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Exploring “Direct” Gametes Production by Somatic Cells Haploidyization.

Primordial germ cells (PGCs) can be generated in vitro from mouse iPSCs, and differentiated into fertile male and female gametes. These in vitro gametes have an extraordinary potential to treat human infertility in both sexes. The process entails though a prolonged exposure of in vitro condition, and, with the current state of art, still relies on GFP tagged, engineered mouse lines. We have recently demonstrated that somatic cells can be remodelled into spermatid-like structure through the induced expression of the human Protamine 1 gene (hPrm1).

Protaminized cells have a nuclear structure easily “readable” by the oocyte, and therefore should be easily reprogrammed, and develop normally. My talk will address the possibility to induce haploidyization of protaminized somatic cells by exploiting the meiotic machinery of pre- and post activated oocytes.