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Amphiphilic Dendritic Compounds as Drug Delivery Systems

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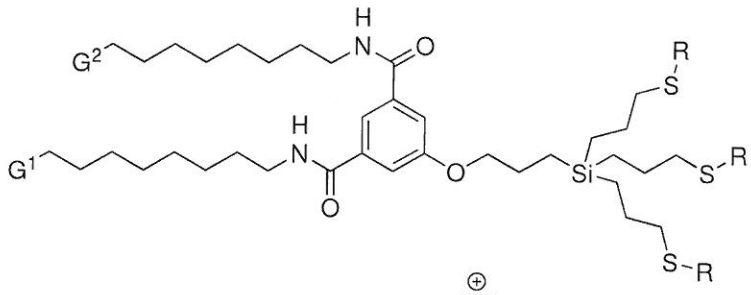
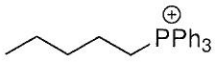
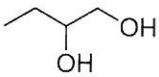
Considering promising biomedical properties and high biomedical application potential of phosphonium dendrimers designed in our group[1], my project aims to prepare amphiphilic dendritic phosphonium or hydroxyl structures such as **1** or **2** capable of working as drug delivery systems in form of liposomes or micelles. Main goal is to be able to transport defined siRNA (short interfering RNA) to cytoplasm. Other applications are also possible.

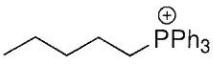
An attaching of polar groups to the dendritic part of molecules is performed using thiol-ene reaction – a radical addition of thiol to double bond. Optimization of this reaction was performed on different model substrates.

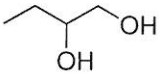
To enable an easy detection of supramolecular objects assembled from **1** or **2**, I am currently working on preparation of their unsymmetrical analogues **3** and **4** bearing a fluorescent tag. Final liposomes or micelles will be prepared from mixtures of fluorescent and non-fluorescent analogues.



1 $G_1 = G_2 = C_4H_9$ R = 

2 $G_1 = G_2 = C_4H_9$ R = 

3 $G_1 = C_4H_9$ G_2 = NHBoc R = 

4 $G_1 = C_4H_9$ G_2 = NHBoc R = 

References

1. Strasak, T.; Maly, J.; Wrobel, D.; Maly, M.; Herma, R.; Cermak, J.; Mullerova, M.; Cervenkova Stastna, L.; Curinova, P. *RSC Advances* **2017**, *7*, 18724–18744.