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* In-vivo motifs were extracted from CISBP-RNA http://cisbp-rna.ccbr.utoronto.ca/ or from AtTRACT http://attract.cnic.es.

** Structure information was extracted from RNAcompete-S (Cook et al., 2017)
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* For comparison SMARTIV was run on a 1000 sequence on the top of the list and 1000 on the bottom.
**Supplementary Table S3**

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*Note: Images of RNA structures and numerical data are included for each condition.*
Supplementary Figure S1: SMARTIV vs RBPmotif runtimes

SMARTIV and RBPmotifs were tested on 16 different dataset (as detailed in Supplementary Table S2) using default parameters. For comparison with RBPmotifs, we run both SMARTIV and RBPmotifs on 2000 sequences per each dataset (top 1000 and bottom 1000 sequences extracted from the ranked sequence list). As shown SMARTIV run time is between 30 second to 3 minutes, depending on the total sequence length and the GC content of the sequences. RBPmotif runtime was usually 5 to 10 fold slower.