Researchers Unveil New Protein Cage Design for Advanced Drug Delivery Systems

Monday 16 December, 2024

An international collaboration between researchers at The Centre for Programmable Matter at Durham University (UK) and the Malopolska Centre of Biotechnology, Jagiellonian University (Poland) has resulted in the generation of a novel artificial protein cage that holds great promise as an advanced drug delivery system.

The team have crafted a highly adaptable artificial protein cage, based on a ring-shaped scaffold made of TRAP proteins. These remarkable nano-scale structures feature strategically positioned metal-binding sites that enable self-assembly into robust, highly organised structures upon exposure to cobalt or zinc ions. These cages have the potential to carry therapeutic cargo in their hollow core.

Most importantly, although highly stable, the cages can be triggered to open up and free their cargoes in certain disease-specific conditions. These include changes in pH, such as those associated with some cancers.

Professor Jonathan Heddle of Durham University comments “To have a highly stable nano-sized transport container that only opens up to release a toxic cargo when it reaches a diseased cell is a big challenge, and we think this work takes us a little closer to that goal”.

The researchers envision that these protein cages will serve as a versatile platform for advanced biomedical applications.

Read the full publication in Macromolecular Rapid Communications: https://onlinelibrary.wiley.com/doi/full/10.1002/MARC.202400712

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