Molecular Machines and Tropical Pathogens

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The "Type 2 Secretion System" (T2SS) from Vibrio cholerae, enterotoxigenic E. coli (ETEC) and related pathogens is responsible for secreting proteins like cholera toxin (CT) and heat-labile enterotoxin (LT). The T2SS consists of 14-16 different proteins, and spans the inner as well as the outer membrane. We have expressed many components of the T2SS from several bacteria including soluble proteins, integral membrane proteins and multi-protein complexes. Several crystal structures have been elucidated which gives initial insight into the architecture of the inner membrane subcomplex.

The editosome is essential for Trypanosomatids, which are causative agents of sleeping sickness, Chagas' disease and leishmaniasis. For several mitochondrial proteins the pre-mRNA needs to be edited substantially. The editing information is encoded in numerous small "guide RNAs" which are used by the "editosome" to create a mature messenger. The editosome consists of over a dozen different proteins. The structures of editosome ligase and TUTase provide the first views of parts of this complex machinery.

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