

# Cologne Evolution Colloquium

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## **The archaellum: how archaea swim**

Most archaea possess a motility structure, called the archaellum<sup>1</sup> that is mainly used for swimming, but can also play a role in adherence to surfaces. Although the archaellum functionally resembles the bacterial flagellum, its structure and assembly is evolutionary related to bacterial type IV pili.

We use the crenarchaeal archaellum of *Sulfolobus acidocaldarius* as a model system to understand its assembly, subunit interactions and how it can rotate. The crenarchaeal archaellum is comprised of only seven subunits and we use biochemical and genetic approaches to understand their function in archaellum assembly and rotation. So far we have solved crystal structures of three of the archaellum subunits<sup>2,3</sup> which greatly helped to understand their role in archaellum assembly and rotation. Biophysical studies like tethered motion particle analysis and optical tweezer experiments are being used to understand the mode of rotation of the archaellum. These studies show that Archaea and Bacteria have developed two totally different motility structures during evolution that serve the same purpose

Wednesday, April 2, 2014, 17:00  
University of Cologne, Institute for Genetics  
Seminar Room 0.46

Hosted by Berenike Maier

Molecular Basis of  
Evolutionary Innovations

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