

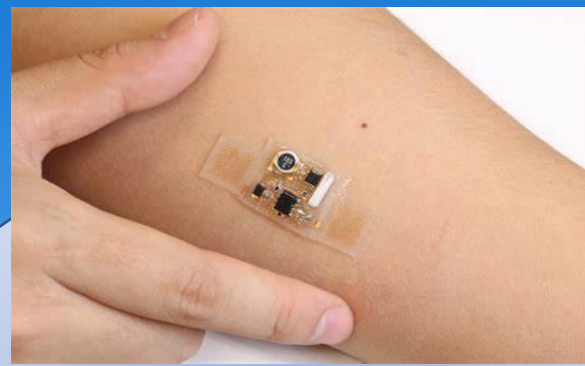
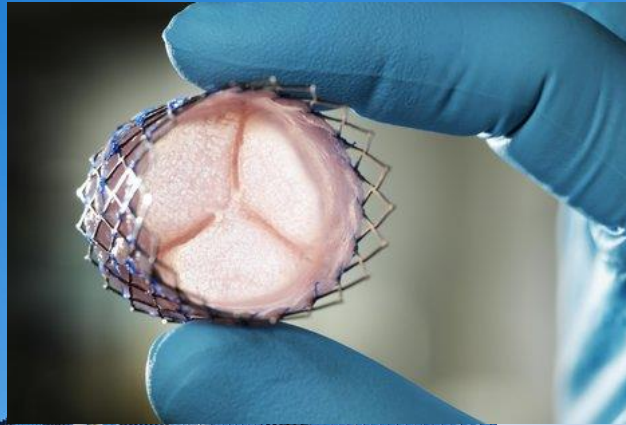
Harmen de Jongh

External Collaboration Coordinator
Biomedical Engineering
Eindhoven University of Technology



Smart biomaterials and innovation solutions in regenerative medicine

Medical scaffolds



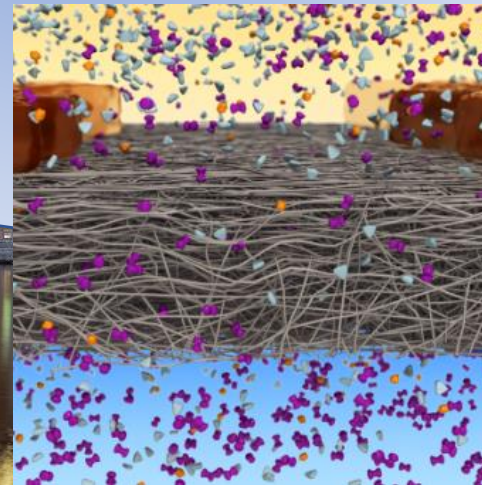
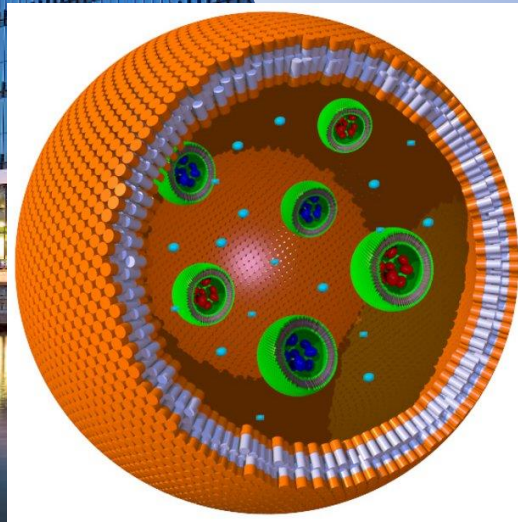
Biosensors



Medical implants

**Department of
Biomedical
Engineering**

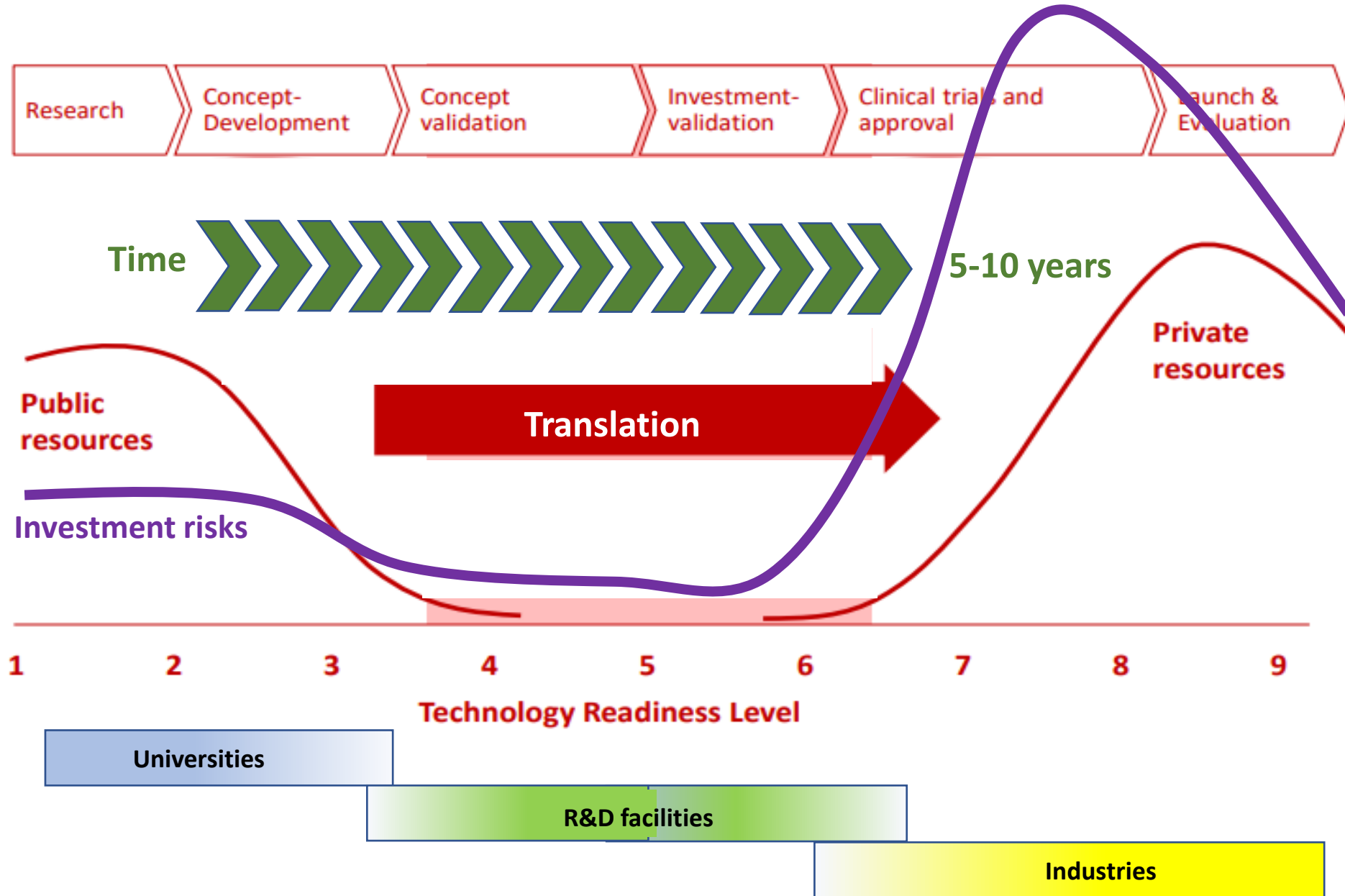
**Targeted delivery
& personalized
medicine**



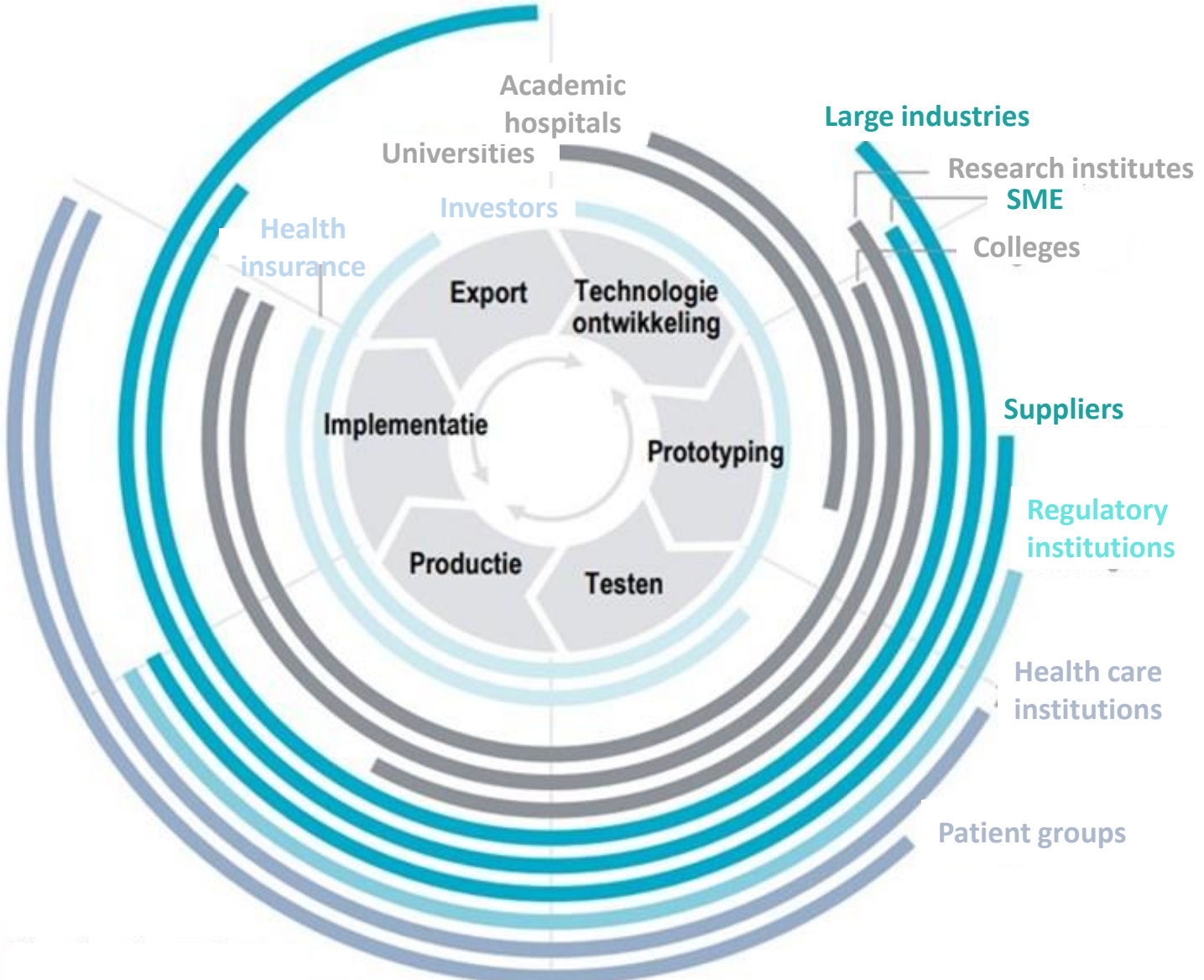
**Medical coatings
and adhesives**



Translation of fundamental science into solutions for patients



The ecosystem essential for delivering solutions in (bio)medical technology:



- Investors & insurance companies
- Knowledge institutes
- Industries
- Regulatory affairs
- Health care sector

The role of academics in the ecosystem

- Filling the concept-pipeline
- Providing trans-sectorial multi-disciplinary expertise
- Training and specialization of dedicated work-force



How?

- Developing long-term strategic programs aiming at medical demands
- Pro-active partnering in translational facilities
- Aligning internal strategy with governmental and scientific visions (and vice versa)

Long term strategic programs:



Thematic programs (5-8 years; TRL 2-7):

Health Foundations (arthritis, diabetes, cardiovascular and kidney diseases)

Regmed XB (Regenerative Medicine crossing borders)

Steering committees at National and European Scientific Institutions

Eurotech (TU/e and Technion in the lead for focus area Health)

Gravitation Programs (8-10 years TRL 1-3):

Material-Driven Regeneration

Interactive Polymeric Materials Research Center

Precision Medicine

National Growth Fund (5-10 years; TRL 2-6):

Smart BioMaterials Consortium

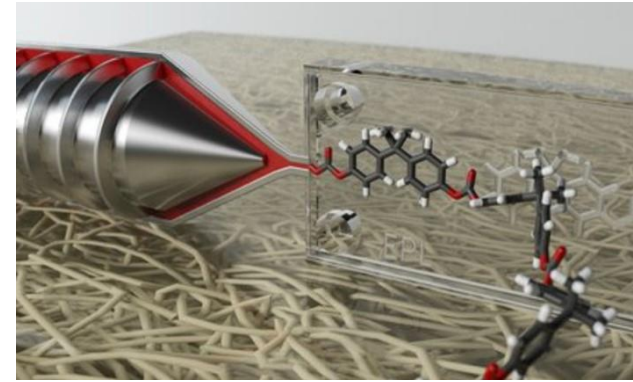
Personalized Medicine

Nextgen HighTech – medical technology

Autonomous molecules

Partnering in translational facilities:

Institute for Complex Molecular Systems (ICMS)



Eindhoven Artificial Intelligence Institute (EAISI)

Smart BioMaterials Consortium (SBMC)

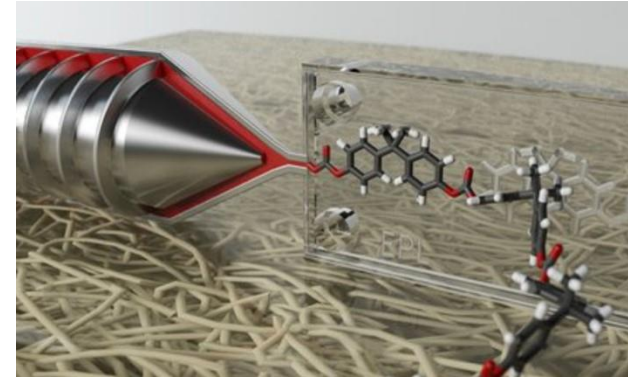


Align with governmental and scientific bodies



Partnering in translational facilities:

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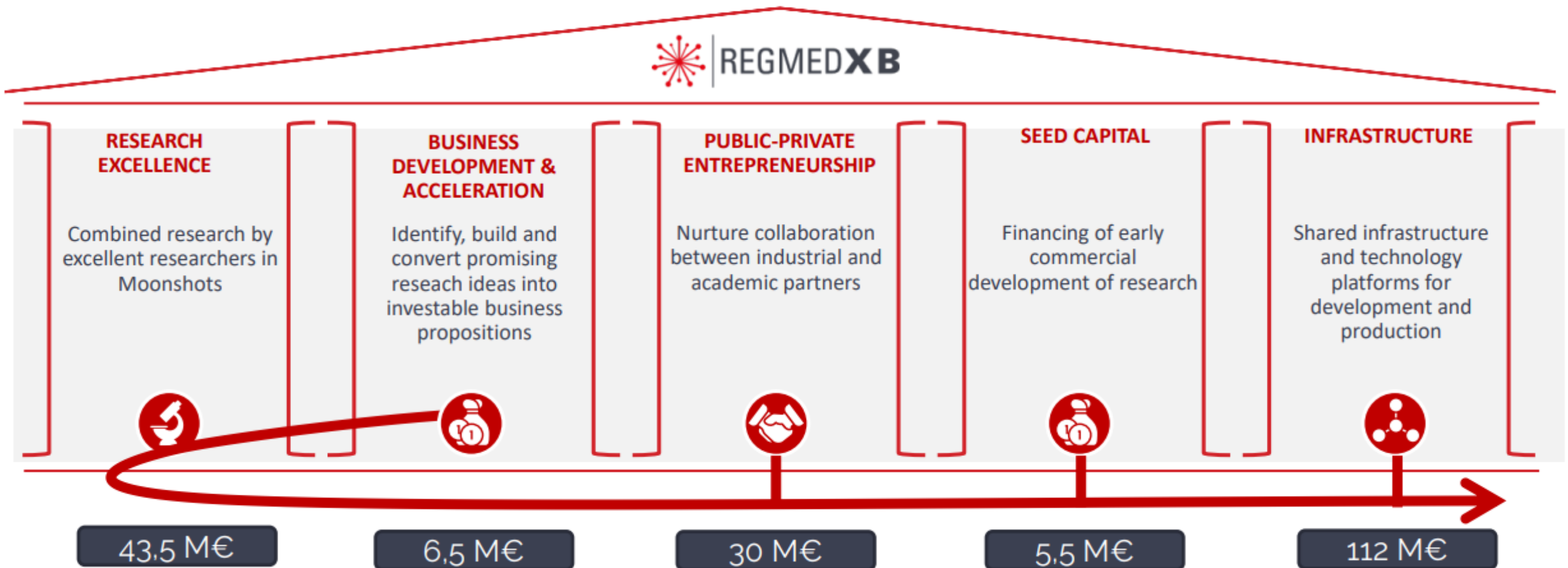
Align with governmental and scientific bodies

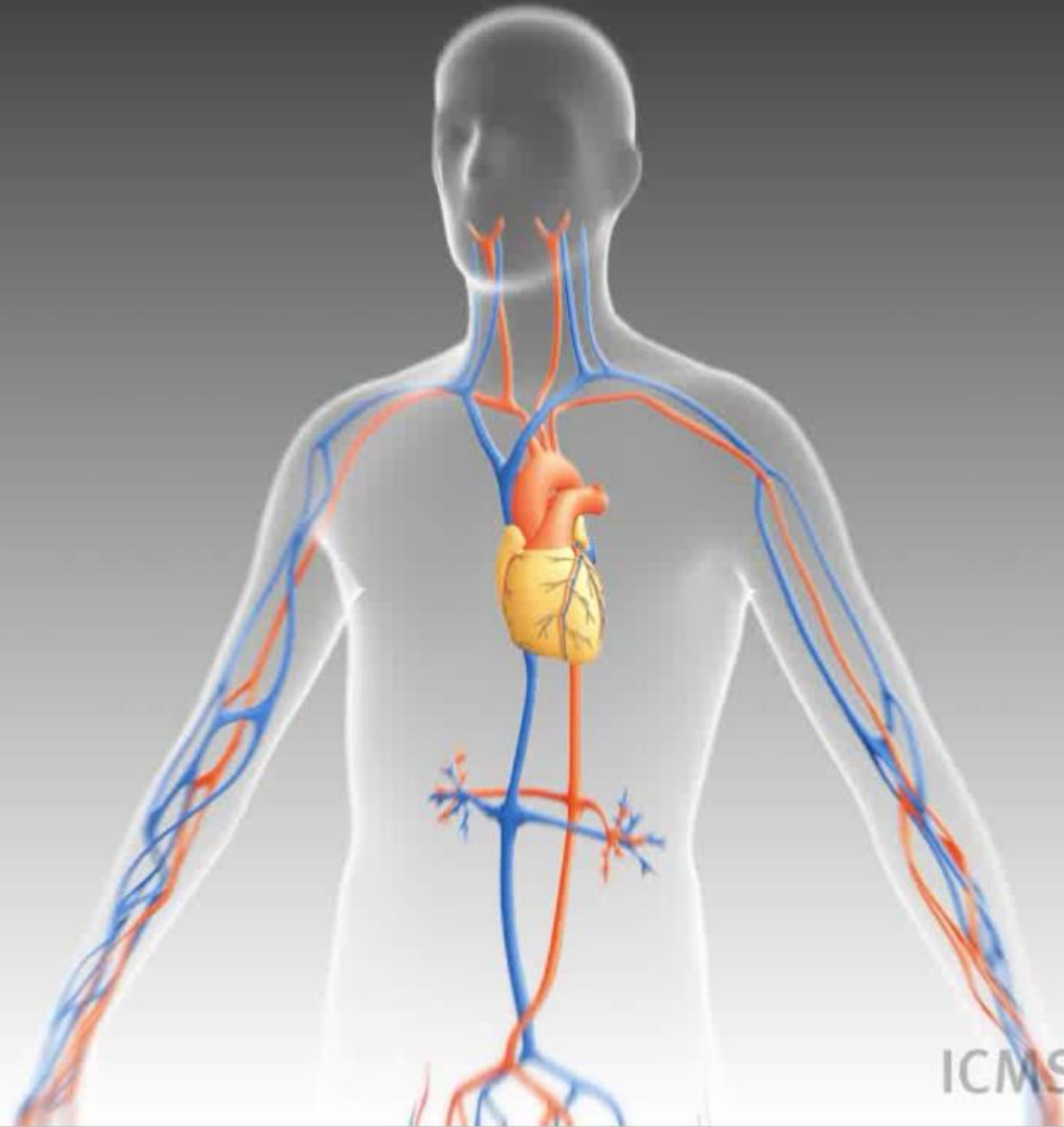
The Neokidney



Example 1: Regenerative Medicine crossing borders


RegMed XB is a patient oriented public-private partnership in the Netherlands and Belgium (Flanders) dedicated to bringing **regenerative medicine solutions to patients** and creating a **new industrial sector** in the participating regions






The Regmed XB pilot factory:

What ?



REGMED XB
Regenerative Medicine Crossing Borders

How ?



	Biomaterials	Stemcells	Micro-tissue	Macro-tissue
Scale	Small scale	Industrial	Industrial	Industrial
	Production of hydrogels and implants <small>TU/e</small>	Automated production van micro- & macro tissues <small>AVL</small>	Production of regenerative therapies for clinical research <small>LMC</small>	Production of personalised patiënt-specifieke therapies based on biofabrication <small>ESSENCE</small>
				Personalised


R&D facility (TRL 3-5)
(on TU/e campus)

Large scale production
(TRL 5-8)


Smart BioMaterials Consortium
 2021-2027 ~36 Meuro

LANDELIJKE **PILOTFABRIEK** VOOR
REGENERATIEVE GENEESKUNDE


OP WEG NAAR:




regeneratieve
therapiën voor patiënten



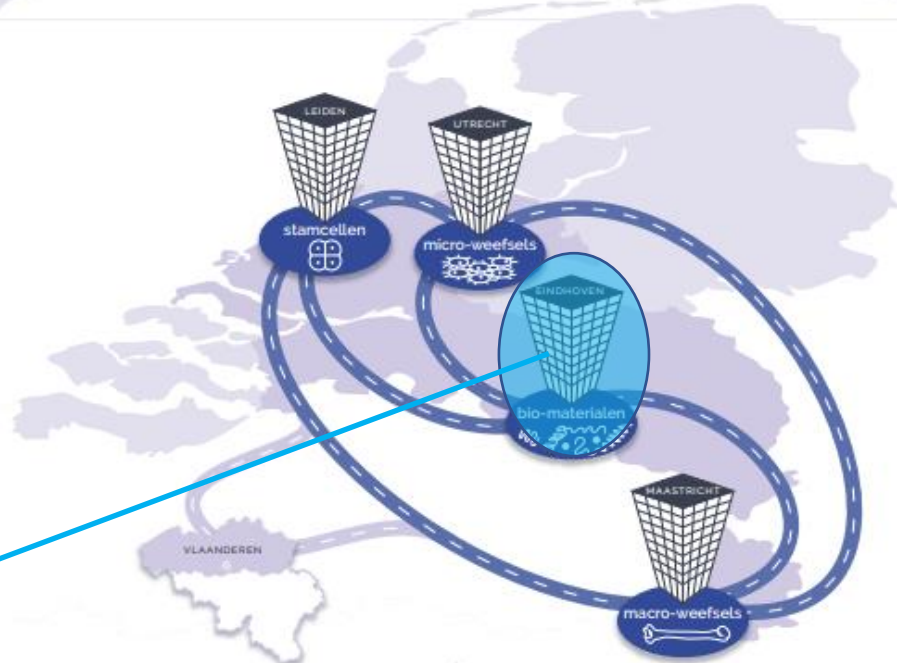
betaalbare
zorg




bedrijvigheid/
werkgelegenheid



ontwikkeling
en innovatie





rijksoverheid · provincies · industriële partners · kennisinstellingen

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Smart BioMaterials Consortium

We enable entrepreneurs and academics to speed up development of new biomaterials and biodegradable implants for regenerative medicine to improve patients' lives.

Latest news

Example 2: Hemodialysis for kidney patients



The Neokidney:



Cost price per cartridge: 250 euro



France

AC

Uremic toxins

USA

HZO

Phosphate, other anions

South Korea

OH⁻

ZP

NH₄⁺, K⁺, Ca²⁺, Mg²⁺

South Korea
UK

IU

Urea → NH₄⁺ + HCO₃⁻

China

Jack Beans

Singapore
Switzerland

Carrier & linker

Cost price per cartridge: 25 euro

