

**P022** Switching peptide structure and biological activity using hydrophobic anchors

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By manipulating the balance between hydrophobicity and hydrophilicity, we have shown that peptide assembly and conformation, hence bioactivity, can be changed. Now, this balance is switched in situ to be able to manipulate both the assembly process and the peptide conformation and to introduce a next level of control. For this purpose we believe peptide amphiphiles are valuable building blocks.

Control over peptide function is achieved by immobilizing them on liposomes to be held in a non-native fold on the membrane surface and hence in an inactive, 'silenced' state. Subsequently, the peptides will be allowed to take on their native, biologically active conformation after an external trigger. This conformational control allows for otherwise unselective and/or harmful peptides to be targeted by being activated as they are delivered and to be employed in a novel drug delivery approach.

The same principle can also be employed to establish control over assembly and disassembly of peptides, an otherwise spontaneous process. Peptides were tuned to assemble in a controlled fashion through the connection of hydrophobic and hydrophilic moieties. Moreover, by the incorporation of cleavable linkers we were also able to reverse this assembly process. In combination with control over the molecular order, established through magnetic alignment of the assemblies, this allows the preparation of highly defined supramolecular materials.