

### Additional Questions:

1. Assuming a arsenodiester linker in plasmid DNA is possible, propose an experiment that allows for the determination of the half-life of the linker toward hydrolysis in water:

One possible qualitative experiment to determine the half life of this arsenodiester bond uses gel electrophoresis to measure the run distance of samples of different ages. Very young plasmids containing this aresodiester bond would theoretically travel further than older samples of the same plasmid. At the end of the run the well containing two equal intensity bands will be indicative of the time required for half of the hydrolysis to occur, and thus the half life.

2. Summarize a method that allows visualization of the endonucleases to the plasmid, if such a thing exists:

It is possible, although extremely challenging, the method I found seems to involve synthetic nanopores and atomic resolution mathematics. I suppose it isn't direct visualization, but the quality of the render is better than any direct microscopy could hope to be at this scale.<sup>1</sup>

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<sup>1</sup> Dorvel, B, et al. "Analyzing the Forces Binding a Restriction Endonuclease to DNA Using a Synthetic Nanopore." *Nucleic Acids Research*, Oxford University Press, July 2009, [www.ncbi.nlm.nih.gov/pmc/articles/PMC2709577/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2709577/).