

ID: MSCA-2020-EGoossens01

Title: Male infertility: developing strategies for fertility preservation

The research group Biology of the Testis (BITE) studies spermatogenesis with a special focus on spermatogonial stem cells (SSCs). Our overall aim is to develop strategies to prevent male infertility after spermatogonial stem cell loss.

Although donor gametes might offer a chance of starting a family for infertile patients, often the wish for genetic parenthood remains. Autotransplantation of SSCs is one option to restore fertility, but when transplantation is not applicable (e.g. Klinefelter patients, former cancer patients), ***in vitro* spermatogenesis** could be an alternative to derive patient-specific gametes. Our research focusses on developing new culture systems for human *in vitro* spermatogenesis using state-of-the-art tissue engineering approaches such as organoid technology and 3D bioprinting.

Klinefelter Syndrome (KS) is highly underdiagnosed and most patients are only diagnosed when they contact a fertility center due to fertility problems. At the time of diagnosis, the testis is often highly fibrotic and shows (almost) complete absence of SSCs. We found that this SSC loss starts very early in life, but the cause of this loss has not been identified. Our current research focusses on finding the mechanism of fibrosis and SSC loss in the KS testis. Next to this, we aim to find biomarkers in semen or urine to predict ongoing spermatogenesis in a non-invasive manner.

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Research group: <https://bite.research.vub.be/en/welcome-at-the-research-unit-biology-of-the-testis-bite>

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