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Poster #21: Insights into plasmid elimination by a pAgo guided anti plasmid immune system

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Bacteria fight in an ongoing arms race against selfish mobile genetic elements, such as plasmids or phages, which drives the evolution of different defense systems against those invaders. Recently, a plethora of new defense systems have been identified and characterized, most of them protecting against phages. While plasmids can be of advantage for the bacteria by allowing adaptations to environmental stress (e.g., spread of antibiotic resistance genes) and driving evolution, they can become a significant burden to the bacterial host. Thus, it is not a surprise that in addition to anti phage also anti plasmid systems have been identified. We are currently investigating one of those systems consisting of a nuclease/helicase effector protein that is guided by a prokaryotic argonaut (pAgo).
We aim to understand how this system is specific for foreign plasmid DNA, how plasmid degradation is facilitated by the effector and pAgo pair and if further components are required to protect against plasmids.

Reference #1

Reference #2

Reference #3

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