REGULATION OF HOST SWITCHING AND TRANSMISSION IN *XYLELLA FASTIDIOSA*

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Xylella fastidiosa is a bacterium that causes disease in a large number of economically important crops. This bacterium is transmitted by xylem sap-feeding insects, primarily sharpshooter leafhoppers, in a persistent manner. *X. fastidiosa* colonizes both the xylem network of plants and the foregut surface of its insect vectors, where it forms a biofilm. A cell-cell signaling mutant of *X. fastidiosa*, deficient in production of the signaling molecule DSF, is unable to colonize vectors and is only poorly transmitted to plants. However, a mutant that generates a distinct profile of signaling molecules is transmitted by vectors, but apparently unable to form biofilms and has decreasing transmission efficiency over time. In addition to this density dependent gene regulation of transmission, environmental cues also affect vector colonization. Host switching from plants to insects is dependent on the presence of plant structural polysaccharides such as pectin, which up-regulates the expression of adhesins required for vector colonization. In addition, within insects, chitin can be used as a carbon source by *X. fastidiosa*, and its presence also leads to phenotypic changes in this bacterium, primarily associated with cell adhesion. We propose that density dependent signals and environmental cues are part of a complex regulatory network controlling *X. fastidiosa* host switching and vector colonization.