New DNA and RNA aptamers offer unique therapeutic advantages

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A novel class of drugs composed of single strands of DNA or RNA, called aptamers, can bind protein targets with a high strength and specificity and are currently in clinical development as treatments for a broad range of common diseases, as described in a comprehensive review article published online ahead of print in *Oligonucleotides*, a peer-reviewed journal published by Mary Ann Liebert, Inc.

Aptamers offer several advantages compared to protein or small molecule drugs, most notably their ease of production, low risk of inducing an immune reaction in humans, and amenability to chemical modifications that enhance their drug-like properties, including improved stability and residence time in the bloodstream. Aptamer therapeutics presently in clinical development target diseases and applications such as macular degeneration, coronary artery bypass graft surgery, and various types of cancer.

Kristina W. Thiel, PhD and Paloma H. Giangrande, PhD, from the University of Iowa, present a thorough review of aptamers and aptamer-based therapeutic strategies that have the highest likelihood of success. In the article entitled "Therapeutic Applications of DNA and RNA Aptamers," the authors describe the methods used to identify aptamers that specifically bind protein drug targets of interest, the types of modifications that have been made to aptamers to enhance their therapeutic potential, and the different types of aptamers that are currently in development. They also discuss the challenges that must still be overcome for aptamer technology to achieve its full potential.

"This is a comprehensive and timely review of aptamer development and therapeutic applications that our readers should enjoy," says John Rossi, PhD, Co-Editor-in-Chief of *Oligonucleotides* and Professor in the Department of Molecular Biology, Beckman Research Institute of the City of Hope (Duarte, CA).

More information: The article is available free online at www.liebertpub.com/oli

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