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Coiled-coil biomaterials for biological applications

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ABBREVIATIONS

CHO	Chinese Hamster Ovary cell
CD20	Cluster of Differentiation 20
CY5	Cyanines 5
Cys	Cysteine
CD	circular dichroism
CFU	colony forming units
DLS	Dynamic light scattering
DIC	N,N'-Diisopropylcarbodiimide
DIPEA	N,N-Diisopropylethylamine
DMF	Dimethyl Formamide
DCM	Dichloromethane
DS	Degree of substitution
DMEM	Dulbecco's Modified Eagle Medium
DCR	Derived Count Rate
DVS	Divinyl Sulfone
DMSO	Dimethyl Sulfoxide
DOPE	1,2-dioleoyl-sn-glycero-3-phosphoethanolamine
DOPC	1,2-dioleoyl-sn-glycero-3-phosphocholine
EDTA	Ethylenediaminetetraacetic acid
FACS	Fluorescence-activated Cell Sorting
FSC	forward scatter
FRET	Förster resonance energy transfer
FCS	Fetal Calf Serum
GFP	Green Fluorescence Protein
GdnHCl	Guanidinium chloride
HPMA	2-Hydroxypropyl Methacrylate
HCTU	2-(6-Chloro-1-H-benzotriazole-1-yl)-1,1,3,3-tetramethylaminium

	hexafluorophosphate
HPLC	High Performance Liquid Chromatography
IOPs	Iron Oxide Particles
LrB	LrB: Lissamine rhodamine B
LC-MS	Liquid chromatography–mass spectrometry
LPMA	L-Phase Medium
LPB	L-phase broth
MACS	Magnetic-activated Cell Sorting
MWCO	Molecular weight cut-off
MeCN	acetonitrile
MIC	Minimum inhibitory concentration
MeOH	Methanol
NBD	Nitrobenzoxadiazole
NMR	Nuclear Magnetic Resonance spectroscopy
PEG	Polyethylene glycol
PI	Propidium iodide
PEI	Polyethylenimine
PDGFRB	platelet-derived growth factor receptor beta
PBS	Phosphate buffered saline
PDI	Polydispersity Index
SNARE	Soluble N-ethylmaleimide-sensitive factor activating protein receptor
SRb	Sulforhodamine B
SNAP-25	Synaptosomal-Associated Protein-25
TMD	Transmembrane Domain
Trp	Tryptophan
TFA	Trifluoroacetic acid
TEM	Transmission Electron Microscope
VAMP	Vesicle Associated Membrane Protein

LIST OF PUBLICATIONS

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4. Guan, A. J.; **Shen, M. J.**; Zhang, E. X.; Li, Q.; Wang, L. X.; Xu, L. J.; Xiang, J. F.; Tang, Y. L. Stabilizing G-quadruplex DNA by methylazacalix[n]pyridine through shape-complementary interaction. *Bioorg Med Chem Lett* **2016**, *26*, 609.
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7. **Shen, M. J.**; Zeng, Y.; Singhal, A.; Sevink, A.; Boyle, A. L.; Kros, A. Enhanced Liposomal Drug Delivery via membrane fusion triggered by Dimeric Coiled-coil Peptides. **Manuscript in preparation.**
8. **Shen, M. J.**; Boyle, A. L.; Kros, A. Investigating the Effect of Peptide Length on Coiled-Coil Stability, Self-Assembly, and Fusogenicity. **Manuscript in preparation.**
9. Shitut, S.; **Shen, M. J.**; Claushuis, B.; Derks, R. J. E; Giera, M.; Rozen, D.; Claessen, D.; Kros, A. Increased membrane fluidity facilitates bacterial cell-cell fusion. **Manuscript in preparation.**
10. Daudey, G. G. A.; **Shen, M. J.**; Singhal, A.; Van der Est, P.; Sevink, A.; Boyle, A. L.; Kros, A. Liposome fusion with orthogonal coiled-coil peptides as fusogens: The efficacy of roleplaying peptides. *Chem. Sci.* **2021**. **Accepted**

CURRICULUM VITAE

Mengjie Shen was born on July 14, 1988, in Linqu, Weifang city, Shandong province, R.P. China. Linqu is a small city named after an extinct volcano whose name is Mount Qu. Weifang is one of the biggest cities in Shandong province and the alternate name of Weifang in ancient times is “YuanDu (鸢都)”, which means “the Capital of Kites”.

In 2009, Mengjie started his bachelor study at Qingdao University of Science & Technology, where he obtained his bachelor's degree in chemistry four years later. In 2013, he continued his study in organic chemistry as a master student at Renmin University of China. In the following three years, he worked with Prof. Han-Yuan Gong from Beijing Normal University studying of Host-Guest interaction between the macrocyclic compound and small aromatic molecules. Also, he worked with Prof. Ya-Lin Tang from the Institute of Chemistry Chinese Academic of Science in researching the DNA G-quadruplex based “molecular switch”. After graduation in 2016, he moved to the Netherlands to start his PhD at Leiden University in the research group of Supramolecular & Biomaterials Chemistry. During his PhD, he was interested in coiled-coil based biomaterials and designed different E/K coiled-coil variants for various biological applications, such as membrane fusion and cell sorting.

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“I’ve had my ups and downs. My fair share of bumpy roads and heavy winds. That’s what made me what I am today.” It’s a tough journey along with challenges and some accomplishments. Looking back to the past five years, I met lots of people and experienced lots of things, which helped me grow up. I appreciate those who helped and supported me during this journey.

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I wish everyone has good luck and a bright future. Hope to see you again somewhere in the corner of world in the future.

Mengjie Shen

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