

P045 Hammerhead ribozymes from *Arabidopsis thaliana* and *Danio rerio*
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The Hammerhead ribozyme is a small catalytic RNA motif that is capable of site-specific endonucleolytic cleavage. The catalytic core of the hammerhead is flanked by three helices, two of which are closed by loops in naturally occurring sequences. It was shown recently that these loop structures can interact, leading to accelerated cleavage compared to synthetic ribozymes without loops (De la Peña et al., 2003; Khvorova et al., 2003; Penedo et al., 2004, Canny et al., 2004).

By a database search we have identified hammerhead ribozyme motives in the genomes of thale cress (*A. thaliana*) and zebrafish (*D. rerio*). RT-PCR revealed tissue-specific expression of hammerhead containing sequences in *A. thaliana*. To test for *in vivo* activity, we employed an S1 nuclease protection assay, that showed the presence of both, cleaved and un-cleaved forms of hammerheads in selected tissues. When analysed *in vitro*, wild type *A. thaliana* hammerhead ribozymes show fast cleavage ($k_{\text{obs}} > 2\text{min}^{-1}$) at sub-mM magnesium ion concentrations, indicating functional loop-loop interactions (Penedo et al., 2004, Canny et al., 2004). In line with this is the observation that sequence variants, in which this interaction is disrupted, are inactive under these conditions, and require mM magnesium ion concentrations for cleavage activity.

In *D. rerio*, hammerhead ribozyme containing transcripts are expressed in an developmentally controlled manner as shown by RT-PCR. Results on *in vivo* and *in vitro* cleavage activity of these sequences will be presented.