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Healthy Ageing Network  
Northern Netherlands  
Region of Knowledge and Development

# Healthy Ageing

## From Basic Science to Clinical Applications and New Business

Jan Sikkema – Center for Development and Innovation  
June 16, 2016



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# Groningen

## Broad Research University

- 11 faculties
- > 30.000 students
- 625 professors
- > 450 PhD theses/year
- 120 Master degree programs



Number 5 in top 10 best places to work in academia in 2012 according to **The Scientist**



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# Groningen

## University Medical Center

- 800.000 patient visits
- 1.300 beds
- 4.500 students
- 214 PhD theses 2015
- Medicine, Dentistry,  
Movement sciences



# CORE RESEARCH THEMES INSPIRED BY SOCIETAL CHALLENGES

ENERGY



HEALTHY AGEING



SUSTAINABLE SOCIETY





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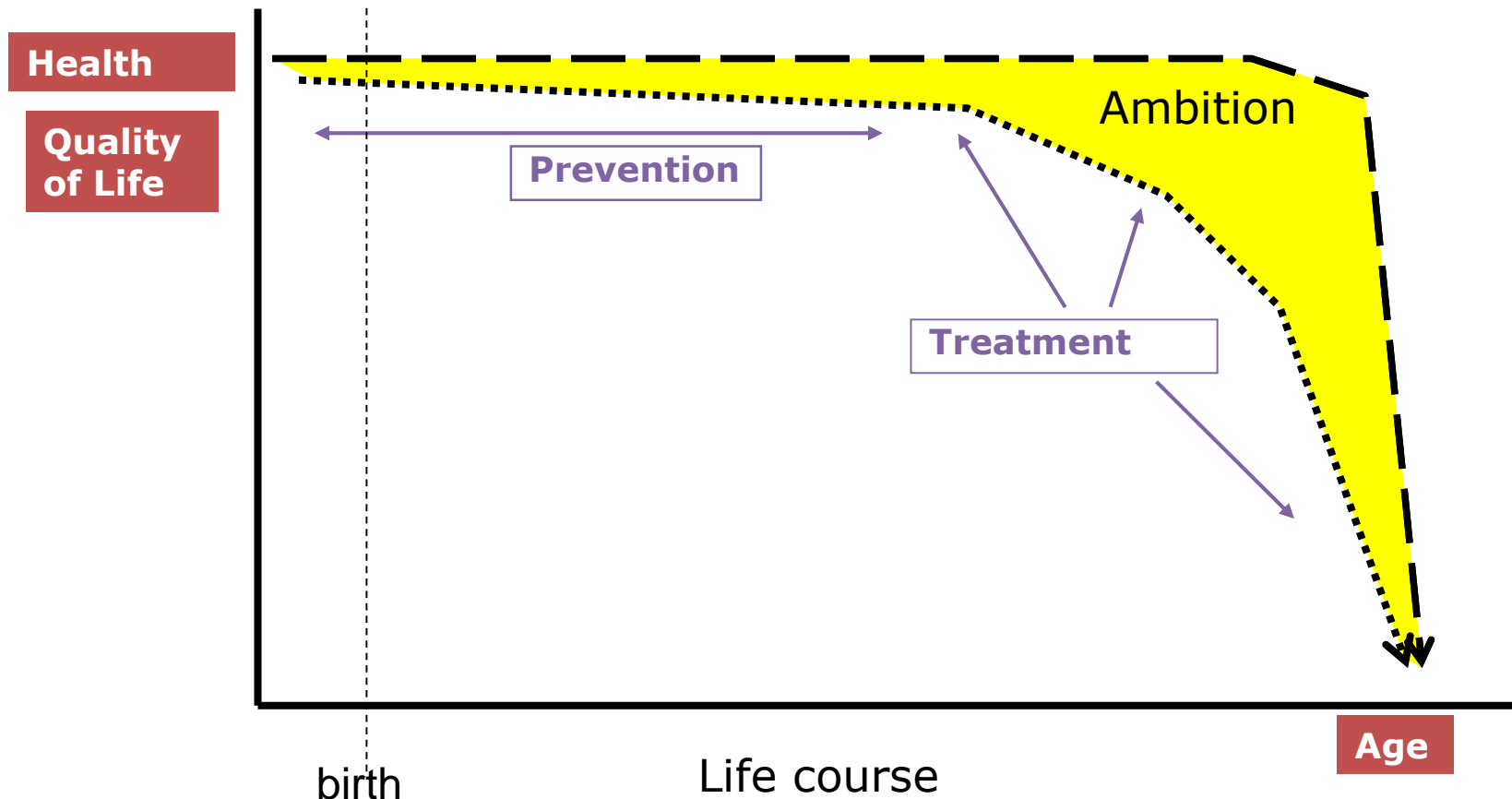


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# Adding healthy years to life





# Healthy Ageing theme embedded in Research of the University

## Programs



innovative policies for healthy ageing

## From cell to society



## Medical Sciences



## Natural Sciences



## Social Sciences



## Economics and Business





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# ERIBA – European Institute for the Biology of Ageing

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European Research Institute on the Biology of Ageing

- 10 world's leading scientists in the field of **ageing and its associated diseases**
- **NWO Systems Biology Center for Energy Metabolism and Ageing**
- **Skoltech Center for Stem Cell Research**



# LifeLines cohort

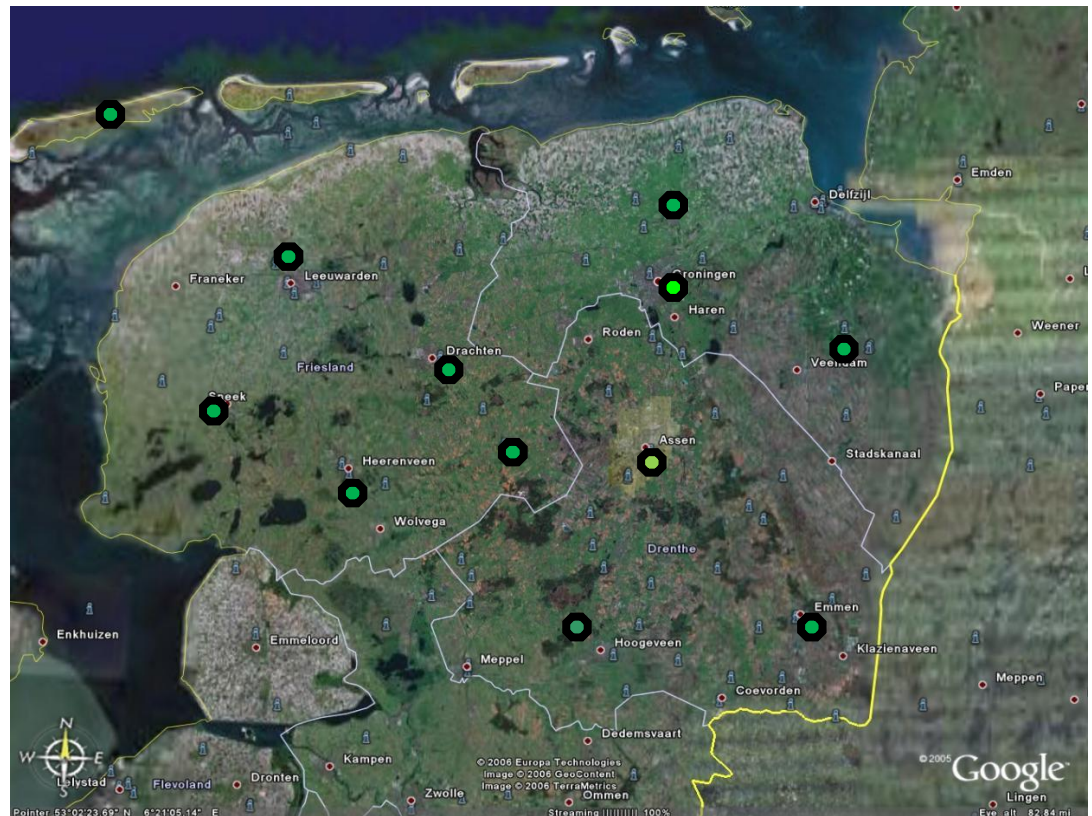
165.000 participants

3 generations

30 years

LifeLines data:

- Questionnaires
- Measurements
- Biological samples
- Registries + GP data







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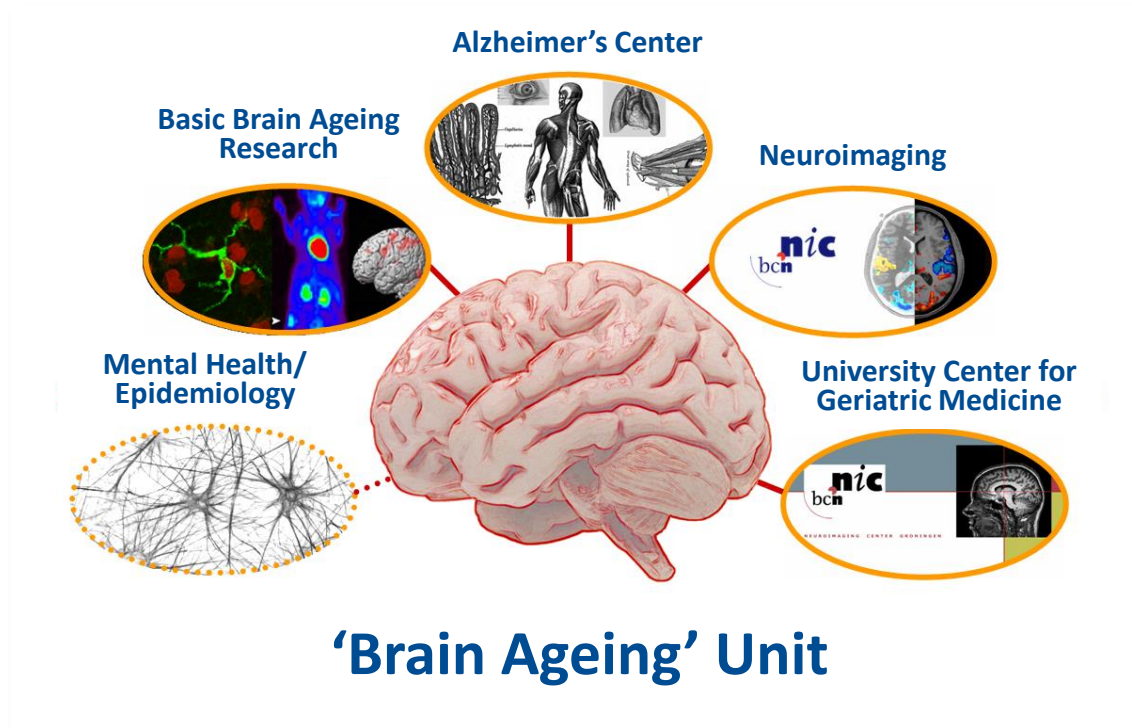
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# Brain research – entire spectrum from pre-clinical to clinical research

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Patient cohorts – Clinic – Neuroinflammation – Neuro-imaging – Biomarkers



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# Maturation and 'ageing' of the Microbiota: the new frontier

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- Changes in microbiota composition associated with altered metabolism
- Role of microbiota and food fibers in maturation of the immune system





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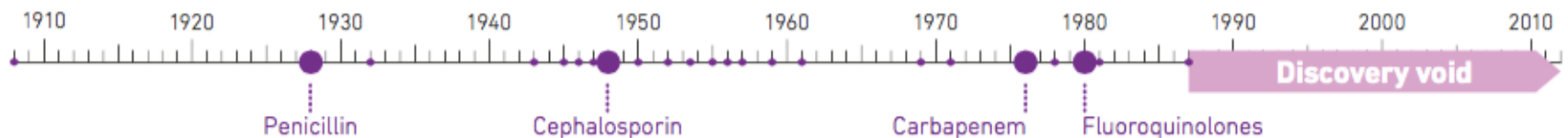
# Antimicrobial Resistance

## CESAM: CENTER for ANTIMICROBIALS RESEARCH

- Brings together medical microbiology, biochemistry, organic chemistry and drug delivery expertise to fight antimicrobial resistance by developing new antibiotics, new strategies for delivery and better protocols.



InfectionManager





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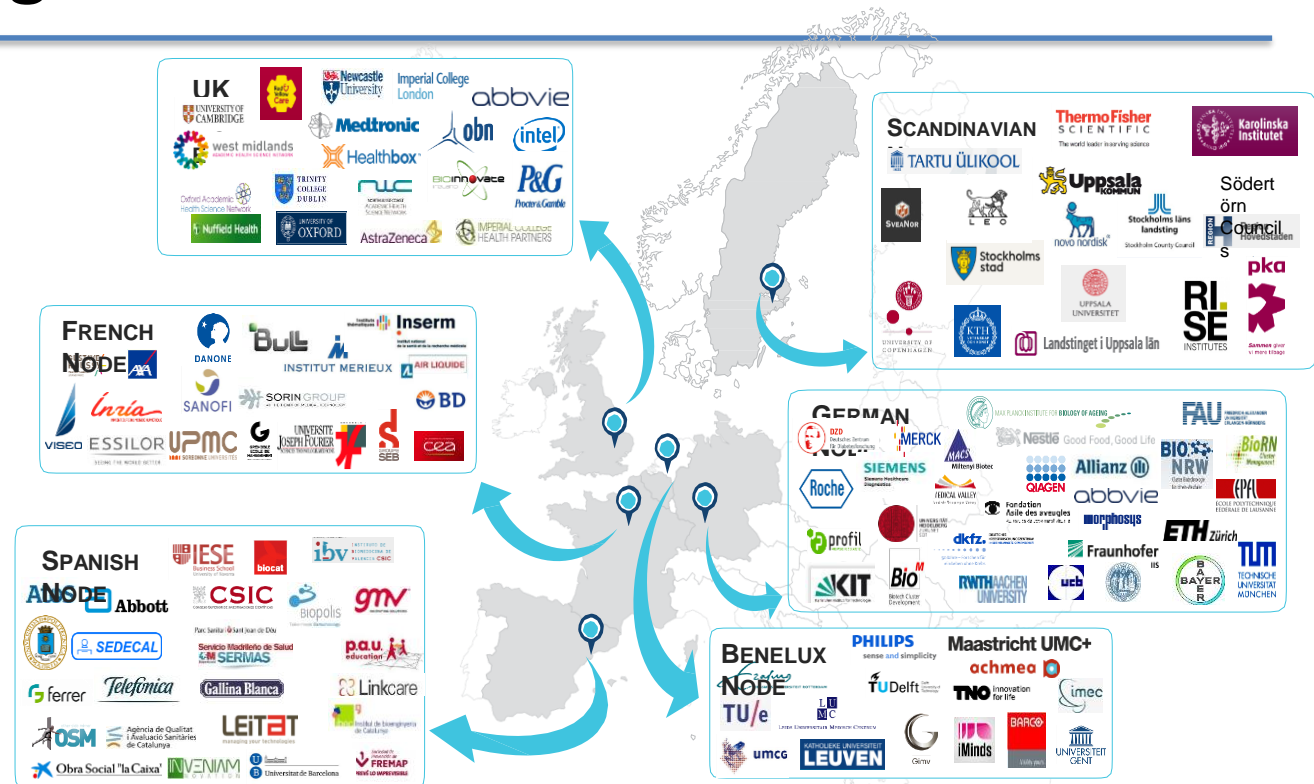
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# EIT Health: Innovation for Active Ageing and Healthy Living

- Large industry + excellent academic partners;
- 2.1 billion euro budget (≠ funding);
- Involvement regional (SME) network.





**Pre-clinical and pharmaceutical  
Research**  
New buildings: a.o. ERIBA



**Healthy Ageing  
Campus Netherlands**

**LifeLines**

**Spin-off  
companies**

**Bio-GMP  
facility**

**Clinical Research, incl.  
advanced imaging facilities**

**Patients**

**Patients**

**Patients**

**Spin-off  
companies**

**Main entrance**

**Valorisation  
Center**

**Spin-off  
companies**

**NH Hotel**

**University Medical Center Groningen**



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# Bridge basic science and application

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- Acknowledged expertise areas
- High end fundamental and pre-clinical research
- Advanced clinical research and clinical practice
- Engage high-tech spin-offs and start-ups
- Form multi-disciplinary consortia: Biomarkers, eHealth, Early Life Nutrition



Designing  
chemistry



brainsonline

bioresorbable solutions  
**POLYGANICS**



AVEBE



❖ Dairy Campus

❖ Health Hub



IMDS



HZPC  
Growing with our potatoes

**PHILIPS**  
sense and simplicity



FrieslandCampina

**Spark**  
HOLLAND



Pointer: 53°02'23.69" N 6°21'05.14" E

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Google

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# Health Hub: a new approach

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- Expertise Center for MedTech
- Research linked to application
- SME's, start-ups and industry
- Education and training program for students from University and Vocational schools
- Ideation and design
- Product development
- Professional education







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# Strategic alliances with industry

- Data handling (improving transport, analysis and storage of data, data privacy and security)
- Core technology
  - material science
  - computer science
- Value areas (research applied to specific sectors)
  - virtual UMC (university medical center)
  - radio astronomy
  - optical and space science
  - energy transition
  - water & climate





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# Strategic alliances with industry

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## Strategic cooperation UMCG and Siemens 'personalized healthcare'

Friday 26 September 2014

**The University Medical Center Groningen (UMCG) and Siemens enter into a strategic partnership for the development and deployment of new imaging techniques in the clinic. Within this co-operation image-forming information will be coupled with laboratory data. This is a new and patient tailored diagnostics and therapy, or 'personalized healthcare'. This reduces the radiation load for the patient and avoids unnecessary diagnostics.**



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**SIEMENS**



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# Strategic alliances with industry

**DSM and University Medical Center Groningen (UMCG) announce cooperation with focus on role of nutrition in healthy ageing**



Kaiseraugst, CH, 13 Sep 2011 12:00 CEST

DSM and UMCG have signed an agreement and will cooperate in research projects on the role of micronutrients, in particular vitamins, in healthy development and longevity.

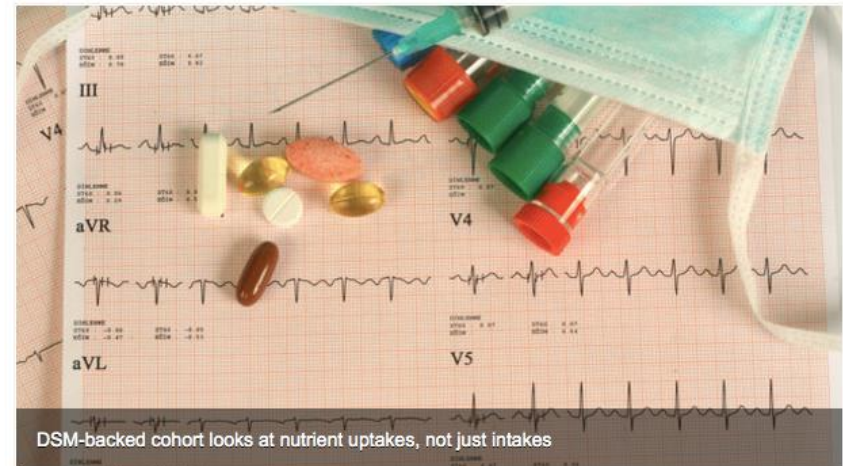
## DSM and Dutch university 'join the dots' in phenotype-nutrient mapping project



By Annie-Rose Harrison-Dunn+

08-Jan-2015

Last updated on 08-Jan-2015 at 14:52 GMT



DSM-backed cohort looks at nutrient uptakes, not just intakes



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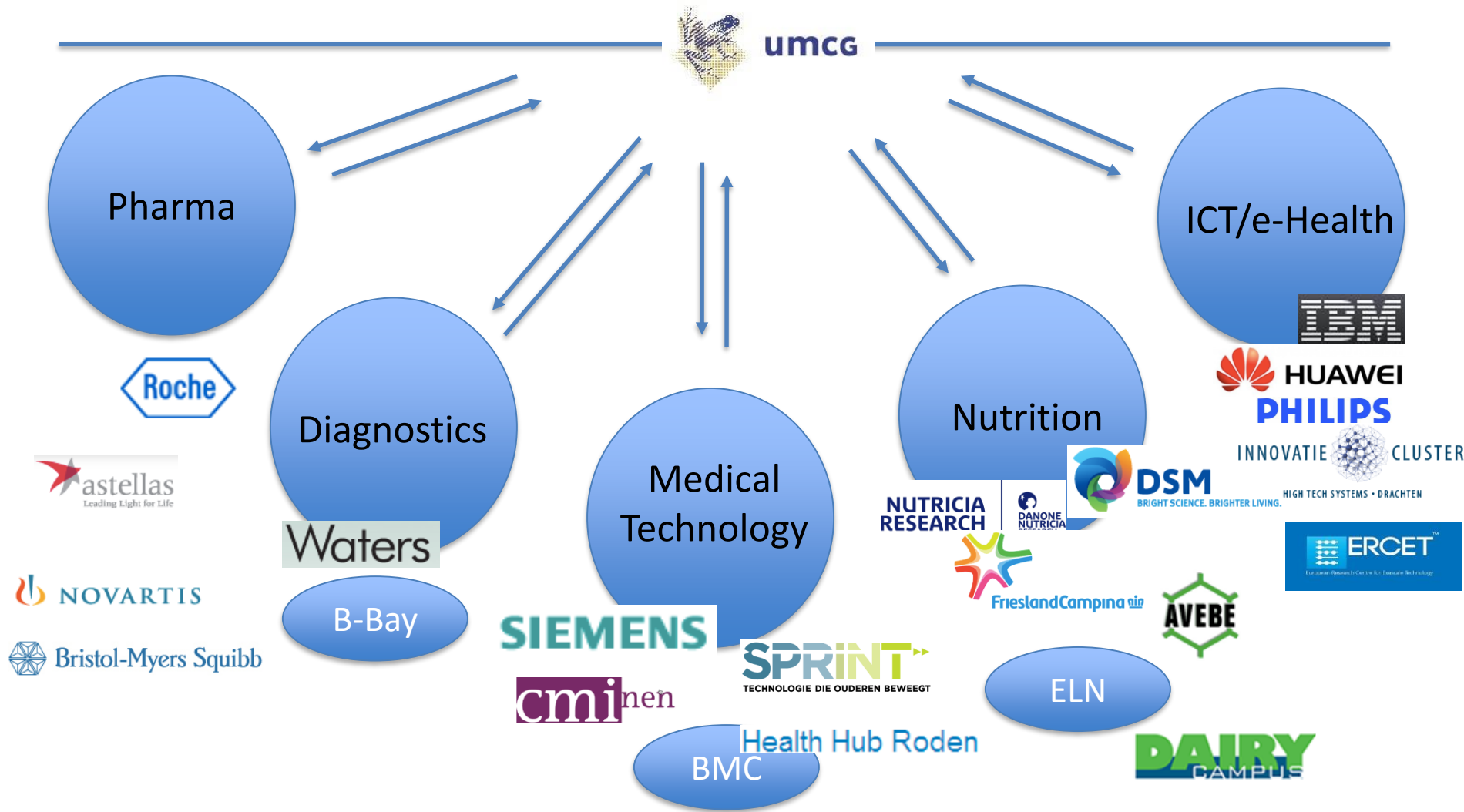


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# Business-centered innovation clusters







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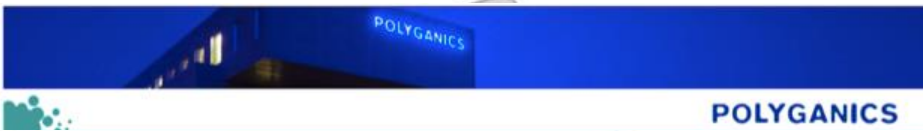
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# High-tech start-ups

## ▢ Diagnostica



- $\approx$  300 start-ups and student companies p.a.
- 10-15 high-tech
- 100 LifeSciences companies
- 1.5 bn euro turnover
- $\approx$  2700 employees



## DIAGNOSIS

Non-invasive assessment of  
advanced glycation end-  
products as a marker for  
metabolic health





**innocore**  
pharmaceuticals

## DRUG DELIVERY

InnoCore Pharmaceuticals is specialized in the development of long acting and minimally invasive injectable drug delivery products for the treatment of chronic diseases



# Shared care for shared organs



## TRANSPLANTATION

*Preservation equipment*

Preservation of donor organs for better treatment and survival of patients undergoing kidney, liver and lung transplantation

**ORGAN  
ASSIST**







THE STANDARD IN ERGOMETRY

## MEDICAL TECHNOLOGY

Advanced Ergometry for  
better assessment of  
physical performance of  
(rehab) patients and  
athletes





# SERIOUS GAMING

*for medical skills training*

The Laparoscopic  
Skills Training Wii Game







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city  
of  
talent

Groningen:  
exceptionally entrepreneurial



