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Poster #71: New insights into the Mrr-domain-associated prokaryotic Argonaute systems SPARMA and SPARMTA

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Argonautes are nucleic acid-guided proteins that use short oligonucleotides to recognize complementary nucleic acids. In eukaryotes, they mediate RNA interference, whereas the more diverse prokaryotic Argonautes (pAgos) protect their hosts against invading nucleic acids by either directly neutralizing the invader or triggering programmed cell death. Initially, research on pAgos focused on a subset of the "long" pAgos, specifically those with a domain architecture similar to that of eukaryotic Argonautes. More recently, attention has shifted to more divergent pAgos, including the so-called "short" pAgos, which lack the N-terminal lobe and instead associate with an APAZ-domain-containing protein fused to one of several functional domains. Interestingly, despite this variation, most short pAgo systems characterized to date oligomerize in some way upon activation. Our work presents structural insights into two divergent short pAgo systems associated with an Mrr domain. Although both are associated with this domain, they oligomerize in different ways upon activation, leading to the cleavage and removal of invading nucleic acids.

Reference #1

Reference #2

Reference #3

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