

ペプチド誘導体が構築する超分子ナノ構造体と DNA ナノフラワーからなる多成分超分子材料の創製

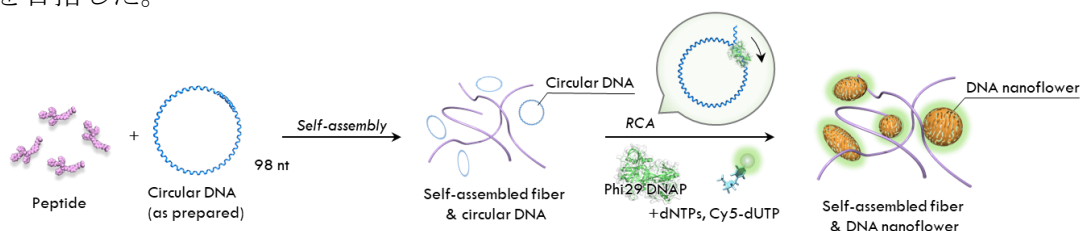
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Construction of Multi-Component Supramolecular Materials Composed of Peptide-based Supramolecular Nanostructures and DNA Nanoflowers (¹Faculty of Engineering, Gifu University, ²Graduate School of Natural Science and Technology, Gifu University, ³United Graduate School of Drug Discovery and Medical Information Sciences, Gifu University, ⁴Institute for Glyco-core Research (iGCORE), Gifu University, ⁵Institute of Nano-Life-Systems, Institutes of Innovation for Future Society, Nagoya University) ○Shintaro Sugiura¹, Yuki Shintani², Daisuke Mori², Masato Ikeda^{1,2,3,4,5}

Biomolecule-based hybrid nanomaterials can show several promising propensities such as biocompatibility and biodegradability. In addition, orthogonal hybridization of plural biomolecules and their assemblies will enable the construction of new materials with emerging functions as well as overcoming the drawbacks of single biomolecular component and reinforcing the inherent properties and functions. In this study, we employed rolling circle amplification to produce long DNA strands and their assemblies (DNA nanoflowers) in the presence of supramolecular nanostructures of peptide derivatives bearing an anionic group, which gives rise to novel hybrid nanomaterials.

Keywords : Hybrid Nanomaterials; Supramolecular Nanostructures; DNA Nanoflowers

ペプチドや核酸等の複数の生体分子からなる超分子ナノ構造体をハイブリッドした材料¹⁾は、生体適合性や生分解性を示すだけでなく、複数の機能の獲得や各々の構成成分の欠点の補完、各成分に固有の機能強化などを実現する可能性を秘めている。本研究では、アニオン性自己集合性ペプチドが形成する超分子ナノ構造体²⁾の存在下で RCA 反応³⁾を進行させることで DNA ナノフラワーを構築し、それぞれの超分子ナノ構造体がオルソゴナルに共存した新しいハイブリッド型多成分超分子材料の創製を目指した。



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