

私立大学戦略的研究基盤形成  
支援事業「タンパク質の生成  
と管理」セミナー



生命科学  
セミナー

## 演 題: Control of Pierce's Disease by Methods Involving Pathogen Confusion

演 者: Michael Ionescu 博士  
カルフォルニア州立大学バークレー校

The xylem-limited plant pathogen *Xylella fastidiosa* that colonizes the grape vascular system and causes Pierce's Disease, employs a Diffusible Signal Factor (DSF) to control virulence. DSF is synthesized by RpfF and sensed by the RpfCG phosphorelay system that modulates cyclic di-GMP metabolism that serves as a switch to transition between a motile plant-colonizing phase and a more adhesive, non-motile form that can be vectored by insect vectors. *rpf* mutants migrate faster in the plant, proliferate more, cause more symptoms, and are less "sticky" than the wild type strain, but are not transmissible, indicating that DSF accumulation suppresses virulence but is required for transmission. DSF anti-virulence activity may have evolved to avoid excessive colonization of xylem vessels that is lethal to *X. fastidiosa*. *rpf* mutants exhibit lower expression of traits contributing to biofilm formation such as the hemagglutinin-like proteins HxfA and HxfB and higher expression of genes associated with motility, growth and proliferation in-vitro. DSF consists of one or more unsaturated fatty acids including 2-Z-tetradecanoic acid DSF; it is active at concentrations as low as 1  $\mu$ M as measured using *hxfA':::phoA* transcriptional fusions in *X. fastidiosa*. Adhesiveness of *X. fastidiosa* increased while growth was suppressed in response to exogenous synthetic 2-Z-tetradecanoic acid. Disease control can be achieved in a process of pathogen confusion in which DSF levels are elevated in plants in advance of pathogen infection by topical application and by expression of *rpfF* in transgenic grape

日 時: 2012年8月2日(木) 午後4時半～5時半

場 所: 15号館1階 15102セミナー室

世話人: 生命システム学科  
嶋本伸雄 (075-705-3078)

共 催: 京都産業大学総合生命科学部  
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