

Bacterial flagellar hook: similarities and specificities

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Gram-positive and gram-negative bacteria use flagella to propel themselves in their living environment. The flagellum can be divided into three major structural parts: the filament, the hook and the basal body. The hook is a highly flexible universal joint that connects the filament to the motor, located in the basal body. It consists of about 120 molecules of a single protein, FlgE. Extensive studies on bacterial flagella show that the filament and the hook make helical assemblies that can be described as tubular structures made of 11 protofilaments. FlgE, has shown evolutionary divergence that resulted in FlgE proteins having very different sequence compositions with an identity as low as 15% and species dependent length varying between 300 and 1800 amino acid residues. Although the quaternary structure of the hook is not affected, could these differences be related to specific functions?