Material properties of hybrid lipid co-block polymer vesicles

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Aims

Can properties of polymers and lipids be combined into a hybrid vesicle?

Can enzymatic activity be maintained in hybrid vesicles?

If so, why?

Results

Observed enzyme activity of cyt bo3 in POPC/PBd-PEO hybrid vesicles over 6 weeks1.

Still enzymatic activity after 500+ days3.

Laurdan is a fluorescent dye that is sensitive to the lipid environment and could be used to determine the membrane phase for hybrid vesicles4.

As the PBd-b-PEO mol% increases the GP remains approx. the same, except for 25% PBd-PEO vesicles whose GP is lower.

Conclusion

- As PBd-b-PEO mol% increases the GP remains approximately the same.
- 50% and 75% PBd-b-PEO vesicles are the least permeable hybrids to protons.

Future Work

Use Cryo-electron microscopy and Small Angle Xray Scattering to determine membrane structure by mapping the electron density of hybrid lipid/co-block polymer vesicles.

Works Cited