

University of Groningen

## Functionalization of DNA by electrostatic bonding

Chen, Wei

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2019

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Chen, W. (2019). *Functionalization of DNA by electrostatic bonding*. University of Groningen.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

*Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.*

Propositions  
Belonging to the dissertation

Functionalization of DNA by Electrostatic Bonding

1. DNA-lipid exchange with amine derived molecules can be achieved stoichiometrically in the organic phase. (Chapter 2)
2. DNA can act as a scaffold for the self-assembly of bound lipids to realize new functions, like a multi-chromophoric light harvesting system. (Chapter 2)
3. Cyclodextrin can be transformed into an ionic liquid with moderate fluidic property at room temperature through a lipid exchange process. (Chapter 3)
4. The approach of DNA-lipid exchange is also applicable to macromolecules like polyethylene glycol (PEG). The degree of exchange is decreasing with the increase of PEG molecular weight. (Chapter 4)
5. Quaternary ammonium-lipids can be exchanged onto DNA by introducing the counterion, acetylacetate, onto these lipids. The acetylacetate can abstract a proton from DNA-ANI complex to facilitate the binding between negatively charged DNA and positively charged quaternary ammonium-lipids. (Chapter 5)
6. DNA bonded with the quaternary ammonium-PEG is more vulnerable to ion displacement than that of primary amine-PEG. (Chapter 5)
7. The development of proper characterization methods to fully understand the conformation of DNA-lipids is challenging.
8. Brave is more crucial than clever in scientific research.