Genes that make bacteria make up their minds

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Bacteria are single cell organisms with no nervous system or brain. So how do individual bacterial cells living as part of a complex community called a biofilm "decide" between different physiological processes (such as movement or producing the "glue" that forms the biofilm)?

In the prestigious 2009 Fleming lecture, given at the Society for General Microbiology's meeting in Harrogate, (Monday 30 March) Dr Nicola Stanley-Wall from the University of Dundee explained that it is important to understand how biofilms form as they are often the basis of chronic infections and also of bioremediation processes. More detailed information on how bacteria develop into biofilms will allow scientists to work on alternative strategies to treat biofilm related infections and may improve technologies for waste water treatment plants or microbial fuel cells.

Using a soil bacterium called Bacillus subtilis, Dr Stanley-Wall has investigated the genes and proteins required for biofilms to develop. She has shown that a protein called DegU helps the individual bacteria to "decide" whether to form a biofilm or not.

"Presumably the bacteria need to achieve the best outcome in response to changes in environmental conditions. DegU protein enables the bacteria to switch between swarming movement and the production of biofilm materials to suit the particular circumstances" said Dr Stanley-Wall.

Source: Society for General Microbiology