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## **Vaccination and targeted therapy using liposomes : opportunities for treatment of atherosclerosis and cancer**

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## Propositions

1. Liposomal rigidity is an often over-looked parameter which is important for antigen-specific immune responses.

*This thesis*

2. DSPG-containing liposomes are valuable antigen delivery vehicles to induce immune tolerance.

*This thesis*

3. Lyp-1-conjugated liposomes are retained in atherosclerotic plaques and can be useful delivery vehicles.

*This thesis*

4. DPTAP-containing liposomes adjuvanted with cyclic-di-GMP can induce strong anti-tumor responses.

*This thesis*

5. Significant future work remains in investigating how particle elasticity impacts more detailed drug delivery processes.

*A.C. Anselmo and S. Mitragotri, Adv Drug Deliv Rev, (108) 2017*

6. The protein corona of a nanoparticle gives it a biological identity that is distinct from its synthetic identity. Understanding the protein corona will enable the development of safer and more effective nanomedicines.

*C.D. Walkey and W.C.W. Chan, Chem Soc Rev, (41) 2012*

7. Manipulating the adaptive immune system by immunomodulatory strategies or vaccination in atherosclerosis is an attractive concept. However, limitations in the predictive power of animal models and a lack of a full understanding of the role of autoantibodies, B, and T cells present formidable hurdles to clinical translation.

*D. Wolf and K. Ley, Circ Res, (2) 2019*

8. The complement-independent functions of C1q on immune and non-immune cells serve to highlight a critical role in maintaining homeostasis. C1q's interaction with novel receptors linked to immune tolerance and prevention of autoimmunity are fascinating areas for further investigation.

*M. Son, B. Diamond and F. Santiago-Schwarz, Imm Res, (63), 2015*

9. Whatever will bewilder me.

*Tool, Lateralus, 2002*

10. We are a way for the cosmos to know itself.

*Carl Sagan, Cosmos, 1980*

11. The only way we can get by in this world is through the help we receive from others. No one can do it alone.

*Amy Poehler, Yes Please, 2014*

12. One of the advantages of being disorganized is that one is always having surprising discoveries.

*A.A. Milne, Winnie the Pooh, 1926*