Archaea

Hindawi

Special Issue on
Genetic Elements in Archaea

CALL FOR PAPERS

Mobile genetic elements (MGE) associated with the archaea are far less studied than their bacterial and eukaryotic counterparts. Yet, the scarce knowledge available to date concerning archaeal viruses, plasmids, and transposons has provided novel insights into the interactions of these elements with their host cells as well as with each other.

Archaeal viruses are the least studied but the most diverse in terms of virion morphology and the ability to maintain infectivity at the extremes of environmental conditions. The described archaeal virus genomes contain numerous orphan genes and much of the molecular details concerning the viral life cycles remain to be discovered.

Archaea contain a wide range of plasmids which vary with respect to their size and propensity for mobility. For instance, large megaplasmids of haloarchaea contain genes that are essential for the survival of the cell and can be considered as minichromosomes, whereas smaller plasmids, including conjugative ones, display varying degree of genetic instability. Archaeal plasmids also display a range of novel replicative strategies. Finally, some plasmids display intimate interplay with viruses by hijacking the capsids of helper viruses for horizontal intercellular transfer, whereas other plasmids themselves turned out to be temperate viruses.

Archaea are also parasitized by a wide range of transposons, including bacterial-like insertion sequences (*IS*) and the recently discovered large self-synthesizing DNA transposons, known as casposons. *IS* elements have a major impact on the evolution of cellular genomes, whereas casposons might have played a key role in the emergence of the adaptive CRISPR-Cas immunity.

This special issue draws attention to the nature of mobile genetic elements within the archaeal domain. We invite researchers specialized in archaeal viruses, plasmids, and transposons to submit high-quality original research articles as well as reviews that explore any aspects of the biology of genetic elements in archaea.

Potential topics include but are not limited to the following:

- Bioinformatic analyses of mobile genetic elements in archaea
- Membrane vesicles as carriers of genetic material among archaea
- Characterization of novel archaeal viruses and virus-host systems
- Interactions between archaeal viruses and plasmids
- Defense mechanisms of archaea against extrachromosomal genetic elements
- Evolutionary relationships between archaeal extra chromosomal elements
- Characterization of archaeal proviruses
- Diversity and impact of transposable elements in archaea

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/archaea/gea/.

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