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How can dendrimers contribute to precision/personalized medicine?

Prof. Anne-Marie Caminade

CNRS, LCC, Toulouse

Dendrimers [1] are perfectly defined hyperbranched nanomolecules, which possess many biological properties [2]. The advantages of using dendrimers in the context of precision/personalized medicine will be emphasized in particular through two examples:

* Dendrimers can trigger the human immune system (Figure 1), and induce an anti-inflammatory response [3], with potential uses against Rheumatoid Arthritis [4], and Multiple Sclerosis [5].

* Dendrimers can be used for improving the sensitivity of biosensors for multiplexing technologies (Figure 2), for choosing the best personalized treatment to prescribe [6].

[1] Dendrimers. Towards Catalytic, Material and Biomedical Uses. Caminade A.M., Turrin C.O., Laurent R., Ouali A., Delavaux-Nicot B, Eds. Wiley & Sons, Chichester (UK) 2011.

[2] a) Dendrimers in combination with natural products and analogues as anti-cancer agents. Mignani S., Rodrigues J., Tomas H., Zablocka M., Shi X., Caminade A.M., Majoral J.P. Chem. Soc. Rev. 2018, 47, 514; b) Phosphorous Dendrimers in Biology and Nanomedicine: Syntheses, Characterization, and Properties. Caminade A.M., Turrin C.O., Majoral J.P., Eds. Pan Stanford, 2018.

[3] The key role of the scaffold on the efficiency of dendrimer nanodrugs. Caminade A.M., Fruchon S., Turrin C.O., Poupot M., Ouali A., Maraval A., Garzoni M., Maly M., Furer V., Kovalenko V., Majoral J.P., Pavan G.M., Poupot R. Nature Comm. 2015, 6, 7722

[4] A phosphorus-based dendrimer targets inflammation and osteoclastogenesis in experimental arthritis. Hayder M., Poupot M., Baron M., Nigon D., Turrin C.O., Caminade A.M., Majoral J.P., Eisenberg R.A., Fournié J.J., Cantagrel A., Poupot R., Davignon J.L. Science Transl. Med. 2011, 3, 81ra35

[5] Phosphorus-based dendrimer ABP treats neuroinflammation by promoting IL-10-producing CD4+ T cells. Hayder M., Varilh M., Turrin C.O., Saoudi A., Caminade A.M., Poupot R., Liblau R. Biomacromolecules 2015, 16, 3425

[6] a) Dendrimeric coating of glass slides for sensitive DNA microarrays analysis. Le Berre V., Trevisiol E., Dagkessamanskaia A., Sokol S., Caminade A.M., Majoral J.P., Meunier B., François J. Nucleic Acids Res. 2003, 31, e88.1-e88.8; b) Multiplexing technology for in vitro diagnosis of pathogens: the key contribution of phosphorus dendrimers. Majoral J.P., François J.M., Fabre R., Senescau A., Caminade A.M., Science China Mater. 2018 in press; c) Dendris: http://www.dendris.fr/

Figure 1:

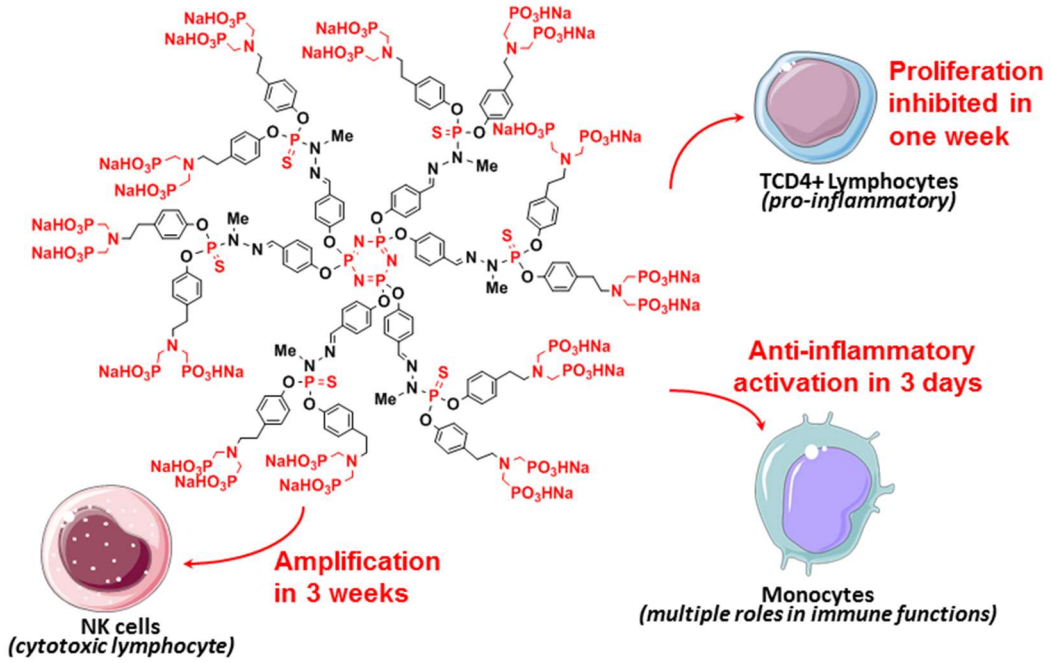

Figure 2: