fund per project: 5.8 MC
Extra Fund per EU project: 2.9 MC
EU Fund per Participant: 450,000 €
FP7 brain research

Key figures

1163 M€ invested
202 projects
2592 participations
1113 organisations
59 countries

First outcomes

3608 publications
3,2 average SJR* (average IF of 9.0)
62 patent applications
7 spin-offs created

* SCImago Journal Ranking

Horizon 2020 and health research

Excellent science €24bn*
Industrial leadership €17bn*
Future and Emerging Technologies
Marie Skłodowska Curie
Research Infrastructures
Eureka Eurostars-2
LEIT Biotech
Financial instruments
SME instrument
Fast Track to Innovation
IMI-2
Collaborative projects
AAL-2
EDCTP-2

European Research Council

* Figure to be updated following EFSI investments in 2015
Where is brain research in Horizon 2020?

EVERYWHERE!

Horizon 2020
"Health, Demographic change and Well-being"

- Translates science to benefit citizens
- Departs from a disease-oriented approach to better depict biological variations
- Provides more opportunity for brain research
- First Horizon 2020 brain collaborative projects worth more than €350 million
Health, demographic change and well-being

7 Focus Areas

- Understanding health, well-being & disease
- Preventing disease: health promotion, screening, assessment of risk, better diagnosis and prognosis, vaccines
- Treating & managing disease
- Active ageing & self-management of health
- Methods & data
- Health care provision and integrated care
- Specific implementation aspects

Health, Demographic change and Well-being
WP 2016 – 2017

Opportunities for brain research

Examples of topics:

- **Understanding Health, Well-being and Disease**
  - SC1-PM-02-2017: New concepts in patient stratification
  - SC1-PM-04–2016: Networking and optimising the use of population and patient cohorts at EU level

- **Preventing Disease**
  - SC1-PM-07–2017: Promoting mental health and well-being in the young

- **Treating and Managing Diseases**
  - SC1-PM-9-2016: New therapies for chronic diseases
  - SC1-PM-10–2017: Comparing the effectiveness of existing healthcare interventions in the adult population

- **Methods and Data**
  - SC1-PM-17–2017: Personalised computer models and in-silico systems for well-being
Implementation in SC1 Work Programme 2016-2017

• SMEInst-05-2016-2017 – Supporting innovative SMEs in the healthcare biotechnology sector

• SMEInst-06-2016-2017 – Accelerating market introduction of ICT solutions for Health, Well-Being and Ageing Well

SME instrument

- Covers the entire medical research and innovation value chain
- Strategic Research Agenda is based on the WHO Priority Medicine Report renewed in July 2013
- Involves pharmaceutical industries as well as others (diagnostics, imaging, animal health, ICT etc.)
- Supports world class research and innovation leading to breakthrough vaccines, medicines and treatments
- €146.7 million (EC contribution) to brain research via IMI: Alzheimer, Autism, Depression, Schizophrenia
- IMI Alzheimer’s disease Joint Platform (March 2015): overall EC contribution €58.2 million

- Neurodegenerative & psychiatric diseases in IMI2’s Strategic Research Agenda (2014-2020)
- More than EUR 70 million EC contribution to IMI2 topics on brain research, around e.g.:
  - dry age-related macular degeneration
  - clinical neuropsychiatry and quantitative neurobiology
  - Alzheimer, cognitive impairment and dementia
  - Neuropathic pain
  - Parkinson

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**Coordination of national research**

**Joint Programming initiative on Neurodegenerative Disease Research (JPND)**
- 30 countries, Member-States led initiative
- Nearly €110 million invested in 7 transnational calls (incl. co-fund of 10 million from EC):
  - 2015: risk and protective factors, longitudinal cohort approaches, advanced experimental models; 2016: working groups on “Harmonisation and Alignment in Brain Imaging Methods for Neurodegeneration”

**Network of European funding for Neuroscience research: NEURON II**
- Neuroscience, neurology, psychiatry (18 countries)
- €71.4 million already invested in 7 transnational calls
  - 2015: Neurodevelopmental Disorders; 2015: Neuroethics
  - 2016: External Insults to the Nervous System (TBI, SCI)
International cooperation

Multi-lateral initiatives

- IRDiRC
  - www.irdirc.org/
- InTBIR
- IHEC
  - http://ihec-epigenomes.org/
- GACD
  - www.gacd.org/
- International Cancer Genome Consortium
  - https://icgc.org/

Global Research Collaboration for Infectious Disease Preparedness

International initiative TBI

- Coordinates clinical research across the full TBI spectrum
- **Key goals**: better clinical outcomes & lower TBI burden by 2020
- **How?** Through the discovery of causal relationships between treatments and clinically meaningful outcomes
- **First results: agreement on common data elements (CDEs)**
  - development of case report forms for patients characterization
  - facilitates the comparison between studies for ultimately identifying best clinical practices
Future & emerging technologies

FET Open
- Supports the early-stages of the science and technology research and innovation around new ideas towards radically new future technologies
- Included in WP 2016-2017

FET Proactive
- Helps new research communities to be developed by encouraging researchers from different disciplines to work together on new technologies and establish a critical mass in specific domains

Future & emerging technologies
The Human Brain Project Flagship

Building an ICT infrastructure for neuroscience, medicine and computing that will catalyse collaborative efforts to better understand the brain and its diseases and emulate its computational capabilities

Human Brain Project
https://www.humanbrainproject.eu/
- A very large-scale European collaborative research initiative: More than 400 scientists from 112 institutions from 24 countries
- A 10 years Research Roadmap, 1 BC budget
- Ramp-up phase (FP7): 1st October 2013 to 31st March 2016 ~ 54 M€ EU funding
- Operational phase (H2020): 01 April 2016 to 2020+: ~50 M€ EU funding / year
**Other financial instruments**

1. **InnovFin Large Projects**
   - Loans from €7.5 m to €300 m; delivered directly by EIB

2. **InnovFin MidCap Growth Finance**
   - Loans from €7.5 m to €25 m; delivered directly by EIB

3. **InnovFin MidCap Guarantee**
   - Guarantees to financial intermediaries (banks, etc.)
   - Loans from €7.5 m to €25 m; implemented by EIB

4. **InnovFin SME Guarantee**
   - Guarantees / counter-guarantees to financial intermediaries
   - Loans from €25,000 to €7.5 m; implemented by EIF

5. **InnovFin Advisory**
   - Improve ‘bankability’ of large projects

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**EFSI**
**European Fund for Strategic Investments**

- Will provide €21 billion in initial funding – including a guarantee
  €16 billion EC and €5 billion from EIB
- Strategic infrastructures including digital, transport and energy
- Education, research, development and innovation
- For entities of all sizes, including smaller businesses and midcap companies
- Projects supported by EFSI shall typically have a higher risk profile than projects supported by EIB normal operations.
Maximising outcome of transnational research

How to strengthen collaboration?

H2020/FP7 projects
IMI
NEURON
FET/HB:
Global Action Against Dementia
InTBIR

Projects (results, data)
Programmes/Initiatives
Infrastructures

Horizon 2020: taking part is the best way to ensure your priorities are met!

Thank you!