

SHORT PRESENTATIONS 1

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Heterologous expression of *Francisella tularensis* type IV pili genes in *Neisseria gonorrhoeae* confirms that PilA can form functional pili

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Accumulating evidence from a number of studies strongly suggests that proteins orthologous to those involved in type IV pili (Tfp) assembly and function are required for *Francisella* pathogenicity. However, the molecular mechanisms by which the components exert their influence on virulence remain poorly understood. In particular, the expression of Tfp filaments by these species has yet to be unambiguously demonstrated.

Aim: In this study we aimed to verify if any of the potential pilin genes identified in *F. tularensis* could form pili structures.

Methods: Trans-species complementation of various Tfp biogenesis mutants have been achieved in a number of cases, and strains expressing heterologous pilin subunits provide unique opportunities to examine the role of the pilus. In this study we expressed a number of *Francisella* pilin genes in the Tfp expressing pathogen *N. gonorrhoeae* lacking its endogenous pilin subunit.

Results: Two gene products, the orthologous PilA proteins from *Francisella* subsp. *tularensis* and *novicida*, were capable of restoring the expression of Tfp-like appendages that were shown to be dependent upon the neisserial Tfp biogenesis machinery for surface localization. Expression of *Francisella* PilA pilins also partially restored competence for natural transformation in *N. gonorrhoeae*, a phenotype that was not complemented by expression of the PulG and XcpT proteins that are equivalent components of related type II protein secretion systems (T2SS).

Conclusion: Our results provide evidence that pilin-like proteins from *Francisella* species are capable of interacting with components of an established Tfp system. These findings provide compelling but indirect evidence of the potential for *Francisella* to express functional Tfp.