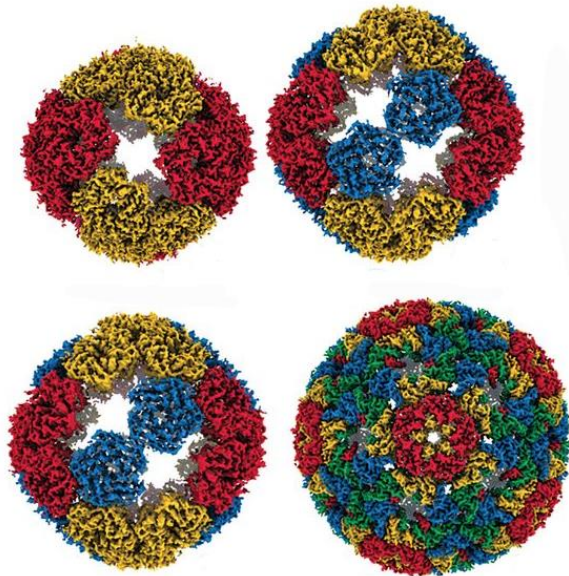


Recreating a Step in the Evolution of Viruses



This image illustrates four different evolutionary steps, differing in their numbers of mutations, in the evolution of the artificial capsid.

Scientific Achievement

Scientists have created a specialized protein container that forms around the genetic message. Such “capsids” have previously only been seen in viruses, which use them as part of their replication machinery.

Significance and Impact

Understanding how viral capsids evolved will help researchers design novel delivery mechanisms for gene therapies.

Research Details

- Engineered an artificial capsid from a bacterial enzyme.
- Mapped ‘capsid evolution’ through a series of structural modifications.
- Using a technique called RNA X-ray footprinting at the NSLS-II XFP beamline, scientists found that these modifications change the way the protein interacts with its genetic message, which is the messenger RNA.

S. Tetter, N. Terasaka, A. Steinauer, R. J. Bingham, S. Clark, A. J. P. Scott, N. Patel, M. Leibundgut, E. Wroblewski, N. Ban, P. G. Stockley, R. Twarock, D. Hilvert. *Science* **372** (6547), 1220-1224 (2021).

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