

# **Mitochondrial genome inheritance and replacement**

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In vitro fertilization (IVF) is increasingly utilized for preimplantation genetic diagnosis (PGD) followed by embryo selection to prevent the transmission of heritable human diseases. Our Center is actively investigating novel germline gene therapy approaches that would allow to repair defective genes in mutant gametes or early preimplantation embryos. We are focused on answering important feasibility, efficacy and safety questions regarding techniques that could one day be useful in preventing thousands of inherited genetic disorders that affect millions of people worldwide. The focus of this lecture is to inform on recent developments of mitochondrial genome replacement in oocytes and gene editing strategies in preclinical and clinical studies.