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Dynamic polymer hydrogels as synthetic extracellular matrices for 3D cell culture

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Curriculum Vitae

Tingxian Liu was born on November 15, 1990 in Xinyang, China. In 2008, She graduated from Shangcheng First Senior High School and was admitted as BSc student in Shandong University. After obtaining a BSc degree in Pharmacy, she started her MSc studies in Shandong University under the supervision of Prof. Na Zhang, where she became interested in the area of nanomedicine and life science, especially in gene therapy, drug delivery and biomaterials. Inspired from that, she applied for the PhD position in the group of Prof. dr. A. Kros after achieving the MSc degree in 2015.

She started her PhD study on “Dynamic polymer hydrogels as synthetic extracellular matrices for 3D cell culture” in September 2015, in the group of Supramolecular&Biomaterials Chemistry (SBC), Leiden Institute of Chemistry. The study was sponsored by Chinese Scholarship Council (CSC)-Leiden University joint scholarship and performed under the supervision of Dr. R. E. Roxanne and Prof. dr. A. Kros. Also, she collaborated with Dr. S.J. ter Braak (LACDR), Prof. B. van de Water (LACDR), Dr. Y.F.M. Ramos (LUMC), Prof. dr. D. Heinrich (Leiden University), and Prof. dr. P.C.J.J. Passier (LUMC) during the PhD study.

Now, she works as a senior researcher in the company (Yangshengtang Institute of Natural Medicine), focusing on neural differentiation of iPSCs and brain organoids for neurodegenerative disease modeling.

Academic presentations were listed as following:

1. Spacer length-dependent irreversible depolymerization of supramolecular polymers. 2020, Poster Presentation, CHAINS.
2. Squaramide based hydrogels support 3D culture of HepG2 spheroids with improved liver-specific function. 2019, Oral and Poster Presentation, CHAINS.

3. Expansion of human induced pluripotent stem cells in squaramide-based supramolecular hydrogels. 2019, Poster Presentation, Reedijk Symposium.
4. Co-assembly of integrin-targeting peptides on squaramide supramolecular materials facilitate 3D expansion of human induced pluripotent stem cells. 2019, Poster Presentation, Regeneration Day.
5. Morphological control over a squaramide-based supramolecular polymer in water. 2018, Poster Presentation, CHAINS.

List of publications

1. T. Liu¹, L. van den Berk¹, J.A.J. Wondergem, C. Tong, M.C. Kwakernaak, B. ter Braak, D.M. Heinrich, B. van de Water, R.E. Kieltyka*, Squaramide-based supramolecular materials drive HepG2 spheroid differentiation. 2021, *Adv. Healthcare Mater.* 2021, 10, 2001903.
2. T. Liu, M. Janssen, M. Bril, R. E. Kieltyka*, Disulfide-based reversible covalent hydrogels starting from cyclic thiosulfinate macromers support cardiomyocytes contractility in 3D 2021, Submitted.
3. T. Liu, M. Janssen, L. Delfos, R. E. Kieltyka*, Co-assembly of integrin-targeting peptides on squaramide supramolecular materials facilitate 3D expansion of hiPSCs. 2021, In preparation.
4. T. Liu, Y.F.M. Ramos, R. E. Kieltyka*, Engineering macroporous hydrogels using the tetrazine-norbornene click reaction. 2021, In preparation.
5. V. Saez Talens, D.M.M. Makurat, T. Liu, W. Dai, C.L. Guibert, W.E.M. Noteborn, I.K. Voets, R.E. Kieltyka*, Shape modulation of squaramide-based supramolecular polymer nanoparticles, *Polym. Chem.*, 2019, 10, 3146.
6. C. Tong, T. Liu, V. Saez Talens, W.E.M. Noteborn, T.H. Sharp, M.M.R.M. Hendrix, I.K. Voets, C.L. Mummery, V.V. Orlova, R.E. Kieltyka*, Squaramide-Based supramolecular materials for three-dimensional cell culture of human induced pluripotent stem cells and their derivatives. *Biomacromolecules*, 2018, 19, 1091.
7. C. Liu¹, T. Liu¹, Y. Liu, N. Zhang*, Evaluation of the potential of a simplified co-delivery system with oligodeoxynucleotides as a drug carrier for enhanced antitumor effect. *Int J Nanomedicine*, 2018, 13, 2435.

8. C. Liu, T. Liu, X. Yu, Y. Gu*, A preliminary study on the interaction between Asn-Gly-Arg (NGR)-modified multifunctional nanoparticles and vascular epithelial cells. *Acta Pharmaceutica Sinica B*, 2017, 7, 361.
9. T. Liu, M. Wang, T. Wang, Y. Yao, N. Zhang*, Co-delivery of doxorubicin and siRNA by a simplified platform with oligodeoxynucleotides as drug carrier. *Colloids Surf B Biointerfaces*, 2015, 126, 531.
10. L. Zhang¹, T. Liu¹, Y. Xiao, D. Yu, N. Zhang*, Hyaluronic Acid-Chitosan Nanoparticles to Deliver Gd-DTPA for MR Cancer Imaging, *Nanomaterials*, 2015, 5, 1379.
11. M. Wang, T. Liu, L. Han, W. Gao, S. Yang, F. Wang, N. Zhang*, Functionalized O-carboxymethyl-chitosan/polyethylenimine based novel dual pH-responsive nanocarriers for controlled co-delivery of DOX and gene, *Polym. Chem.*, 2015, 6, 3324.

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