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Nanobiomaterials for biological barrier crossing and controlled drug delivery

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Propositions

1. Enhanced cellular uptake of nanoparticles is not a good predictor for their passing of the blood brain barrier as it only represents the first stage in a long journey. (This thesis)
2. Cellular uptake of nanoparticles depends on the cell microenvironment that includes the presence of other cell types, hence co-cultures may give better insights to *in vivo* nanoparticle uptake. (This thesis)
3. Complexity lies within simplicity, simple insertion of hydrophobic light driven rotatory motors in liposomes enables light driven triggered release. (This thesis)
4. Engineering nanoparticles to mimic characteristics of the tumor microenvironment is an effective way to improve nanotherapeutics efficacy and targetability. (This thesis)
5. Killing a cancer cell is easy, the hard part is keeping all normal cells alive.
6. Interdisciplinary research pushes us to think beyond our comfort zone
7. Experimental science is a troubleshooting process where knowledge and innovation constantly need to be combined.

8. Impactful science cannot be done if we do not leave our comfort zone.

9. A double-degree program is a bureaucratic nightmare but an amazing intellectual journey during which you will be awake most of the time.