

De novo peptide-based virus-like particles as biological standards

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Introduction

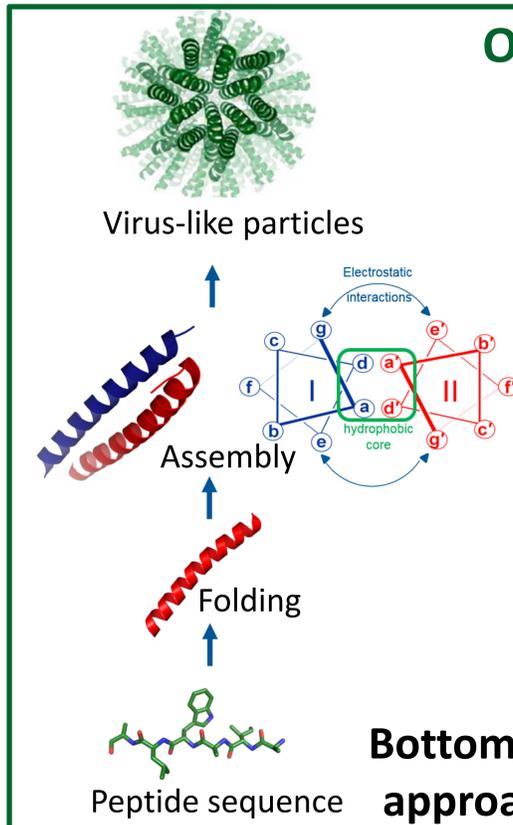
Gene delivery depends on adaptable nanoscale vehicles to safely handle and deliver therapeutic nucleic acids into human cells.

Viruses are the most efficient gene-transfecting agents in nature and have been an inspiration for the development of novel gene delivery vehicles.

Metrology need

Need for intracellular reference materials and protocols to improve quantification and reproducibility of transfection efficiency, cell viability and activity.

Our approach



The modularity in peptide design allows for a controlled and predictable assembly which, makes peptide-based virus-like particles ideal candidates as intracellular standards.

Their development as standards is currently being validated by an intercomparison study under VAMAS.

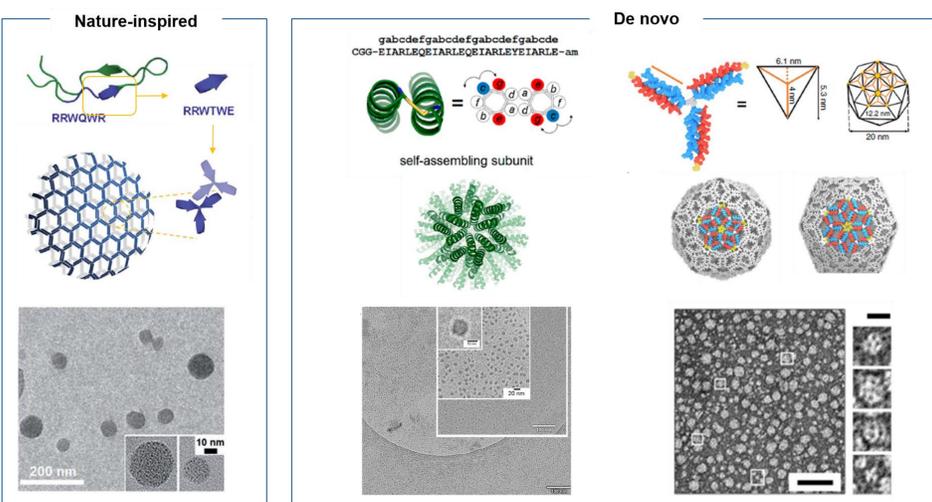


Towards de novo virus-like particles as biological standards

Design rationale and characterisation

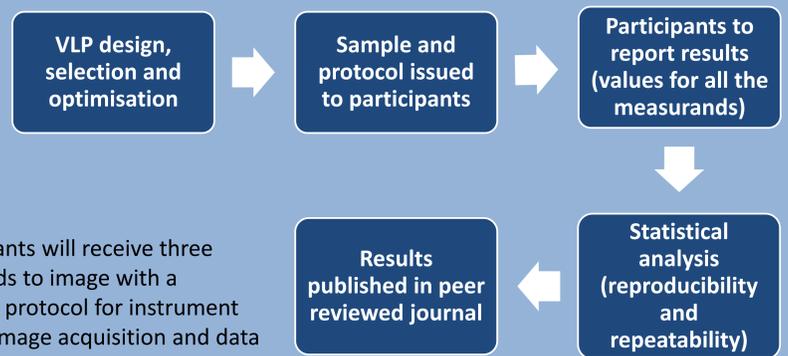
Antimicrobial peptide capsids of de novo design
Emiliana De Santis¹, Hasan Alkassam^{1,2,3}, Baptiste Lamarre¹, Nilofar Faruqi¹, Angelo Bella¹, James E. Noble¹, Nicola Micale⁴, Santanu Ray⁵, Jonathan R. Burns⁶, Alexander R. Yon^{2,7,8}, Bart W. Hoogenboom^{2,7,8} & Maxim G. Ryadnov¹

JIAICIS
A De Novo Virus-Like Topology for Synthetic Virions
James E. Noble¹, Emiliana De Santis¹, Jacinda Ray¹, Baptiste Lamarre¹, Valera Castellanos¹, Judith Mantell¹, Santanu Ray¹ and Maxim G. Ryadnov¹



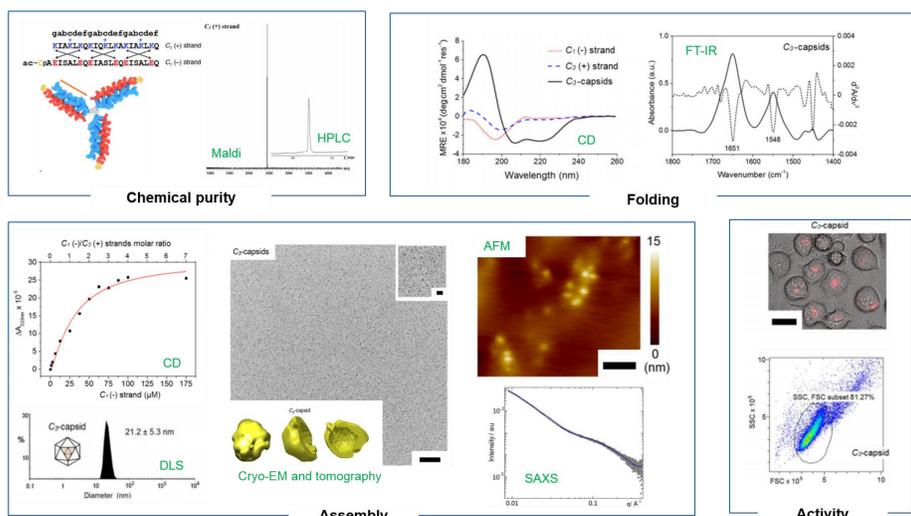
Validation via intercomparison study

Technical working area TW40 Synthetic Biomaterials
Versailles project on Advanced Materials and Standards
VAMAS supports world trade in products dependent on advanced materials technologies, through International collaborative projects aimed at providing the technical basis for harmonized measurements, testing, specifications, and standards.



We are accepting participants

Measurement continuum



Sample and protocol optimisation

Measurands:
N: particles/ μm^2
D: Feret's diameter
PDI: Polydispersity
R: Roundness

Good agreement between particle size by TEM and AFM in liquid.

