

## NRP Endocrine Disruptors

### Final Summary

Original project title <b>Drop of male fertility in various geographic regions of Switzerland: Investigation of the critical parameters usable for prospective repeated evaluations.</b>
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Project number <b>4050-66564</b>

### First results from the Swiss young men sperm quality study.

*More than half of the investigated Swiss conscripts have, at least, one sperm parameter below the WHO thresholds. The recorded values are near the ones observed in countries with high testicular cancer incidence. The lower sperm quality of the investigated conscripts should be recognised as a national health issue that needs to be seriously considered.*

### Research questions

In Switzerland, there are no data available on the reference values of semen parameters and their variation over time. Without the knowledge of these values, a possible influence of environmental factors on spermatogenesis cannot be evaluated. Furthermore the potential geographical changes of sperm quality throughout the country cannot be studied. The main goal of this research is to collect data on health, life style habits, genital malformations, sperm quality and future fertility among young Swiss males born in various regions of Switzerland.

### Results

From September 2005 to June 2007, data on about 770 young men attending to military recruitment were collected in various regions of Switzerland, covering 26% of the national territory. The measured sperm parameters can be summarized as follows (parameter, median value [WHO reference value]): volume, 2.9 ml [2-6]; concentration, 47 millions/ml [ $\geq 20$ ]; total sperm count, 132 millions/ejaculate [ $\geq 40$ ]; sperm motility, 58% [ $\geq 50$ ]. More than 50% of the subjects had, at least, one value below the WHO thresholds. The median concentration was comparable to that of Denmark (44 millions/ml), which has the highest testicular cancer incidence in Europe. Regional

differences were observed in Switzerland. The sperm concentrations of the subjects living in the Zürich area (36 millions/ml) and in the Alps (43 millions/ml) were slightly lower than those from Jura (54 millions/ml) or the Plateau (54 millions/ml). No testicular tumours were found. Several genital tract malformations, known to be part of a testicular dysgenesis syndrome, were diagnosed (18% varicocele, 2% cryptorchidism, 5% hydrocele).

### **Perspectives**

The altered sperm quality observed among the investigated conscripts should be recognised as a national health issue. This observation constitutes a strong incentive to extend the study to all regions of Switzerland. In terms of fertility, the studied population represents a unique opportunity to draw a correlation between sperm quality and future parenthood.