

Aptamer-derived Molecular Interconnectors

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Abstract

In order to regulate biological processes, proteins and other molecules are connected to each other through a complex network of interactions. Experimental manipulation and therapeutic intervention is often achieved through the modification of the connectivity of this network. Traditional genetic methods and drugs modify such connectivity by blocking or abolishing molecular interaction. An alternative and sometimes more effective strategy is to introduce new links between non-interacting molecules. This approach is rarely explored because bridging two molecules specifically and selectively is much more difficult than blocking one molecule. This presentation describes our development of aptamer-based molecular interconnectors that revise the connectivity of existing protein networks.

Biography

Hua Shi graduated from Peking University Healthy Science Center, also known as Beijing Medical University, in Beijing, China. After receiving his professional medical degree, he did graduate research work in Biochemistry and Oncology and received a master's degree in these fields. He entered the doctoral program of Molecular Biology and Genetics at Cornell University in the early 1990's and received his PhD degree in 1997. Afterwards, he worked as a postdoctoral fellow and research associate with Dr. John Lis, before joining the faculty of the Department of Biological Sciences of University at Albany. His research programs centered around the development and application of RNA-based reagents and aptamers, from which, self-assembling supramolecular assemblies and synthetic gene circuits are created according to quantitative models, and used to probe and control protein functions in living cells and organisms. He has published 17 original research papers in peer-reviewed journals and has 7 issued or pending patents.