

Protein clue to tailor-made antibiotics

Scientists at the University of York have made a huge leap forward in the search for 'smarter' antibiotics.

A research group in the Department of Biology has made a significant advance in understanding how bacteria use proteins to conduct a type of biological warfare.

Bacteria like *E. coli* frequently try to kill each other when resources are scarce using protein antibiotics called colicins, which are potent toxins.

The research led by Professor Colin Kleanthous has discovered a critical element in the mode of action of a class of colicins (so-called DNases) that kill cells by destroying their DNA.

Though most proteins have a folded structure, DNase colicins are only partially so. The scientists have found that the unfolded part of DNase colicin structure makes its way into an unsuspecting bacterium and blocks a key process that lowers the cell's defences and allows the toxin to enter.

Professor Kleanthous said: "Antibiotic resistance is on the increase throughout the world. Understanding how bacteria have evolved to kill each other with protein toxins might offer ways of constructing new, tailor-made antibiotics that target particular microorganisms."

Researchers are now trying to establish what it is about this blocking mechanism (which they've christened 'competitive recruitment') that lowers the cells' defences toward the colicin.

Source: University of York

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