SUPRAMOLECULAR TOOLS FOR CHEMICAL AND SYNTHETIC BIOLOGY

Javier Montenegro

CIQUS, Universidad de Santiago de Compostela

The fabrication of functional molecular devices constitutes one of the most important current challenges for chemical sciences. The complex processes accomplished by living systems continuously demand the assistance of non-covalent interactions between molecular building blocks. Additionally, these building blocks (proteins, membranes, nucleotides) are also constituted by self-assembled structures. Therefore, supramolecular chemistry is the discipline required to understand the properties of the minimal self-assembled building blocks of living systems and to develop new functional smart materials. We are interested in the preparation of supramolecular membrane transporters for the delivery of nucleotides (plasmid, siRNA, mRNA, etc) and proteins for CRISPR genome edition (Cas9). We have recently started a research program towards the application of peptide nanotubes in confined spaces as cytoskeleton mimics. This exciting research allow us to learn, understand and manipulate supramolecular functional assemblies with biological applications. *Chemical Communications,* **2017***, 53,* 7861-7871.