Challenges for the Health sector within the scope of the research agenda and current definition of European policies for Science, Technology and Innovation...

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From Science to Technologies... integration and convergence
Horizon 2020 (2014-2020) – Objectives and International cooperation

Shared objective

Tackling Societal Challenges
- Health, demographic change and wellbeing
  - Food security, sustainable agriculture and the bio-based economy
  - Secure, clean and efficient energy
  - Smart, green and integrated transport
  - Climate action, resource efficiency and raw materials
  - Inclusive, innovative and secure societies

Excellence in teaching and training
- Frontier research (EIC)
- Future and Emerging Technologies
- Skills and career development
- Research infrastructures

Simplified access
Common rules, tools.

Health

- HBP: Human Brain Project
- JPI: Joint Programming Initiative
- IMI: Innovative Medicines Initiative
- AAL: Active and Assistive Living programme
- KIC: Knowledge and Innovation Community
- FET: Future and Emerging Technologies
- JPI MYBL: More Years, Better Lives
- JPI HDHL: Healthy Diet for Healthy Life
- JPI AMR: Joint Programme in Antimicrobial Resistance
- JPND: Joint Programme in Neurodegenerative Disease Research
- EDCTP: European & Developing Countries Clinical Trials Partnership
- EMPIR: European Metrology Programme for Innovation and Research
- EIP-AHA: European Innovation Partnership on Active and Healthy Ageing

IMI2 1,638 M€
EIP-AHA 0 M€
JPI AMR ? M€
JPI HDHL ? M€
EIP-AHA 0 M€
EDCTP 683 M€
EMPIR 60 M€
KIC EIT-Health ? M€
FET HBP ? M€
AAL 175 M€
ICT for Health 1,120 M€?
From FP8 to FP9... Horizon 2020 moving to Horizon Europe

Horizon Europe, 2021-2017 (as per April 2nd, 2019)
✓ European Research Council
✓ European Innovation Council
✓ Grand challenges
  • Missions (first set of 5)
    1. Adapting to climate change, including societal transformation;
    2. Cancer;
    3. Healthy oceans, seas, coastal and inland waters;
    4. Climate-neutral and smart cities;
    5. Soil health and food
  • Partnerships
    1. Faster development and safer use of health innovations for European patients, and global health.
    2. Advancing key digital and enabling technologies and their use, including but not limited to novel technologies such as artificial intelligence, photonics and quantum technologies.
    3. European leadership in metrology, including an integrated metrology system.
    4. Accelerate competitiveness, safety and environmental performance of EU air traffic, aviation and rail.
    5. Sustainable, inclusive and circular bio-based solutions.
    6. Hydrogen and sustainable energy storage technologies with lower environmental footprint and less energy-intensive production.
    7. Clean, connected, cooperative, autonomous and automated solutions for future mobility demands of people and goods.
    8. Innovative and R&D intensive small and medium-sized enterprises.

The commission has proposed a budget of €94.1 billion for the programme, while the parliament wants €120 billion.

The amount won’t be agreed until the end of 2019 at the earliest, because it depends on negotiations for the EU’s long-term financial plan.
Europe’s challenges (examples)...

- Risk-management culture and risk-management based policies

- Venture capital and lack of continuity in the financial cycle of innovation and entrepreneurship

- Dual-use technologies (e.g. lack of DARPA-like programmes, management structures to be adequate, European Defence Union still incipient)

- Digital Europe and cybersecurity

- Coherence between European central policies (FP8/FP9) and regional/national policies
Regional policies... (Regional Innovation Scoreboard)

2009

2017
Portugal... Lisbon...

FDI – target areas within Health sector @Lisboa region

• Data / Digital Technologies
  • Biopharmaceutical R&D+Innovation

R&D integration
Specialisation/Personalised care
Manufacturing capacity

Figure 1. PM approach as compared to treatment-failure evidence-based medicine (EBM) approach in medical practice. A similar PM approach applies to the prevention of disease, where at-risk individuals are identified by their personalised profiles.

Critical success factors: Health benefit, cost

Multi-omics, psychosocial, socioeconomic as well as other health and lifestyle-related data

Approved in 2017

Approved in 2018
Reference positions (last 5 years)

○ University Governance
  ○ Pro-Rector (2016-2017), Vice-Rector R&D, University of Lisboa (ULisboa), Portugal (2013-2016)
  ○ General Council of University of Lisbon (UL, Portugal), 2008-2013
  ○ Vice-Dean, Research & Tech Transfer/ International Affairs (FFUL) 2012-2013
  ○ Head of Department
  ○ President Department of Pharmacy Practice, FFUL, 2017-2018 and 2018-2022
  ○ President School Council FFUL (2018-2022)

○ Research groups Leadership
  ○ Group Leader “Nanomedicine & Drug Delivery Systems” (iMed.UL), 2007-2013
  ○ Group Leader “Intracellular Trafficking Modulation for Advanced Drug Delivery” (iMed.UL), 2013-2014
  ○ iBB (Institute for Bioengineering and Biosciences) @ IST since 2017 (member of scientific coordination board)

○ Scientific Societies / International bodies
  ○ SPCF, President Portuguese Society for Pharmaceutical Sciences (since 2016)
  ○ Foreign member of the Spanish Royal Academy of Pharmacy (RANF, since 2017)
  ○ EUFEPS, Executive Committee (2009-2013 and 2016-2020), Vice-President for the mandate 2019-2020, EUFEPS Council representing SPCF (since 2016); EUFEPS, Chair of Regulatory Science Network (2011-2014 and since 2016), and representing EUFEPS at Board of Pharmaceutical Sciences, FIP (2019)
  ○ FIP, Vice-chair Regulatory Science Special Interest Group (2011-2014)

○ Advisory positions (international)
  ○ External Advisory Board of RESTORE (Horizon 2020 project, NMBP, 2018-2022)
  ○ External Advisory Board of REFINE (Horizon 2020, project NMBP-761104, 2017-2021)
  ○ Advisory Board of NANOMED-ITN, (Horizon 2020, project Marie-Curie Action, MSCA-ITN-676137)
  ○ External Advisory Board of EuroNanoMedNet (ERA-NET in Nanomedicine, FP7/Horizon 2020, EU (active)
  ○ External Advisory Board of European Doctoral Program in Nanomedicine (NANOFAR, ERASMUS MUNDUS, 2011-2017)
  ○ Scientific Advisory Board of TRANS-INT (Large FP-7 project, 2012-2017, contract n° 281035)
  ○ Scientific Advisory Board of Z-Cube (Zambon group, Milano, Italy, 2011-2013)

○ Editorial Board/International Advisory Board:
Research Groups

Bioengineering (BERG)
Biological Sciences (BSRG)
Biospectroscopy and Interfaces (BSIRG)
Stem Cell Engineering (SCERG)
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