Horizon 2020 funding opportunities for Regenerative Medicine (2018-2020)

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Disclaimer: Any information mentioned is preliminary only, always consult the official documents.

Outline

- AMIRES
- Summary of H2020 calls
- Overview of RegMed in EU FPs, incl. AMIPLEXUS
- Next action

AMIRES

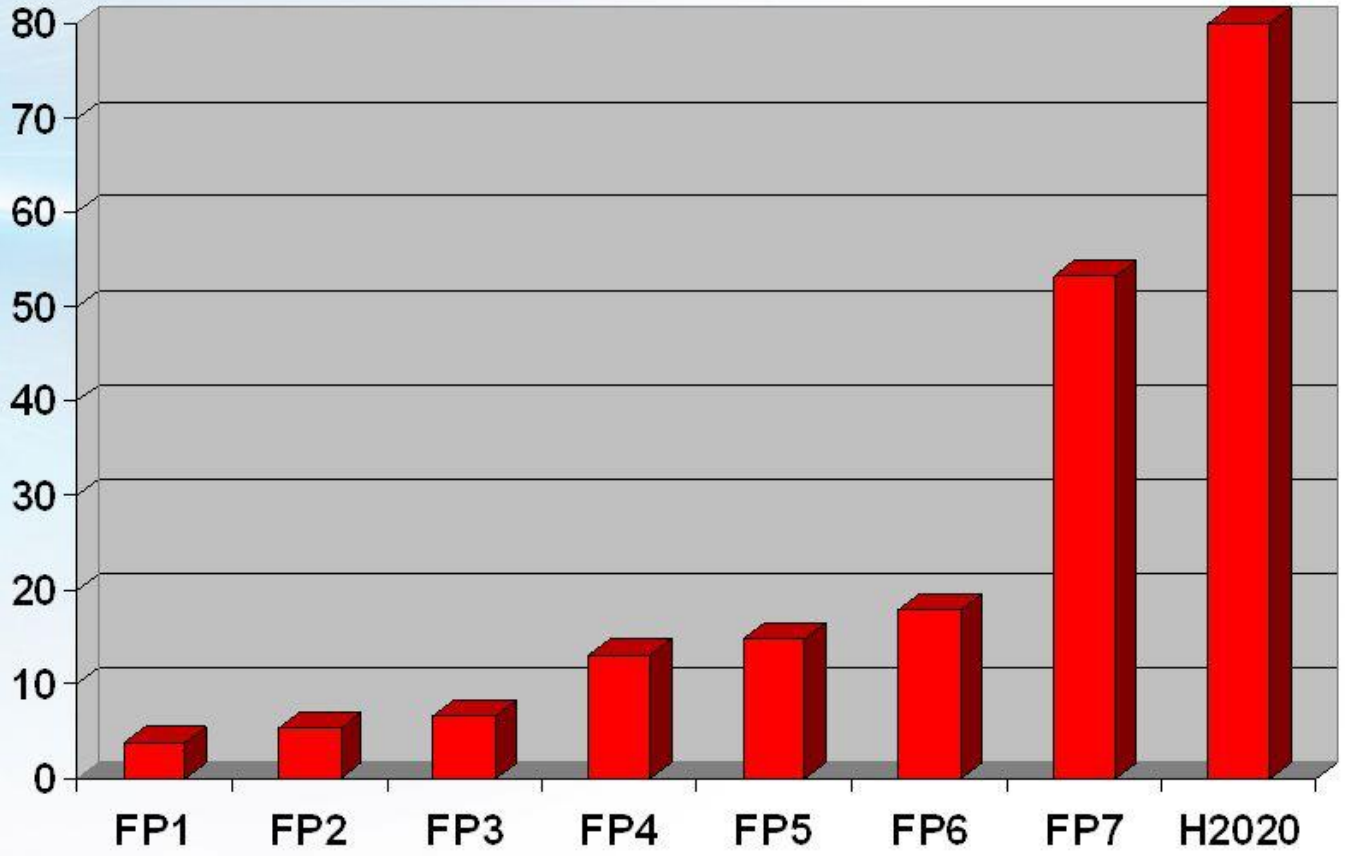
- Strategic partner(s) search
- Project initiation, planning, drafting, proof-reading and negotiation
- Project management

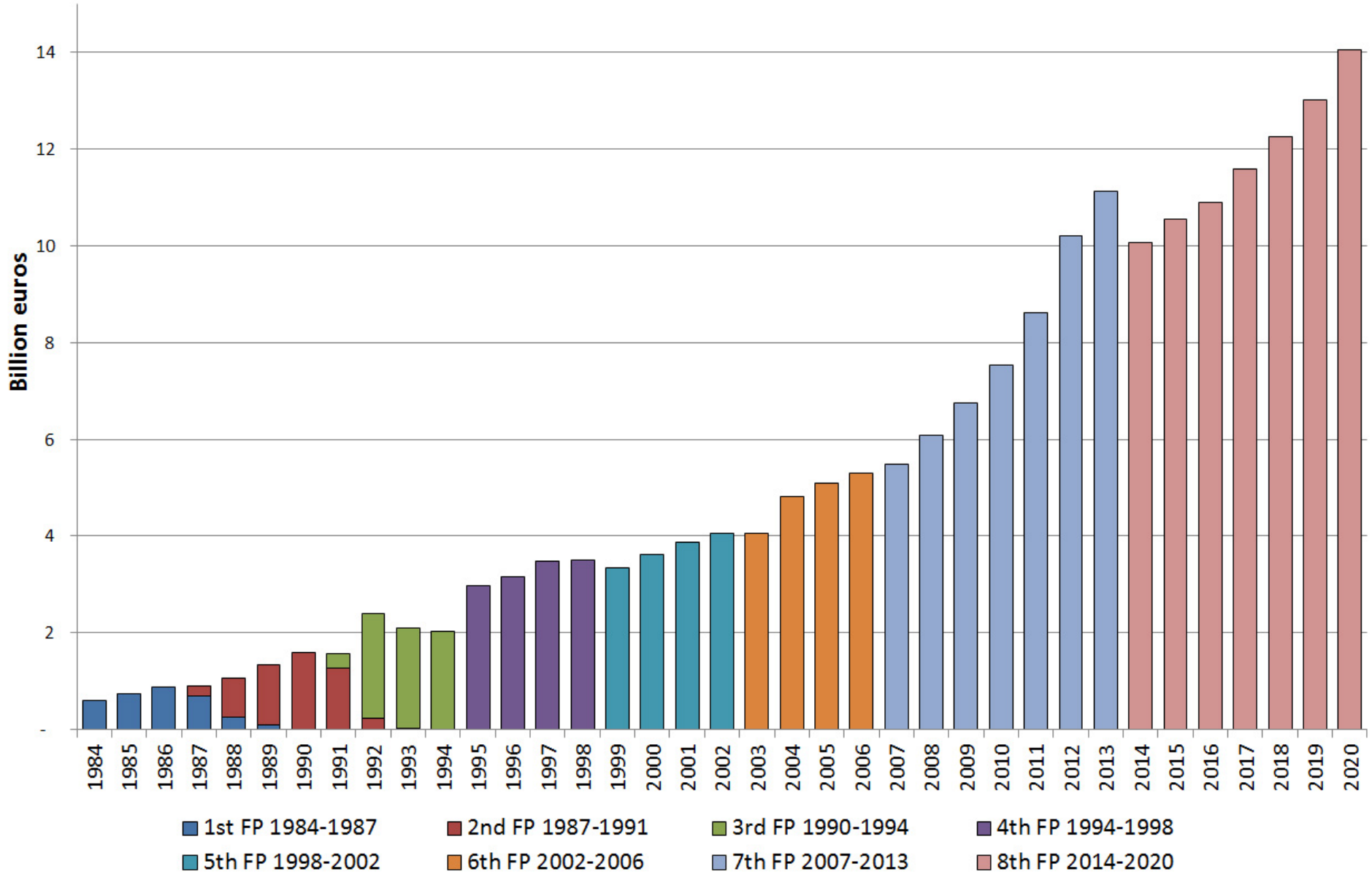
- Innovation opportunity analysis
- Business Innovation Coaching
- Technology assessment
- Webinar and events management

“Experienced professionals provide support in strategically oriented innovations for business impact”

EU Framework Programme Budgets

FP1 (1984-88) to Horizon 2020 (2014-20)




Billion euros
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3rd FP 1990-1994
4th FP 1994-1998
5th FP 1998-2002
6th FP 2002-2006
7th FP 2007-2013
8th FP 2014-2020

ETPN RegMed Survey 2015-2016

- **New therapies and devices for tissue regeneration, hydrogels, scaffolds (e.g. intervertebral disk), Bioactive surface coatings for localized tissue regeneration, neural tissue scaffolds, gene activated scaffolds (8)**
- Nanotechnology for innovative in-vitro/in-vivo diagnostics methods (e.g. breast, brain) (6)
- **Antimicrobial implants and technologies against biofilm (5)**
- Combining encapsulation of nanoparticles with novel/smart drug delivery materials (4)
- Biosensing (4)
- **3D biofabrication & cell printing (3)**
- **Development of (artificial) organ models, e.g. skin, liver, kidney (3)**
- **Stem cell therapy and cell reprogramming (3)**
- Nanoformualtions for advanced, synergic cancer therapies (2)
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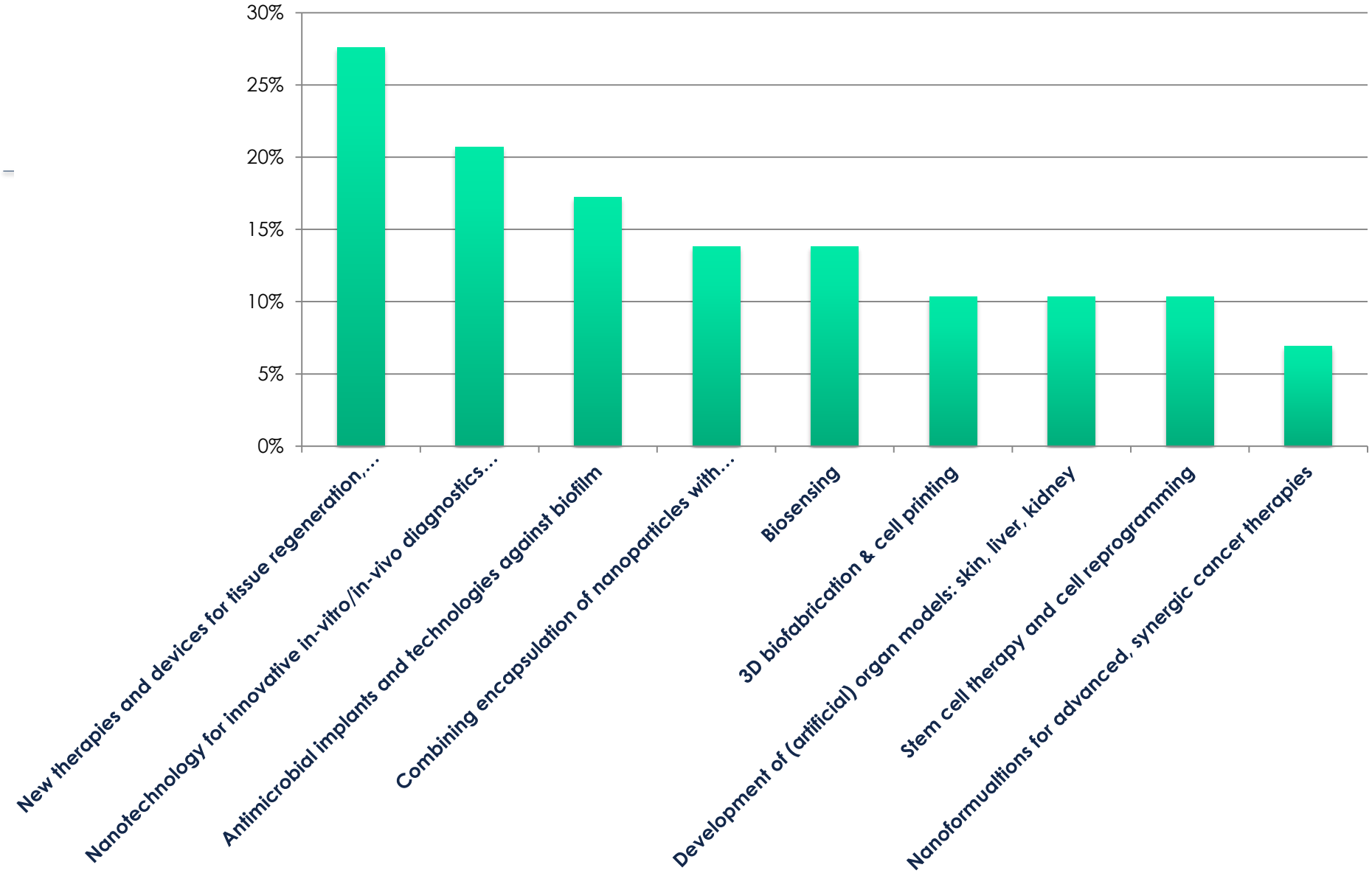
Future H2020 topics – ETPN survey 2015-2016



Medical Technology Innovations

EU demographic change requires innovation to enhance healthcare delivery, quality of life and active ageing, being also an industrial opportunity and a growing market. To respond to these challenges and opportunities, the topics in this section will **develop innovative design, development and manufacture of user-centric medical technologies, including implants, tissue regeneration, and smart nano- or bio-materials**.

The EU medical industrial sector ecosystem is currently fragmented into diverse approaches and technologies; developing and tuning innovative medical technologies performances to the **patients' needs** is essential to **enable the translatability of inclusive "bench to bedside" solutions into personalised clinical applications**. This development could result in a **major improvement on the quality of life of patients**.

Medical Technology Innovations

- NMBP-22-2018: Osteoarticular tissues regeneration (RIA)
- NMBP-21-2020: Custom-made biological scaffolds for specific tissue regeneration and repair (RIA)
- DT-NMBP-23-2020: Next generation organ-on-chip (RIA)

NMBP-22-2018: Osteoarticular tissues regeneration (RIA)

EU demographic change requires innovation to enhance **active ageing**, whereby a growing market for **osteoarticular tissue regeneration** is created.

To reduce patients' sufferings, mitigate the economic burdens to health systems and exploit market opportunities it is crucial to conceive **innovative designs and development of innovative biomaterials that enables the delivery of smart, nanostructured and functionalised tissues to regenerate and integrate bones, cartilages, tendons and joints**.

Scope

To design and develop **user-centred innovative and smart nanobiomaterials** which may be also **adaptable to remote control**, that will lead to a **personalised regeneration of osteoarticular tissues (bones, cartilages, tendons, joints).** The nanobiomaterials should be designed **to perform in host tissues affected by severe degenerative and/or inflammatory processes**, which typically characterise Osteoarticular pathologies. Proposals should cover at least one of the following technologies, leading to a convergence of processes: **(i) 3D-bioprinting; (ii) stem cells seeding, recruiting, activation, functionalisation, and cell printing; (iii) nano functionalisation; (iv) 3D-printable biophoto-polymerisation; (v) use of light to expose/mask tethered signalling molecules, incorporating immune-modulatory materials such as complement regulators; (vi) additive manufacturing by laser sintering, rapid prototyping technologies, stereolithography, inkjet techniques; (vii) relevant cross-cutting KETs; (viii) electrospinning.**

Scope II

The research design should be developed by means of a multidisciplinary approach and involve relevant stakeholders. As relevant, proposals should consider sex and gender specific aspects.

Proposals submitted under this topic should include actions designed to facilitate cooperation with other projects; to enhance user involvement; and to ensure the accessibility and reusability of data produced in the course of the project.

Activities should start at **TRL 3 and achieve TRL 5** at the end of the project.

The Commission considers that proposals requesting a contribution from the EU of **between EUR 4 and 6 million** would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

- Alleviate heavy burdens on patients and healthcare systems by developing smart nanoengineered affordable biomaterials for tissue self-healing and regeneration; **improve the well-being, health, quality of life and active ageing of populations**;
- Boost industrial competitiveness and leadership of EU companies **in personalised biointelligent materials responding to patients' clinical specificities**;
- **Enhanced incorporation of digitalisation and Internet of Things for innovative and affordable biomaterials;**
- Increase EU attractiveness for the clinical development of regenerative medicine;
- reinforce the EU sector ecosystem to generate new markets and opportunities for SMEs, translating innovative biomaterials into pre-clinical tests for market uptake.

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

Type of Action: Research and Innovation action, Two stage 23rd Jan – 28th June

Budget: 24 million €, i.e. 4 - 6 projects!

AMIPLEXUS search

OA:

- ADIPOA-2
- BOOSTB4
- CuraBone
- Orthounion
- FAST (AM)
- RETHRIM
- BIOGEL
- VASCUBONE (FP7)
- VIVOIMAG

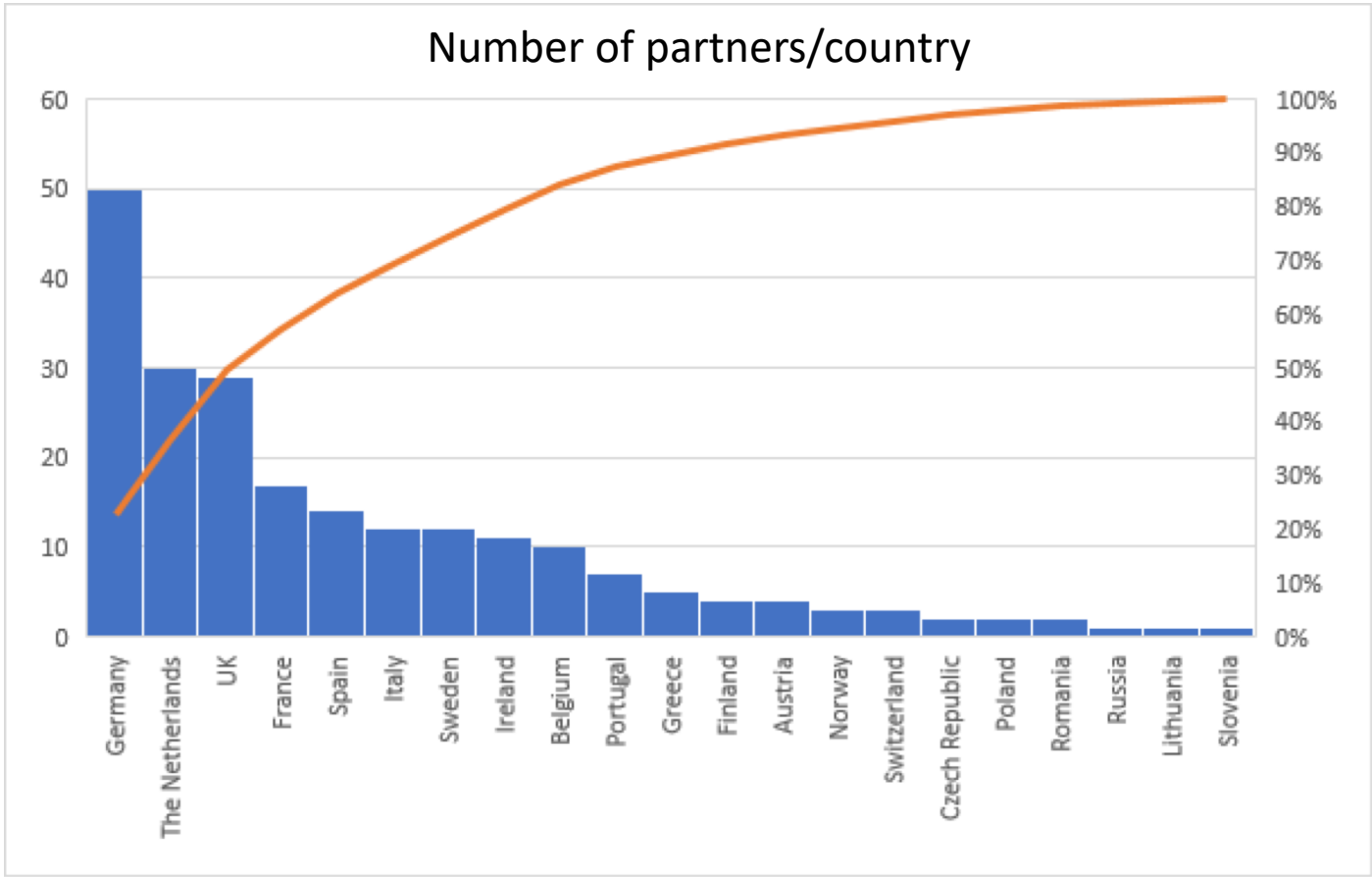
3D bioprint:

MIMIC
BIOPOL
PRINT-AID
FAST
MESO_Brain

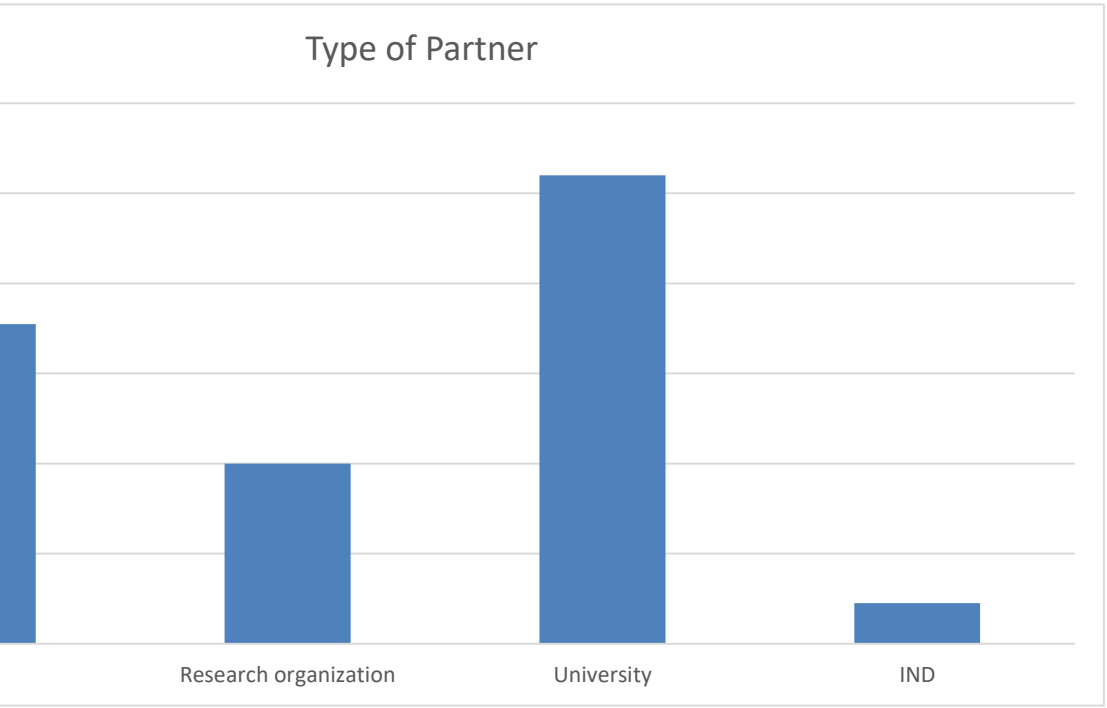
Gene therapy:

IMGENE
COSYN
ENLIGHT-TEN
HemAcure

Regenerative medicine in H2020 (and FP7)



Regenerative medicine in H2020 (and FP7)



Other linked NMBP calls

- DT-NMBP-02-2018: Open Innovation Test Beds for Safety Testing of Medical Technologies for Health (IA)
- DT-NMBP-04-2020: Open Innovation Test Beds for bio-based nano-materials and solutions (IA)
- DT-NMBP-06-2020: Open Innovation Test Beds for nano-pharmaceuticals production
- (IA)
- DT-NMBP-08-2019: Real-time nano-characterisation technologies (RIA)

ICT-09-2018: Electronic Smart Systems (ESS)

b) **Advances in bio-electronics smart systems**: Enhancement of the technical capabilities **of bio-electronics and connected Bio-electronics and Micro-Nano-Bio Systems through cost-effective miniaturisation, manufacturing and demonstration**, leading to high performance in specificity/sensitivity, reliability, time to results and manufacturability.

This includes modular approaches with integration of standard components and interfaces as well as platforms where material, IT, communications and sensing/analysis modules are interchangeable. **Portability, wearability, biocompatibility, and operation in remote and low resource settings should be considered. User needs, markets and business cases should be clearly addressed.**

Projects should start from experimentally proven concepts and deliver prototype(s) validated in relevant environments **(TRL 5).**

Budget 2-4 mio € (RIA – 39mio €, i.e. 2-3 projects)

Deadline 17th April 2018

AMIPLEXUS

- ICT-2-2014
- ICT-3-2016

SC1-BHC-09-2018: Innovation platforms for advanced therapies of the future

Advanced therapies are based on gene, cell or tissue-engineered products which are defined and placed on the market according to the terms of Regulation 1394/2007.

So far, only a small number of these products have been placed on the market, and of these, **most are for rare diseases.** However, in recent years, **important discoveries and developments, some unprecedented, have been made in molecular and cell biology and in cell technology**, which offer improved opportunities for advanced therapies development. The challenge is to use the new knowledge and new technologies to introduce greater innovation into the advanced therapy development chain as a **basis for tackling diseases and conditions affecting large patient groups**.

SCOPE

Building on European strengths and using the definition set out in Regulation (EC) 1394/2007, projects should **create knowledge and exploitation platforms around innovative concepts for advanced therapy development**. **Platforms** should comprise the **components** and **expertise** necessary to create a solid foundation **on which to build possible new therapeutic approaches and/or aim to overcome particular development bottlenecks**. Possible components could include **studying the basic biology of the potential therapy and investigating its mode of action, proof of concept in animal models or first-in–man studies**; **safety, efficacy, characterisation, refinement and manufacturing of the product could be considered**. Projects should also propose **a business model for exploiting results and carry out appropriate outreach and public information activities**. Examples of issues that have been identified as holding back the field **include gene delivery to cells, reducing off-target effects in gene therapy, immunogenicity of potential new therapies, cell homing and tracking, or responding to regulatory concerns, such as potency assays, product characterization, or bank-to-bank variability** (non-exhaustive list for illustrative purposes only).

Expected Impact

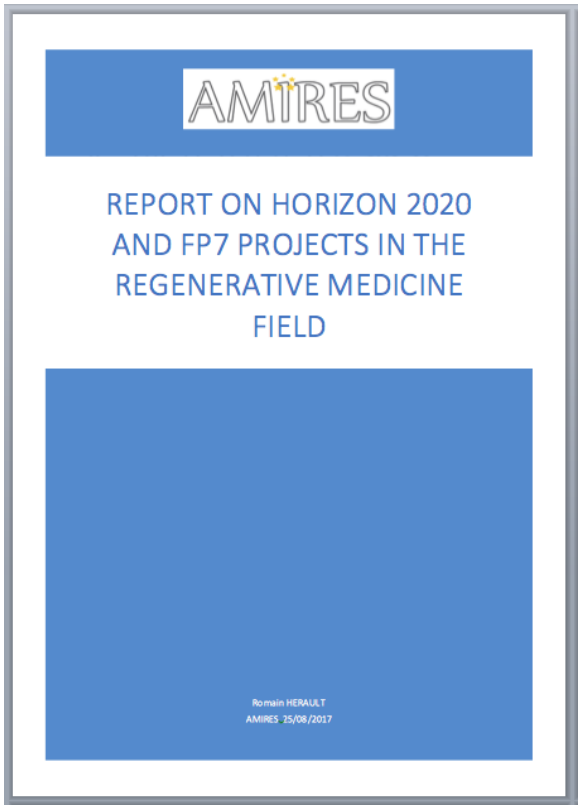
The Commission considers that proposals requesting a contribution from the EU of between **EUR 12 and 15 million** would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

- Strengthened competitive position of European advanced therapy research and development
- Improved perspectives for treating diseases and conditions **in large patient groups with advanced therapies**
- Technological progress in the advanced therapy field
- Type of Action: **Research and Innovation action**

- **Deadline: 10th April 2018**
- **Budget: 50 mio € (3-4 projects)**

Customized analysis & reports

- www.amiplexus.eu



Looking forward to meet you at:

nanomedicine
EUROPEAN TECHNOLOGY PLATFORM

ETPN2017
17-19, October 2017
Malaga - Spain

AMIRES