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Gaining control of lipid-based nanomedicine by understanding the nano-bio interface

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Curriculum Vitae

Roy Pattipeiluhu was born on the October 3, 1991 in Rotterdam, the Netherlands. In 2009, he graduated from csg. Calvijn in Rotterdam. In 2011, he obtained a propaedeutic certificate in Chemistry from the Hogeschool Rotterdam. In 2014, he obtained his Bachelor's degree in Molecular Science & Technology from Delft University and Technology and Leiden University, with a major in Chemistry and a minor in Education.

In 2017, he received a cum laude Master's degree in Chemistry from Leiden University, with a specialization in Chemical Biology. In addition, he participated in the 2015 honors program of the Netherlands Research School of Chemical Biology. During his Master's program, he performed several internships and projects. As a part of his master's thesis in 2015, he developed light-activated angiogenic peptides for the use in embryonic zebrafish in the Supramolecular and Biomaterials Chemistry group at Leiden University, under the supervision of Dr. Jeroen Bussmann and Prof. dr. Alexander Kros. In addition, he was funded a NWO Top Sector Chemistry Student grant and spend several months working on dual directed liposomes for tumor treatment. In 2016, he worked on an enzymatic fluorescent labelling method in the bacterium *C. Crescentus* under the supervision of Dr. Samuel Ho in the lab of Prof. dr. David A. Tirrell at the California Institute of Technology.

In 2017, Roy started his PhD in the Supramolecular and Biomaterials Chemistry group at Leiden University, under the supervision of promotor Prof. dr. Alexander Kros (Leiden University) and co-promotor Dr. Thomas H. Sharp (Leiden University Medical Centre). During this period, he focused on understanding the behavior of lipid-based nanomedicine at the nano-bio interface, as described in this dissertation. To this end, he collaborated with scientists from the groups of Prof. dr. Pieter R. Cullis (University of British Columbia, Vancouver, Canada) and Prof. dr. Ilja K. Voets (Eindhoven University of Technology, the Netherlands). In addition, he supervised multiple Bachelor and Master students during their internships and presented the work described in this dissertation at several (inter)national conferences.

Since September 2021, Roy is working as a Scientist in the Early-Stage Formulation Process Development group at BioNTech SE in Mainz, Germany.

The research described in this dissertation was presented at the following meetings and conferences:

- CHAINS editions 2017, 2018 and 2019, Veldhoven, the Netherlands (poster presentations)
- Activity Based Protein Profiling Symposium, Leuven, Belgium, 2019 (poster presentation)
- TIDES, Amsterdam, the Netherlands, 2019 (poster presentation)
- Nanomedicine Journal Club, *digital*, 2020 (oral presentation)
- Annual Meeting of the Biophysical Society, San Diego, United States of America, 2020 (oral presentation)

List of publications

1. **R. Pattipeiluhu**, S. Crielgaard, I. Klein-Schiphorst, B. I. Florea, A. Kros, F. Campbell, ACS Cent. Sci. **2020**, 6, 535. “Unbiased Identification of the Liposome Protein Corona Using Photoaffinity Based Chemoproteomics”
2. **R. Pattipeiluhu***, G. Arias-Alpizar*, G. Basha, J. Bussmann, T.H. Sharp, M.A. Moradi, N. Sommerdijk, P.R. Cullis, A. Kros, D. Witzigmann, F. Campbell. “Anionic Lipid Nanoparticles Preferentially Deliver mRNA to the Hepatic Reticuloendothelial System”, **submitted**.
3. **R. Pattipeiluhu**, Y. Zeng, M.R.M. Hendrix, I.K. Voets, A. Kros, T.H. Sharp. “Paracrystalline Inverted Lipid Phases Encapsulating siRNA Enhance Lipid Nanoparticle Mediated Transfection”, **submitted**.
4. **R. Pattipeiluhu**, B.I. Florea, K. Dickie, T.H. Sharp, F. Campbell, A. Kros. “Site Selective Binding of Apolipoprotein E in the Protein Corona of Anionic Liposomes”, *in preparation*.

*These authors contributed equally