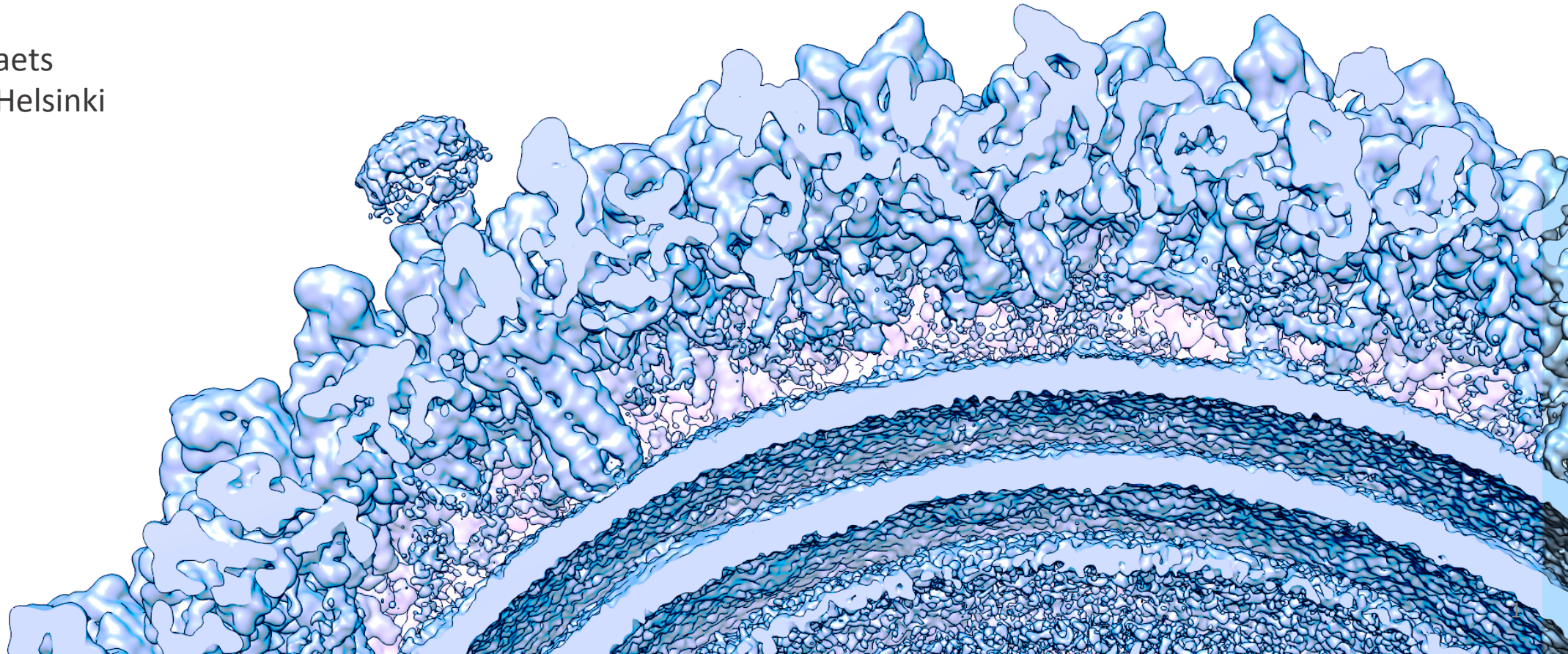


3D Reconstruction of Thermus Virus P23-77

Dr James Geraets
University of Helsinki



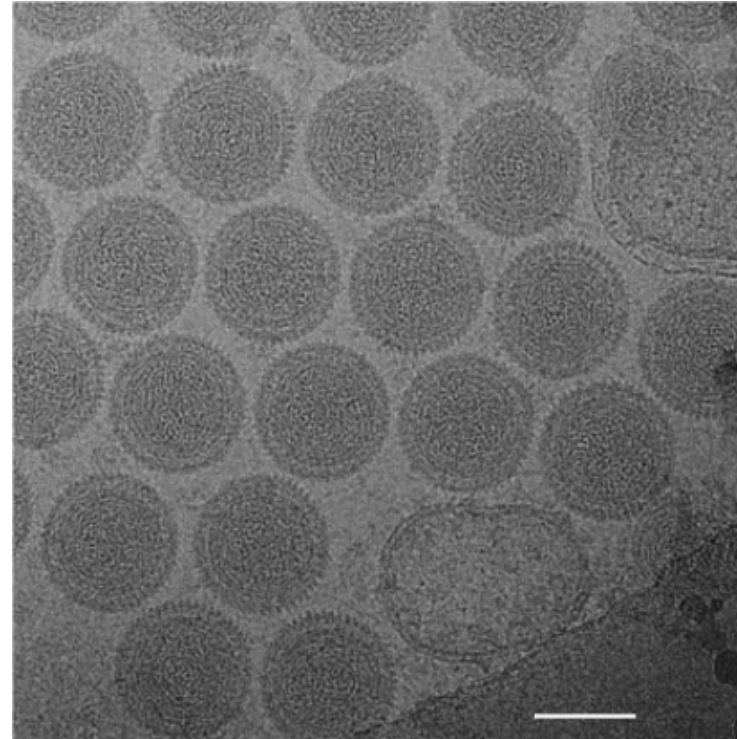
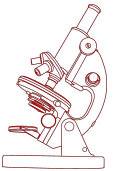
Thermus Virus P23-77: Cryo-electron microscopy



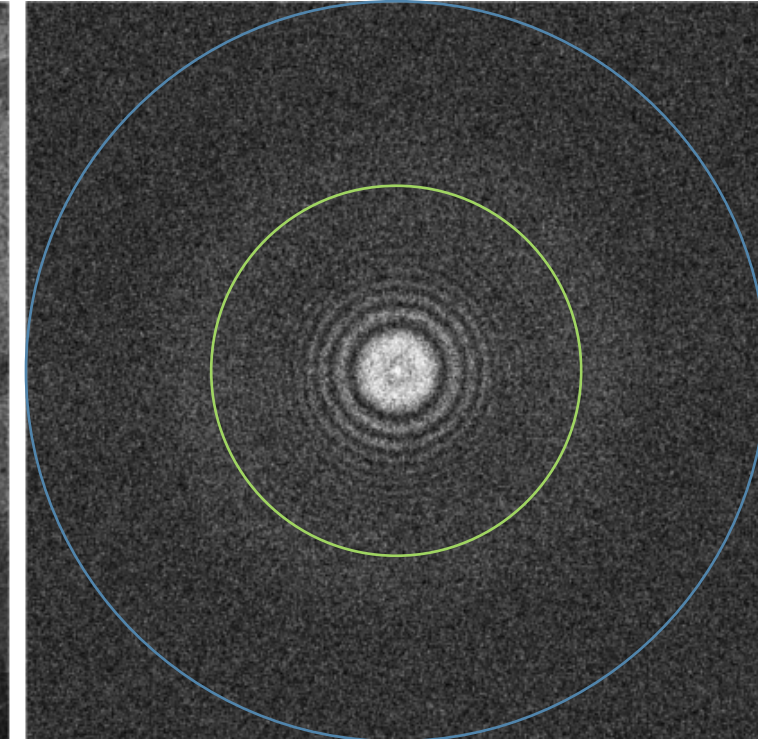
Extremophile: Isolated from hot, alkaline source in New Zealand, infects *Thermus thermophilus*



- tailless, spherical, $\varnothing$ 78 nm
- icosahedral T = 28d
- internal lipid membrane,
- spikes at 5-fold axes
- FEI Titan Krios 300kV TEM
- Gatan Quantum K2 Summit DED
- Single particle strategy
- 1.06 Å/pix
- 20 dose fractions, 2e⁻ per frame
- -0.5 to -1.5 μ m defocus



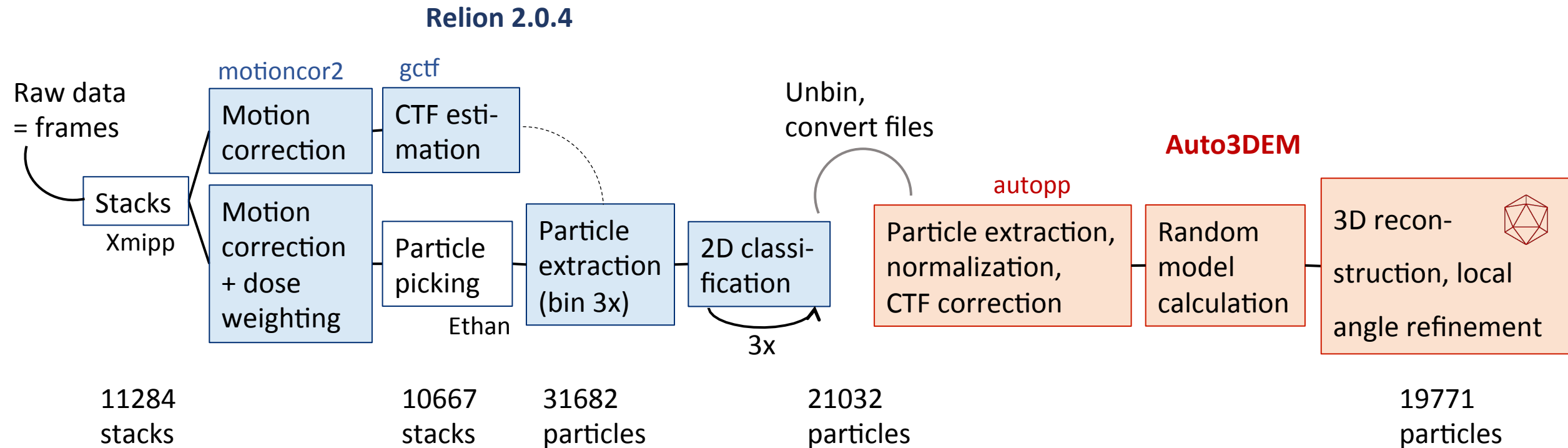
scale bar: 50 nm



defocus: 1.394 μ m

○ 2.12 Å
○ 4.24 Å

Data processing workflow: Single particle analysis



Symmetric reconstruction



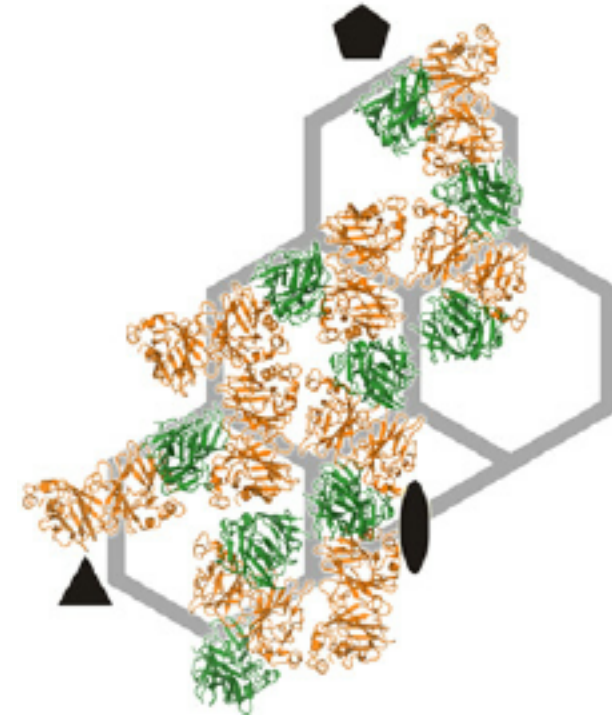
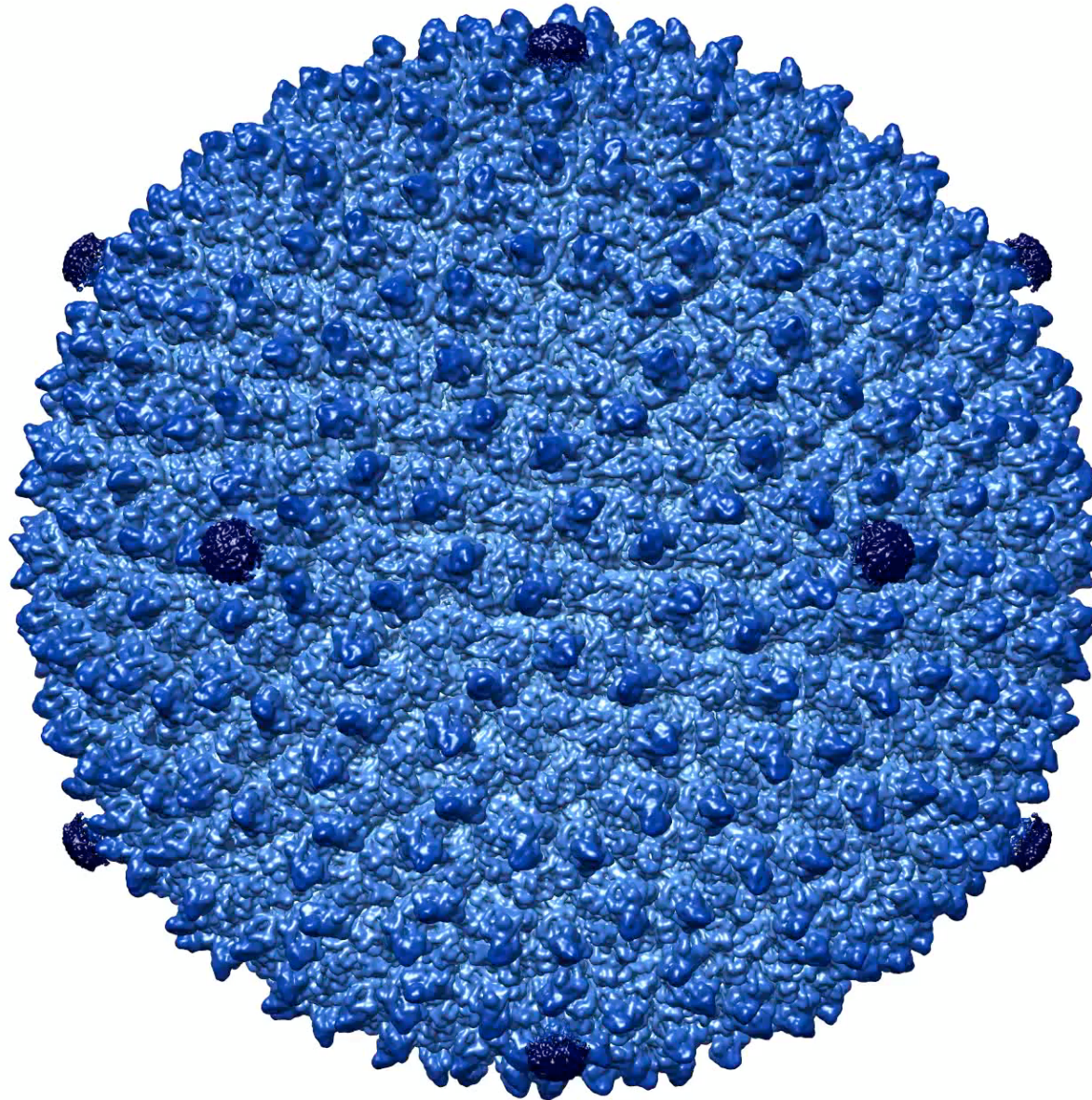
Unsharpened map

Spike: anchored
in penton

Turrets: VP17

Flat areas: VP16

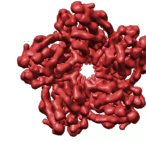
Penton protein:
 α -helix bundle,
transmembrane



Atomic model analysis

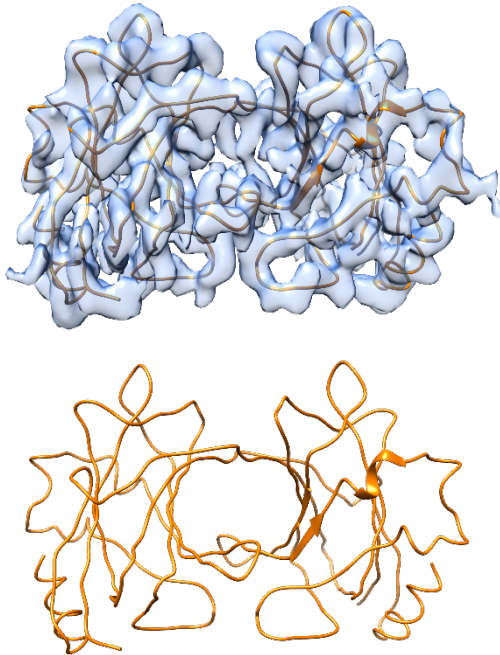


capsid proteins, crystal structures



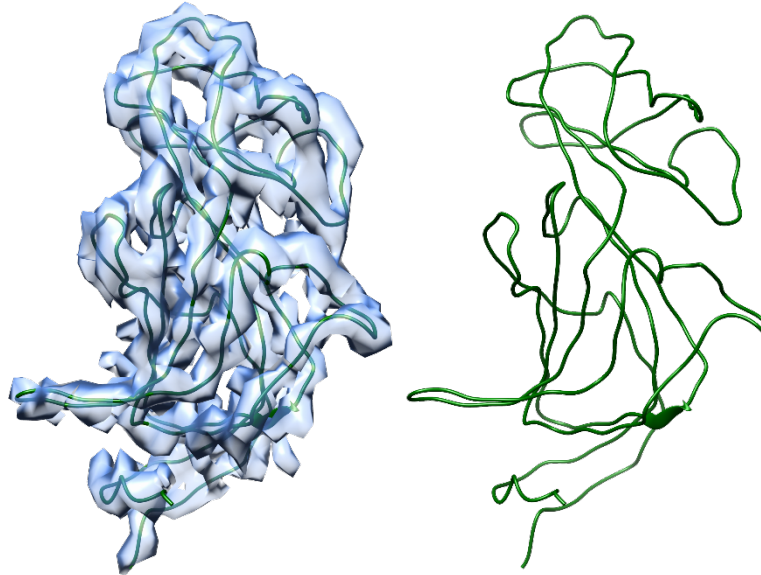
penton protein

VP16 dimer

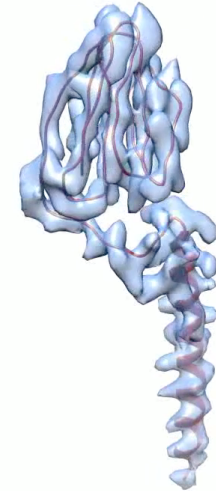


strand-swapped
8 stranded β -barrel

VP17



double β -
barrel



poly-alanine model, 124aa

Asymmetric and local reconstructions

