

## **The reductionistic journey of the Y- chromosome the latest 300 million years**

**Sigbritt Werner** <sup>1</sup>

<sup>1</sup> Endocrinology, Karolinska Institutet, Stockholm, Sweden

According to the latest estimations homo sapiens have lived on earth approximately 195 000 years. The birthplace was Africa. A proposed path for the evolution of the human sex chromosomes postulate four inversions on the Y-chromosome, which originally, 200-300 million years ago, was of similar size as the other autosomes. The inversions caused successive reduction of the chromosome containing the sex determining region Y (SRY), increasing number of inactive DNA-repeats and inability to recombine with other chromosomes. Furthermore, there are human male specific mutations of the mitochondrial DNA which cause infertility and hence no further journey through new generations of that particular male Y-chromosome. Mutation rates within generations causing infertility can be estimated; after another 8000 generations the human male Y-chromosome may be extinct. The Y-chromosome drives the basic female sex to a male phenotype. It is a dangerous, threatening journey within uterus for at least 9 months. However, the danger is propagated for the rest of the human male's living years; males dominate over females regarding spontaneous abortion, perinatal death, accidents, school problems, suicide, autism, ADHD, DAMP, Aspergers syndrome, alcoholism, drug abuse, criminality, financial fraud among others. Female dominate over males regarding depression, panic disorder, eating disorders, social fobia. The underlying mechanisms behind these sex and gender specific differences will be discussed.