

Stellingen behorende bij het proefschrift

Loading and positioning of recombinases during meiotic prophase in mice *a super-resolution approach*

1. Although there is considerable variation in RAD51 and DMC1 structures, there are two main configurations, D1R1 and D2R1, which exhibit dynamically coupled frequencies during mouse male meiotic prophase (this thesis).
2. The degree of helix capacity of the synaptonemal complex is regulated by the inhibitor action of HORMAD1 and the stimulatory action of SYCP1, which suggests that the coiling of the synaptonemal complex has a certain function (this thesis).
3. In vivo and in vitro disruption of specific BRCA2 domains reveals the presence of two important HSF2BP-interacting motifs encoded by *Brca2* exons 12 and 13 as well as a critical DMC1-binding domain encoded by exon 14 (this thesis).
4. In early meiotic prophase, DNA tethers, occasionally characterized by RPA presence, connect two homologous chromosomes and are important for the initiation of homologous synapsis (this thesis).
5. An unexpected difference in RAD51 loading between male and female mice lacking exon 12 to 14 of *Brca2* points towards differences in the regulation of stability and/or loading of RAD51 between sexes in mouse meiosis (this thesis).
6. The chromosome axis is a platform for regulating meiotic recombination and essential to properly regulate DSB formation, interhomolog bias and CO formation (Grey and de Massy, *Frontiers Cell and Developmental Biology*, 2021).
7. Meiosis is a tightly conserved mammalian biological process that is essential for the generation of male and female gametes, but a high degree of sexual dimorphism exists in the specific regulation of such gametogenesis (Hua and Liu, *Frontiers Cell and Developmental Biology*, 2021).
8. New technologies—3D cell culturing, human induced pluripotent stem cells, and gene editing—are leading to new solutions for replacing, refining, and reducing animal models (Kendall Powell, *Science/AAAS Custom Publishing Office*, 2018).
9. Theoretical capabilities of high-resolution fluorescent microscopy suggest that imaging cell structures at a resolution of a few nanometers is possible, but practical application of this capability has not yet been achieved.
10. Variation in numbers and presence or absence of proteins in repair foci in different reports in (meiotic) research indicate that conclusions of quantitative and qualitative analysis should be drawn in the context of the experimental set-up, taking into account its limitations (Zhang et al. 2019, Felipe-Medina et al. 2020, Ghouil et al. 2021).
11. The statement made by Loesje that “You should not confuse the truth with the opinion of the majority” reflects a major problem in our contemporary culture.