Abstract: Tailed phages (Caudovirales) are the most representative and diversified class of virus group. They are traditionally divided into three families: Myoviridae, Siphoviridae and Podoviridae. Phage T7 belongs to the Podoviridae family, which presents a short and non-contractile tail, and it is an interesting system to study how these viruses puncture the double membranes of Gram-negative bacteria. It has been postulated that during infection, the tail interacts with an internal head complex, the core, to form a channel through the bacterial membrane, in order to allow DNA translocation (Hu et al. 2013). Here we present near-atomic resolution cryo-electron microscopy (cryo-EM) structure at 3.24Å of this DNA translocation complex. Our results suggest that the interaction of two proteins of core complex show a novel type of assisted folding and assembly correlated with the proposed functional hypothesis.