SMOKING AND MUTATIONS IN SPERM DNA

Axelsson, Jonatan[1]; Romerius, Patrik[2]; Ringell-Hydbom, Anna[3]; Engström, Karin[3]

[1]Lund University, Sweden, [2]Skåne University Hospital Lund, [3]Occupational and Environmental Medicine, Lund University

Abstract Body

Smoking and mutations in sperm DNA

We recently reported a 50% lower sperm count in Swedish men whose father smoked at the time of the pregnancy. Simultaneously, parental smoking is by the International Agency for Research on Cancer considered to cause cancer in children, for which specifically *paternal* smoking seems to cause the highest risk, and especially if occurring around the conception.

Paternal smoking has also been associated with malformations in a large part of studies in the field. These associations have been suggested to be due to mutation in the father's germ cells.

The purpose of this abstract is to describe a study with the aim of answering whether smokers have an elevated number of mutations in their germ cells.

From an already recruited group of Swedish men, we will amplify whole genomes from about five germ cells per man in two to three smokers and two to three never-smokers, to perform whole genome sequencing from the five cell-specific individual sperm genomes. Preliminary whole genome amplification has been performed in sperm cells, the quality of which will be investigated.

We will count variants present in the germ cell DNA in all available reads (at 30x of depth) but not present in any read of the somatic DNA from the blood in bulk (at 60x of depth), as mutations. Thereafter, we will compare the number of mutations in the germ cells of the smokers and the never-smokers, as an indication of whether smokers seem to have elevated numbers.