

Novel *Flavobacterium*-originated OPH-based Tat Signal Sequence for periplasmic translocation of foreign protein in *Escherichia coli*

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Organophosphorus hydrolase (OPH) from *Flavobacterium* sp. is a membrane associated homodimeric metalloenzyme and has a signal sequence in its N-terminus. We found that the signal sequence of OPH is composed of 29 amino acids and has a twin arginine (RR) amino acids sequence in its hydrophobic region near the N-terminal that is analogous to the twin arginine consensus motif (S-R-R-x-F-L-K) of twin arginine translocase (Tat) pathway. To investigate whether this sequence is dependent on Tat pathway, we used green fluorescent protein (GFP) as a cytoplasmic folding reporter. Unlike Sec pathway, Tat pathway can export correctly folded GFP into the periplasm of *Escherichia coli*. By using the novel Tat signal sequence of OPH, we demonstrated that foreign GFP was translocated with fully active form into the periplasmic space of *E. coli*.