



**The pivotal role of prenatal built environment in the onset of noncommunicable diseases; a twin study**

**Supervisors**

Professor Maurice Zeegers has broad experience in big data, precision medicine, complex genetics, epidemiology, systematic reviewing and health promotion. He is head of the department of Complex Genetics and head of Maastricht University's Care and Public Health Research Institute, CAPHRI.

Dr. Marij Gielen ([marij.gielen@maastrichtuniversity.nl](mailto:marij.gielen@maastrichtuniversity.nl)) is assistant professor at Complex Genetics & Epidemiology at UM. Her main interest is prenatal programming of non-communicable diseases (NCD). She collaborates with the East Flanders Prospective Twin Survey (EFPTS) and is the Study Manager of the MEFAB study and the TELOMAAS initiative.

**Duration:** Flexible. Preferably 5- 6 months.

**Proposal**

***Background***

Over the last years, efforts to improve population health have focused largely on the early stages of human development, during which the individual is highly vulnerable to environmental influences. Exposure to surrounding greenness and traffic are two environmental factors that have been recently implicated as potential drivers. Twins are an ideal study population to study these environmental influences in depth as they share the same prenatal maternal environment, while fetoplacental factors and genetic factors may differ. Evidence from twin studies prospectively following a population sample from birth to adulthood will provide a strong evidence base for policy strategies to enable green growth in cities and protect health.

***We aim to examine whether early-life built environments impacts health of the newborn and the risk of noncommunicable diseases at young adulthood.***

***Study design***

The EFPTS ([www.twins.be](http://www.twins.be)) is a population based register with prospective data collection situated in the province of East Flanders, Belgium. The twins are ascertained at birth. At present over 10.000 twin pairs are registered. The EFPTS is unique because of its examination of the placenta and determination of zygosity and chorionicity at birth. A total of 424 young adult twin pairs were included in the so called "Barker study". A dataset with extensive phenotypic assessment and repeated individual-level information on residential addresses from birth throughout young adulthood is available.

***Statistical methods***

A geographic information system (GIS) is designed to relate spatial or geographic data by using location as key index variable. Residential addresses will be geocoded and GIS functions will be used to measure physical environment. Descriptive statistics will be performed. Potential confounders and covariates will be selected a priori. Next, twins will be analyzed as individuals in a multilevel regression analysis. A generalized linear mixed model will be used to account for relatedness between twin members.

**End product**

Successful termination of this project will result in a ready to submit manuscript (W1-1 publication).