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Photo-activated drug delivery systems

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Stellingen

Behorende bij het proefschrift

Photo-activated Drug delivery systems

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1. PEGylated drug delivery systems have decreased serum protein adsorption, reduced nanoparticle uptake in the liver and prolonged circulation lifetimes. **Chapter 1**, this thesis.
2. Polyethylene glycol (PEG) on the E-liposomal surface plays as steric 'shield' between complementary fusogenic peptides (E/K) tethered to opposing liposomal membranes. **Chapter 2**, this thesis.
3. Doxorubicin (DOX) is a potent cytotoxic drug used in the clinical treatment cancers. However, it's off-target cardiotoxicity limits the cumulative patient lifetime dose of DOX to just 550 mg/m², irrespective of therapeutic success. **Chapter 3**, this thesis.
4. There was no premature DOX release in a high-loading, "stealth-like" PEGylated doxorubicin micelles which upon light activation, leads to burst-like doxorubicin release. Through this approach, it showed precise spatiotemporal control of doxorubicin delivery to cells in vitro. **Chapter 3**, this thesis.
5. The transmembrane domains (TMD) of many membrane proteins are highly evolved to prefer a specific lipid environment. In turn, slight changes of bilayer thickness, fluidity, curvature, and/or lipid headgroup chemistry may lead to destabilization of protein structure and affect function and activity. **Chapter 4**, this thesis.
6. Surface charge significantly affects how nanoparticles distribute in vivo as well as how they are taken up by cells. Neutrally charged nanoparticles could freely circulate within the bloodstream, while the ones with a cationic surface charge could be rapidly internalized by cells. **Chapter 5**, this thesis.
7. During your PhD life, it might be hard to keep going, but you will get something in the end.
8. Sometimes, giving up is even harder than insisting.