

# Connecting Development and Late Life Health

## Epigenetic mechanisms and beyond

October 12-14, 2015, Leiden, The Netherlands

*Meeting venue :*  
Stadsgehoorzaal Leiden  
Aalmarktzaal  
Aalmarkt 7  
2311 EC Leiden



The aim of the conference is to integrate the expertise of medical health care professionals and basic researchers in the field of development, childhood behavior, adult health and ageing. Attendants will learn about a range of early life exposures leading to childhood, adult or late life consequences and clinical problems. The current evidence that early life exposures cause late life consequences will be evaluated in the light of theories such as the Barker hypothesis. Furthermore it will be discussed how this early-late life link may be explained through the most up to date knowledge of genome biology and epigenetic regulation. Ideally, these discussions result in consensus of suitable study designs to investigate the early-late life links and in notion how the current knowledge may contribute to an understanding of and solutions for the clinical problems encountered.

### Program day 1 - Monday October 12, 2015

12.00 - 13.00 Registration and lunch

13.00 - 13.05 Welcome: **Eveline Brandt (day chair and discussion leader)**

13.05 – 13.15 Introduction: **Prof. Eline Slagboom (LUMC, coordinator IDEAL consortium)**

#### *Session 1: Developmental exposure, phenotypic and clinical consequences*

In this session the range of early life exposures and late life consequences will be introduced. The primary assumptions of theories linking early exposure and childhood, adult or later life effects, and the evidence from human epidemiological studies and animal studies will be discussed. This session will put forward a notion of the phenotypic and clinical consequences of early exposure to adverse conditions.

13.15 - 14.00 **Key note: prof. Mark Hanson, University of Southampton:** DOHaD and its relevance across the life course for global health

14.00 - 14.30 **Anastasia Nyman, KI:** IVF: what are the consequences?

14.30 - 15.00 **Urs Meyer, ETH Zürich:** Prenatal exposure to infection, early and late consequences in mice

15.00 - 15.30 *Break*

15.30 - 16.00 **Bas Heijmans, LUMC:** The prenatal epigenome and studies into long-term health

16.00 - 16.30 **Ruth Müller, Munich Center for Technology in Society:** Experience, Exposure and the Epigenome. Mapping the Social and Ethical Aspects of Epigenetic Approaches to Public Health

16.30 - 17.15 Plenary discussion and conclusion  
17.45 Drinks at the cityhall of Leiden



## Program day 2 - Tuesday October 13, 2015

### *Session 2: Clinical views and hopes*

In this session the clinical view on the late life effects of an early life exposure will be introduced. First, the mechanism of epigenetic regulation of the genome during development will be explained. Then, the relevance of the knowledge that early life events may contribute to clinical problems will be discussed. This session will put forward a notion of the view of medical health care professionals on the early-late life link and its impact on clinical health care.

- 09.00 - 09.05 Introduction by chair
- 09.05 - 09.50 **Key note: Prof. Sicco Scherjon, UMCG:** Introduction to the clinicians view and hopes
- 09.50 - 10.20 **Christianne de Groot, VUMC:** Preeclampsia and late effects
- 10.20 - 10.50 *Break*
- 10.50 - 11.20 **Kaare Christensen, SDU:** It ain't necessarily so - twin studies challenging DOHAD
- 11.20 - 11.50 **Bas Zwaan, WUR:** Does the link between development and ageing make sense in the light of evolution?
- 11.50 - 12.30 Plenary discussion and conclusion
- 12.30 - 13.30 Lunch

### *Session 3: Effects of Prenatal and Nutritional Exposures*

In this session the relevance of developmental timing of late life effects, trans-generational and sex-specific effects will be introduced. The evolutionary and epidemiological perspectives of trans-generation epigenetic effects will be discussed. This session will put forward a notion of the epidemiological view on the evidence that epigenetics may mediate the late effects and the evolutionary benefits.

- 13.30 - 14.00 **David Gems, UCL:** Evolution of sexually dimorphic longevity in humans
- 14.00 - 14.30 **Wilma Steegenga, WUR:** Reversible and irreversible diet-induced effects in the liver of aging mice
- 14.30 - 15.00 **Karen Lillycrop, University of Southampton:** The effect of diet and generation on the ageing phenotype
- 15.00 - 15.30 *Break*
- 15.30 - 16.00 **Denis Duboule, EPFL:** Mechanisms Underlying the Organization of Epigenetic Set-Points at Hox Genes Loci
- 16.00 - 16.45 **Key note: Prof. George Davey Smith, University of Bristol:** Life course Epidemiology and epigenetic mediators
- 16.45 - 17.30 Plenary discussion and conclusion
- 18.30 Congress diner at the *Leidse Schouwburg* Oude Vest 43, Leiden



### Program day 3 - Wednesday October 14, 2015

*Session 4: Late effects: The role of the genome in age-related disease and lifespan regulation.*

In this session the knowledge obtained from 10 year genetic research into late life disease will be introduced. The pleiotropic role of identified loci in development and adult disease will be discussed. This session will put forward a notion of the evidence that epigenetic dysregulation contributes to age-related decline of function.

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| 09.00 - 09.05 | Introduction by chair  |
| 09.05 - 09.50 | <b>Key note: Prof. Eline Slagboom, LUMC:</b> Omics biomarker studies connect development , ageing and longevity              |
| 09.50 - 10.20 | <b>Ingrid Meulenbelt, LUMC:</b> The thyroid pathway in OA linking early and late life  |
| 10.20 - 10.50 | <b>Laurent Sachs, CNRS:</b> Stress sensitivity of limb development in <i>Xenopus tropicalis</i>                              |
| 10.50 - 11.20 | Plenary discussion and conclusion  |
| 11.20 - 11.50 | <i>Break</i>   |
| 11.50 - 12.35 | <b>Key note: Prof. Silvère van der Maarel, LUMC:</b> Facioscapulohumeral muscular dystrophy: a metastable epiallele disease? |
| 12.35 - 12.50 | Concluding remarks coordinators IDEAL: <b>Eline Slagboom and Bas Zwaan</b>   |
| 12.50 - 14.15 | Lunch and IDEAL poster presentations   |
| 14.15         | END of scientific program  |