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Gaining control of lipid-based nanomedicine by understanding the nano-bio interface

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Stellingen

Behorende bij het proefschrift

Gaining control of lipid-based nanomedicine by understanding the nano-bio interface

1. Nanomedicine design possibilities are virtually endless, but the effects are never as straight-forward as described in schematic figures. *Chapter 1, this thesis.*
2. The chemical biology toolbox holds great potential to probe and understand the nano-bio interface of nanomedicine. *Chapter 2 & 4, this thesis.*
3. Understanding of protein adsorption to nanoparticles has to shift from the general *who* and *what* to the *why* and *how*. *Chapter 2 & 4, this thesis.*
4. The number of reviews and perspectives that speculate on the roles of the biomolecular corona overpower the number of articles that present sound methodologies and validated evidence, generating a false preconception for its importance and introducing a bias for those studying the topic.
5. Endogenous protein function should always be considered in the explanation of validated protein-nanoparticle interactions. *Chapter 4, this thesis.*
6. Understanding the biophysical organization of lipid nanoparticle components can yield effective strategies for nanomedicine targeting that require minimal engineering. *Chapter 3, this thesis.*
7. Embryonic zebrafish can be used as a predictive and insightful animal model for mechanistic nanomedicine studies. *Chapter 3, this thesis.*
8. Complete and accurate biophysical characterization of lipid nanoparticles requires the combination of bulk phase and single particle techniques. *Chapter 5, this thesis.*
9. Even in the case of single parameter changes in lipid nanoparticles, it is still the synergy of all components that will dictate the formation of superstructures. *Chapter 5, this thesis.*
10. Fundamental nanomedicine research should shift its attention from an empirical and novelty driven approach towards an approach using defined hypotheses and minimal engineering. *Chapter 6, this thesis.*
11. Obeying written or unwritten rules that dictate the quantification of research output in doctoral programs can be destructive for the personal development of the respective scientists and the quality of in-depth fundamental research.
12. During the PhD, there is a very thin line that separates between having a dot on the horizon, and being lost at sea.