P020 *In silico* identification of bacterial-like *dif* sites in archaea with specific affinity for archaeal Xer proteins *in vivo*

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In Bacteria, resolution of recombined chromosomes at the end of DNA replication is performed by chromosomal XerC/XerD recombinases at specific *dif* sites at the regions of replication termination. XerC/XerD recombination at *dif* sites are coupled to cell division by FtsK and TopoIV proteins in order to ensure proper chromosome segregation. Most Archaea encode one XerC/D like gene, but all of them lack FtsK and Topo IV. The role of Xer-like proteins in Archaea is thus unclear. Here we have identified *in silico* putative *dif* sites in several archaeal chromosomes based on known interactions between bacterial Xer proteins and *dif* sequences. We have purified recombinant Xer proteins form the archaea *Pyrococcus abyssi* and *Methanobacterium thermo-autotrophicum*. These proteins bind to DNA oligonucleotides *in vitro* and exhibit specificity for their respective *dif* sites. The *dif* sites of *P.abyssi* and *M.thermoautotrophicum* are localized in the predicted regions of replication termination determined by word skew polarization, suggesting that archaeal Xer protein could be involved in chromosome resolution like in Bacteria.