Stellingen behorende bij het proefschrift

Dynamics of Mouse and Human Gametogenesis

From microscopic analyses using immunohistochemical techniques to live cell imaging

1. Desynapis of the synaptonemal complex in mouse occurs in a discontinuous manner, and even includes occasional resynapsis events, indicating that this process is regulated in concert with other chromatin events (this thesis).

2. Telomere clustering and dissolution events often occur in a synchronized manner in oocyte nuclei within a syncytium, indicating that signals that mediate these events travel via the cytoplasm.

3. Transition from metaphase to anaphase in mouse spermatocytes, probably involving release from the Spindle Assembly Checkpoint (SAC), mainly occurs in a cell-autonomous manner, despite the presence of cytoplasmic bridges between cells (this thesis).

4. Biopsies of non-obstructive azoospermic patients displaying partial activation of the metaphase checkpoint should be further analysed to determine if the surviving spermatids display an increased frequency of (epi)genetic aberrations, when assisted reproductive technology is considered (this thesis).

5. Pan-chromosomal γH2AX enrichment on human spermatocytes at meiotic metaphase marks aberrant cells that are destined to die (this thesis).

6. Proteins that make up the synaptonemal complex can move within the assembled structure, whereby the synaptonemal

complex possesses liquid crystal-like properties, which allow long-range signaling along meiotic chromosomes (Rog *et al.*, 2017).

7. Our surprise at observing huge inter-individual differences among mice with identical genotype, on an inbred background, kept under controlled identical housing conditions, highlights the complexity of biology.

8. The mere knowledge about novel genes associated with insomnia will actually result in more sleepless nights for scientists suffering from sleep disorders. Environmental stress factors, like writing a thesis, will only worsen this situation. (Jansen *et al.*, 2019, Hammerschlag et al., 2017)

9. Meaningful interpretation of scientific results requires imagination and creativity, but also a rational mind to avoid the temptation to fall into speculation.

10. Neurons, fibroblasts and muscle cells are specialized cell types that form parts of tissues that are connected to each other to function as an organism. Like them, botanists, geneticists and microscopists are all specialized biologists that form teams and connect interdisciplinary projects to try to understand the complexity of life.

11. All we have to decide is what to do with the time that is given us. J.R.R.Tolkien (The Fellowship of the Ring)

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