Functional fluorescent materials and migration dynamics of neural progenitor cells

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Stellingen

Behorend bij het proefschrift

Functional fluorescent materials and migration dynamics of neural progenitor cells

1. The selection of the DNA template for the synthesis Ag-DNA nanomaterials is a balancing act between achieving sufficient Ag-DNA stability and at the same time enough environmental sensitivity, particularly for applications in living cells. *Chapter 2 of this thesis*.

2. Nanoparticles that are used for long-term fluorescence imaging or drug release applications require a dual fluorescent label to ensure a validation of particle integrity at any point in time or to verify a controlled content release. *Chapter 3 of this thesis.*

3. Using genetic fluorescent markers is presently the best option for long-term live cell labelling, as currently available fluorescent dyes still underperform in regard to lasting signal stability and incorporation into living cells. *Chapter 4 of this thesis*.

4. The C17.2 murine cell line is a valuable asset for establishing experimental models investigating the migration of neural progenitor cells, before employing more complex cell systems like embryonic stem cells (ES) or induced pluripotent stem cells (iPSCs). *Chapter 5 of this thesis*.

5. Despite the progress of in vivo studies and the development of more complex in vitro models, the analysis of a system under minimalistic and controlled conditions will always remain indispensable.

6. The term “migration analysis” is used for rather different analysis concepts in the biological/medical vs. the biophysical research field. Thus, this term needs to be adapted to permit a search for publications in these subdisciplines.

7. For longer term cellular applications, the impact of DNA-encapsulated silver on cellular processes and health needs to be fully analysed and understood.

8. In depth *in vitro* studies on the migration dynamics of neural progenitor cells could highly contribute to the development of stem cell therapies for central nervous system injuries and diseases.

9. The current publications system is chaotic and overwhelmed as too many (unnecessary) articles are being published.

10. Academic research institutions need to team up more with industry and scientific service providers to reduce lost time and finances when establishing new research infrastructure.