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Discovery of Novel RNA Targets Using Chemical Genomics

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RNA plays an important role in numerous biological processes but little is known about the interactions between small organic molecules and RNA. Our previous work has shown that the heterodimeric compound designed by conjugation with neomycin and loop-specific chemical bind to the stem-loop structured RNA motifs. In the present study, heterodimer was used, in a reverse way, as a probe to identify structured RNA motifs. Through genomic SELEX technology, we selected genomic sequence fragments that specifically bind to the heterodimers. Selected RNA fragments were investigated by binding affinity measurement and secondary structure prediction. The result suggests that conserved stem-loop structures can be discovered by genomic SELEX and it can be novel RNA targets for drug discovery.