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Structure of AcrH-AopB chaperone-translocator complex reveals a role for membrane hairpins in type III secretion system translocon assembly

Type III secretion systems (T3SSs) are adopted by pathogenic bacteria for the transport of effector proteins into host cells through the translocon pore comprised of major and minor translocator proteins. Both translocators require a dedicated chaperone for solubility. Despite tremendous efforts in the past, structural information regarding the chaperone:translocator complex and the topology of the translocon pore have remained elusive. Here, we report the crystal structure of the major translocator, AopB from *Aeromonas hydrophila* AH-1 in complex with its chaperone, AcrH. Overall, the structure revealed unique interactions between the various interfaces of AopB and AcrH with the N-terminal molecular anchor of AopB crossing into the N-terminal arm of AcrH. AopB adopts a novel fold and its transmembrane regions form two pairs of helical hairpins. From these structural studies and associated cellular assays, we deduced the topology of the assembled T3SS translocon with both termini remain extracellular after membrane insertion.

Biography

Mok Yu-Keung has his expertise in determining the structural/functional relationship of protein involved in human diseases using both Nuclear Magnetic Resonance (NMR) and X-ray crystallography.

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