

Publication

Assembly and function of type III secretory systems

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 156197

Author(s) Cornelis, G R; Van Gijsegem, F

Author(s) at UniBasel [Cornelis, Guy R.](#) ;

Year 2000

Title Assembly and function of type III secretory systems

Journal Annual review of microbiology

Volume 54

Pages / Article-Number 735-74

Keywords microbial pathogenesis, plant pathogens, secretion, translocation, effector, hypersensitive response

Type III secretion systems allow *Yersinia* spp., *Salmonella* spp., *Shigella* spp., *Bordetella* spp., and *Pseudomonas aeruginosa* and enteropathogenic *Escherichia coli* adhering at the surface of a eukaryotic cell to inject bacterial proteins across the two bacterial membranes and the eukaryotic cell membrane to destroy or subvert the target cell. These systems consist of a secretion apparatus, made of approximately 25 proteins, and an array of proteins released by this apparatus. Some of these released proteins are "effectors," which are delivered into the cytosol of the target cell, whereas the others are "translocators," which help the effectors to cross the membrane of the eukaryotic cell. Most of the effectors act on the cytoskeleton or on intracellular-signaling cascades. A protein injected by the enteropathogenic *E. coli* serves as a membrane receptor for the docking of the bacterium itself at the surface of the cell. Type III secretion systems also occur in plant pathogens where they are involved both in causing disease in susceptible hosts and in eliciting the so-called hypersensitive response in resistant or nonhost plants. They consist of 15-20 Hrp proteins building a secretion apparatus and two groups of effectors: harpins and avirulence proteins. Harpins are presumably secreted in the extracellular compartment, whereas avirulence proteins are thought to be targeted into plant cells. Although a coherent picture is clearly emerging, basic questions remain to be answered. In particular, little is known about how the type III apparatus fits together to deliver proteins in animal cells. It is even more mysterious for plant cells where a thick wall has to be crossed. In spite of these haunting questions, type III secretion appears as a fascinating trans-kingdom communication device.

Publisher Annual Review

ISSN/ISBN 0066-4227

edoc-URL <http://edoc.unibas.ch/dok/A5259182>

Full Text on edoc No;

Digital Object Identifier DOI 10.1146/annurev.micro.54.1.735

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/11018143>

ISI-Number WOS:000165272300023

Document type (ISI) Journal Article, Review