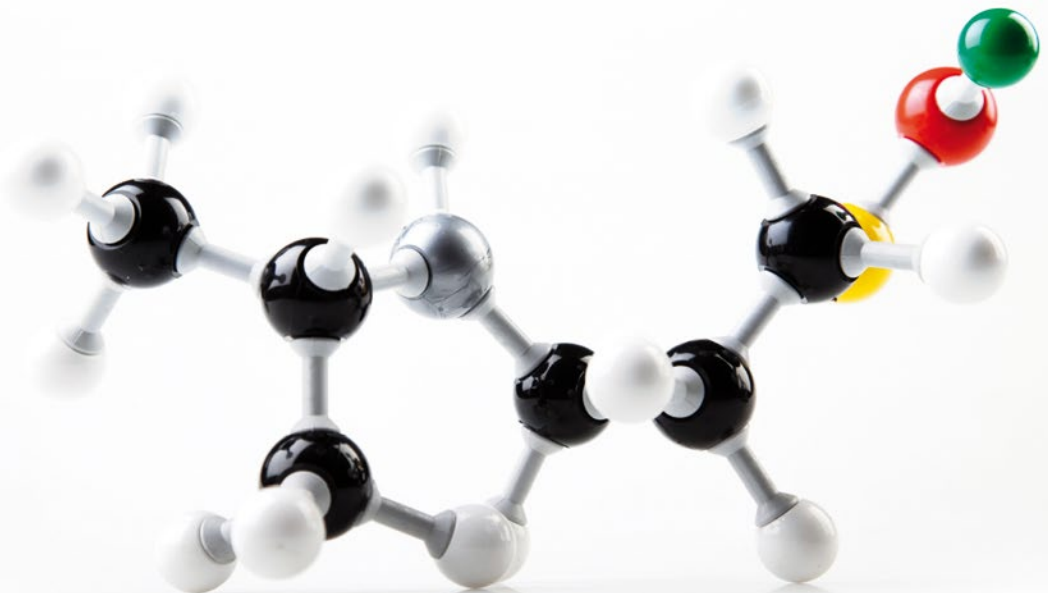


ERA-HDL non cofunded Joint Action:
Nutrition & the Epigenome
funded projects

The aim of this call, the 2nd one launched under the ERA-Net ERA-HDHL in 2018, is to support transnational, collaborative research projects that gain a better understanding of the diet-epigenome relationships and their effect on human health. This will allow the development and substantiation of intervention strategies for treating nutrition-related diseases and sustaining good health throughout the life course.

In total, 13 funding organisations from 11 countries participated in this call with a total budget of about 7 M€. Six research projects started in the first half of 2019 for a period of three years. Due to the COVID-19 pandemic the runtime of several projects is extended into 2022.



DIFAMEM

Dietary Intervention in Food Allergy: Microbiome, Epigenetic and Metabolomic interactions

WHAT

DIFAMEM aims to investigate the effects of food allergy (FA) treatment through intervention with a prebiotic dietary component, pectin, and using peach allergy as a model. This intervention should be safer than allergen immunotherapy.

WHO

The consortium consists of researchers from Spain, France and Germany. The consortium members have expertise in a wide variety of areas, including microbiome analysis, epigenetics, metabolomics, as well as clinical studies, immunology, and experimental animal models for food allergy.

HOW

DIFAM will (i) identify how different structural types of pectin affect regulatory immune responses, (ii) assess pectin effects on FA patients, and (iii) develop predictive probabilistic multivariate models for the treatment of FA via integrative analysis of epigenomic, microbiomic, metabolomics and immunological profiles related to immune modulation.

FUNDING

DIFAMEM receives approximately 0.9 M€. Project coordinator: **Dr. Maria Jose Torres** (Allergy Unit- Hospital Regional de Malaga,ES)

DIMENSION

Dietary induced methylome and transcriptome dynamics assessing nutrition impacts on cardiovascular and metabolic health

WHAT

The DIMENSION consortium aims to deliver novel mechanistic insights into how exactly nutritional modifications can modulate the regulatory and functional genome to promote cardio-metabolic health.

WHO

The DIMENSION consortium brings together six partners from the UK, France, Germany, Spain, and the Netherlands with complementary research strengths and established track records in epigenetics, nutrition, cardio-metabolic health and disease, molecular biology, multi-omics, and epidemiology.

HOW

The work programme is based on (i) targeted postprandial and nutritional intervention studies, (ii) state-of-the-art analyses to characterize the links between diet, epigenetics, and cardio-metabolic health, and (iii) functional follow-up experiments assessing the impact of diet-induced epigenetic and transcriptomic signals.

FUNDING

DIMENSION receives approximately 1.7 M€. Project coordinator: **Dr. Jordana Bell** (King's College London, UK)

EpiBrain

Epigenetic effects of B-vitamins on brain health throughout life: scientific substantiation and translation of evidence for health-improvement strategies

WHAT

The EpiBrain project aims to investigate the nutrition-epigenome-brain relationship across the lifespan. The EpiBrain project will lead to improved understanding of the role of B vitamins, their epigenetic effects and brain function in childhood and older age.

WHO

The consortium consists of four partners, two Canadian teams, one UK team, and one team in Spain. The synergy of the four consortium partners will bring together strengths in nutrition, epigenetics, dietetics, pediatrics, psychology and perinatal epidemiology.

HOW

EpiBrain aims to investigate diet-epigenome relationships and their associations with child brain function focusing on early exposure to maternal B-vitamins in utero and cognitive function in early stages of life.

FUNDING

EpiBrain receives approximately 0.7 M€.

Project coordinator: **Dr. Yvonne Lamers** (The University of British Columbia, Canada)

HEROS

Paternal RNA-mediated epigenetic inheritance of metabolic disorders: impact of weight loss on the human sperm epitranscriptome

WHAT

HEROS aims to validate RNA-mediated epigenetic inheritance as a mechanism for obesity in humans. The major aim of the present study is to determine how the sperm epitranscriptome responds to environmental changes.

WHO

The consortium brings together five teams (from France, Germany and Spain) with complementary expertise ranging from paternal epigenetic inheritance study, mouse experimental models, nucleotide RNA modification study, to clinical aspects of obesity diseases.

HOW

HEROS will (i) compare the epitranscriptome profiles of sperm from non-obese and obese men to identify RNAs that may be epigenetically modulated; (ii) compare the epitranscriptome profiles of obese men before and post- surgery weight-loss and finally (iii) validate the role of human spermatozoa RNAs in epigenetic inheritance.

FUNDING

HEROS receives approximately 0.8 M€.

Project coordinator: **Dr. Valerie Grandjean** (C3M, Inserm U1065, France)

NutriPROGRAM

Early-life Nutritional Programming of Metabolic Health through Epigenetic Pathways

WHAT

Pregnancy and infancy are critical periods for nutritional programming of metabolic health. Epigenetic changes seem to have a crucial role in this. NutriPROGRAM aims to study key maternal and infant nutrition-related exposures in relation to DNA methylation in mothers and offspring at different ages, and metabolic health across the life course.

WHO

In the NutriPROGRAM consortium scientists from the Netherlands, UK, Canada, Germany and Spain will work together. The 3 key expertise of this consortium are nutritional expertise, epigenetics expertise and metabolic disease expertise.

HOW

NutriPROGRAM will focus on an integrated set of maternal and infant nutrition-related exposures and the role of functional DNA methylation changes in associations with metabolic outcomes.

FUNDING

NutriPROGRAM receives approximately 1.4 M€.

Project coordinator: **Dr. Janine Felix** (Erasmus MC, University Medical Center, Rotterdam, NL)



More information:

Call Secretariat ZonMW (NL) Wilke Van Ansem, jpihdhl@zonmw.nl



The ERA-HDHL has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement n. 696295

PREcisE

A precision nutri-epigenetic approach to tackle the mother-to-child transmission of impaired glucose metabolism

WHAT

The prevalence of co-morbidities associated with adult diabetes (T2D) continues rising. PREcisE aims at breakthrough in understanding i) the causal epigenetic pathways underpinning fetal exposure to impaired glycaemic health, ii) the role played by the glycaemic and the inflammatory load of the diet in inducing and modulating DNA methylation and iii) the life-course consequences.

WHO

The PREcisE consortium is multidisciplinary, uniting epigenetic researchers, nutrition scientists, clinical scientists, biostatisticians, bioinformaticians and epidemiologists from 5 countries (UK, France, Germany, Spain and the Netherlands).

HOW

The PREcisE consortium organises its working plan into three work packages to i) perform an epigenome wide association study on glucose level exposure, ii) infer the primary role of pre- and postnatal dietary exposures and iii) integrate its findings further into a life-course model.

FUNDING

PREcisE receives approximately 1.4 M€.

Project coordinator: **Prof. Marjo-Riitta Jarvelin** (Imperial College, London, UK)