



# Advanced paternal age and risk of childhood cancer

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## Original research idea

### Background

- Mutations accumulate in the sperm DNA with age → paternal age a potential important predictor for offspring health (Kong et al. 2001)
- Expect a higher incidence of childhood cancer among offspring born to fathers of advanced age
- Previous results are mainly from case-control studies
- Results are conflicting, without consistency between populations

### Original research aims

- A study investigating the association between advanced paternal age and risk of childhood cancers in offspring
- A study investigating socio-demographic and life style characteristics related to paternal age and the age of the couple

(Kong et al. 2012. Nature 488(7412):471-475)



## Why I4C data?

- Because of the prospectively collected information on various lifestyle factors (we do not have that information in the registers)
- We planned to use the information collected on lifestyle factors to
  - make a profound description of the parents to the children included in the various cohorts
  - assess the natural direct and indirect effects of paternal age through multiple pathways conducting a proper mediation analysis (treating the lifestyle factors as mediators)



## Limitations in the I4C data in relation to paternal age

Association between paternal age and childhood cancer:

- The sample size is too small (the number of childhood cancer cases are too low)
- The number of fathers of (very) advanced age is too low

Characteristics related to fathers or couples of advanced age:

- Representativity is very important
- Very few variables regarding the father's lifestyle (except from MoBa)
- The cohorts are too heterogeneous to make a general characterization
- We plan to make a characterization of the pregnancies in the Nordic countries only (more homogenous)



## The future...

- Estimate natural direct and indirect effects using I4C data  
(when more cohorts are included and the number of cases have increased)
- A recent review suggested a lack of cohort studies on paternal age and childhood cancer
  - We are conducting a study examining the association between paternal age and childhood cancer using Danish register data (nearly 2 million children)
  - Unfortunately, we do not have information on important lifestyle factors and hence we are not able to conduct a mediation analysis estimating natural direct and indirect effects





Thank you!