

Structure-guided disruption of the pseudopilus tip complex inhibits the Type II secretion in *Pseudomonas aeruginosa*

Pseudomonas aeruginosa utilizes the Type II secretion system (T2SS) to translocate a wide range of large, structured protein virulence factors through the periplasm to the extracellular environment for infection. In the T2SS, five pseudopilins assemble into the pseudopilus that acts as a piston to extrude exoproteins out of cells. Through structure determination of the pseudopilin complexes of XcpVWX and XcpVW and function analysis, we have confirmed that two minor pseudopilins, XcpV and XcpW, constitute a core

complex indispensable to the pseudopilus tip. The absence of either XcpV or -W resulted in the non-functional T2SS. Our small-angle X-ray scattering experiment for the first time revealed the architecture of the entire pseudopilus tip and established the working model. Based on the interaction interface of complexes, we have developed inhibitory peptides. The structure-based peptides not only disrupted of the XcpVW core complex and the entire pseudopilus tip in vitro but also inhibited the T2SS in vivo. More importantly, these peptides effectively reduced the virulence of *P. aeruginosa* towards *Caenorhabditis elegans*.

Biography

Zongchao Jia is working and performing all researches currently with Beijing Normal University on related studies of Biology



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and life science. One of author's most cited work recently is entitled Function Coupling Mechanism of PhuS and HemO in Heme Degradation. and we hope to see many more researches very soon with further publications. Function Coupling Mechanism of PhuS and HemO in Heme Degradation.

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