

## Poster Presentation

**MS37.P06**

*Insights into minor pseudopilin complexes of the Type II secretion system*

Y. Zhang<sup>1</sup>, F. Faucher<sup>1</sup>, Z. Jia<sup>1</sup>

<sup>1</sup>*Queen's University, Department of Biomedical and Molecular Sciences, Kingston, Canada*

The type II secretion system (T2SS) is sophisticated multiprotein machinery that enables Gram-negative pathogens to secrete a wide range of exoproteins, named virulence factors, into the extracellular environments. In *Pseudomonas aeruginosa*, the Xcp T2SS is responsible for secreting many virulence factors that induce severe infections. In T2SS, the recognition and binding of secreted exoproteins are conducted by a structure called the pseudopilus tip, which is formed by four minor pseudopilins, including XcpU, XcpV, XcpW and XcpX. These minor pseudopilins form a quaternary complex, which is also involved in the initiation and regulation of the pseudopilus assembly. Although individual structures of these four pseudopilins have been revealed in different organisms, the substrate recognition and binding mechanisms have not been clearly elucidated due to the lack of systematic studies on the whole structures of several complexes formed by these pseudopilins. As a result, the understanding of the structures of these protein complexes will provide useful information for unveiling the mystery of the recognition and binding mechanisms. The establishment of the substrate binding model requires the preparation of stable complex(es) of substrates and certain minor pseudopilin(s). In this work, we aim to gradually elucidate the secretion mechanisms by assembling each component to build up the whole architecture. The structure of XcpV in complex with XcpW has been determined, and other complexes, especially the XcpU-containing binary and ternary complexes, have been stably established and purified. The identification of these complex structures will significantly promote our understandings of the type II secretion mechanisms.

[1] Douzi, B., et al., *J. Biol. Chem.*, 2011, 286, 40792-40801, [2] Korotkov, K. V. & Hol, W. G., *Nat. Struct. Mol. Biol.*, 2008, 15, 462-468, [3] Douzi, B. et al., *J. Biol. Chem.*, 2009, 284, 34580-34589

**Keywords:** Minor pseudopilin complexes, Structure, T2SS