

S59-8 RNA Plasticity and Aptamer Therapeutics

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Aptamers are short DNA or RNA folded molecules that can be selected *in vitro* on the basis of their high affinity for a target molecule from large random-sequence libraries. The selected oligonucleotide ligands are called ‘aptamers’. Structural and biochemical analysis revealed that RNA aptamers could achieve specific high affinity to target protein by capturing its global conformation or by fitting perfectly to the shape of targets. This is completely different from the pinpoint recognition of target protein by antibodies, and is representing high potential of RNA ‘plasticity’ to fold a tertiary structure. Aptamers are useful for therapeutic applications in cancer or autoimmune disease. Here we developed therapeutic aptamers to several cytokines including midline (MK). MK is a heparin-binding growth factor involved in oncogenesis, inflammation, and tissue repair. Administration of anti-MK aptamer alleviates the symptoms of experimental autoimmune encephalomyelitis (EAE) mice.