# Biomarkers to Determine Effects of Dietary components on Gut Health in Man

**[HEalthMArkers, HEMA]**

**Questions professional practice:**

**1-assess values of biomarkers in healthy individuals to determine health effects of food**

**2-assess robustnes/validity of biomarker assays**

**3-trained HBO professionals to analyse large datasets**

# Partners

**4 HBO-institutes (DAS), HU (coordination), Avans, Hanze, Zuyd**

## Food company:

**Danone**

## “Biomarker”-companies:

**Roche Diagnostics, Luminex, Merck-Millipore,**
**MKB: Pamgene, Ostendum, PhytoGenix**

## Hospital:

**Jeroen Bosch Ziekenhuis, Den Bosch**

## Knowledge institutes:

**TNO**
**IRAS**
**University of Twente**

# Background

## Assessment of health

**Factors**
Heredity
Life Style
Physical environment
Social Environment
Personal attributes
**Diet**


**Biomarkers for:**
Morphology
Muscular
Motor/Coordination
Cardiovascular and Respiratory
Metabolism
Cognition/Brain function
**Immunity/Inflammation/ Gut health**

***Adapted from Bouchard et al 1990***

# Background

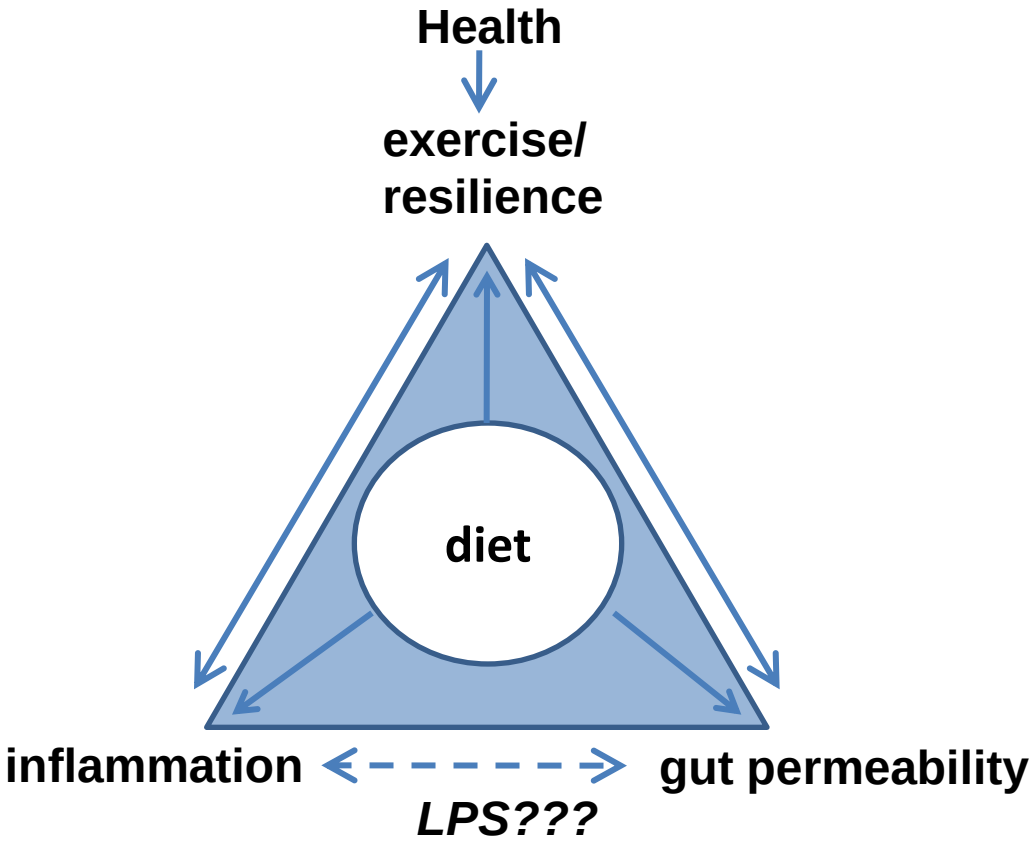
**Gut health is determined by e.g. gut permeability and balanced gut flora**

**Controlled changes of systemic immune responses (inflammation) is healthy**

**Gut permeability and changes of systemic immune responses inflammation are influenced by certain stressors, such as infection of physical exercise**

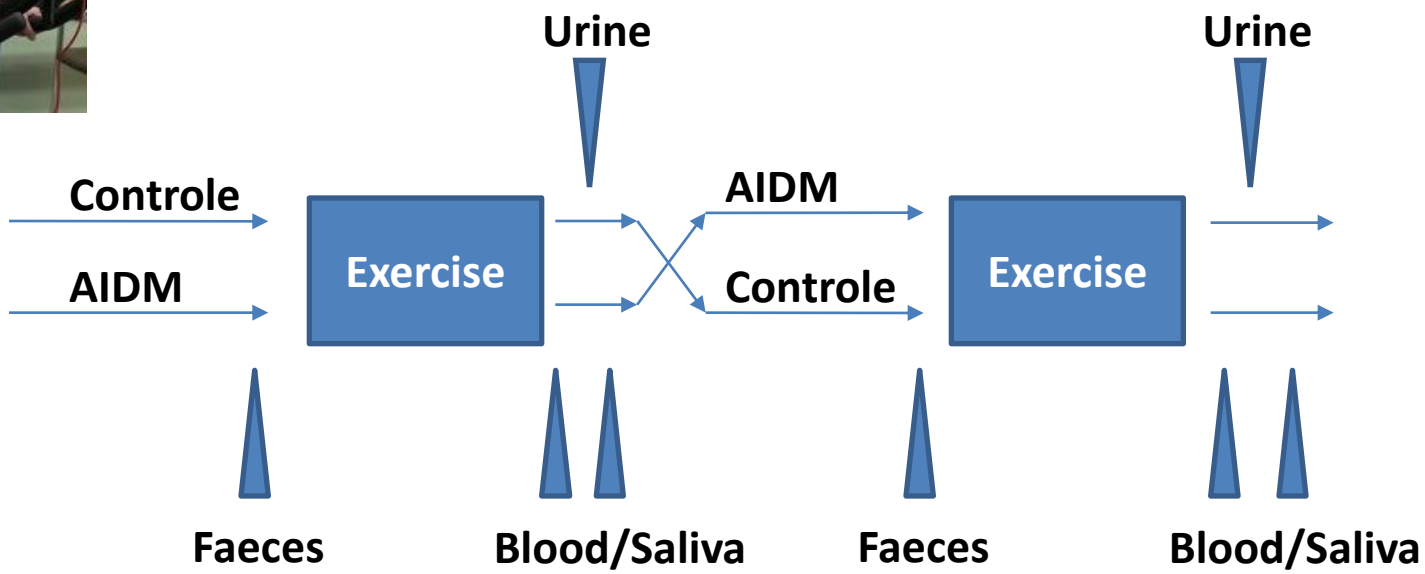
# Hypothesis

***Increased intestinal permeability is responsible for changes in parameters of inflammation after exercise and can be prevented by certain dietary components***



# Human diet intervention study

*Young healthy students (32, BMI<25, non smoking etcetc)*




**AIDM is mix composed by TNO constisting of:**
**resveratrol, green tea extract, α-tocopherol, vitamin C, n-3 polyunsaturated fatty acids & tomato extract**

# Parameters

| | |
|---|---|
| **General parameters:** | **Body parameters, Hematology**<br>**Questionaire, Blood pressure**<br>**Lung function, Hormones** |
| **Gut Health** | |
| **Faeces:** | **IgA, Calpotectin, Gut flora** |
| **Intestinal integrity:** | **LPS in blood,**<br>**fatty acid binding protein-6,**<br>**lactulose/mannitol (L/M) in urine** |
| **Inflammatory response:** | **cytokines, phenotype and function of immune cells (T/Mf/NK)**<br>**antibodies.**<br>(kinase/hormoonreceptoren, next generation sequencing) |
| **Urine** | **metabolomics** |
| **Salive** | **IgA, IL6, ACTH, cortisol** |

# General

**Collaboration between various HBO on important life sciences subject,**

**Knowledge exchange**

**Rotation of students and researchers/lecturors/ professors**

**Future projects, involving other HBO**
**(e.g. specialized in materials and lab-on-chip)**