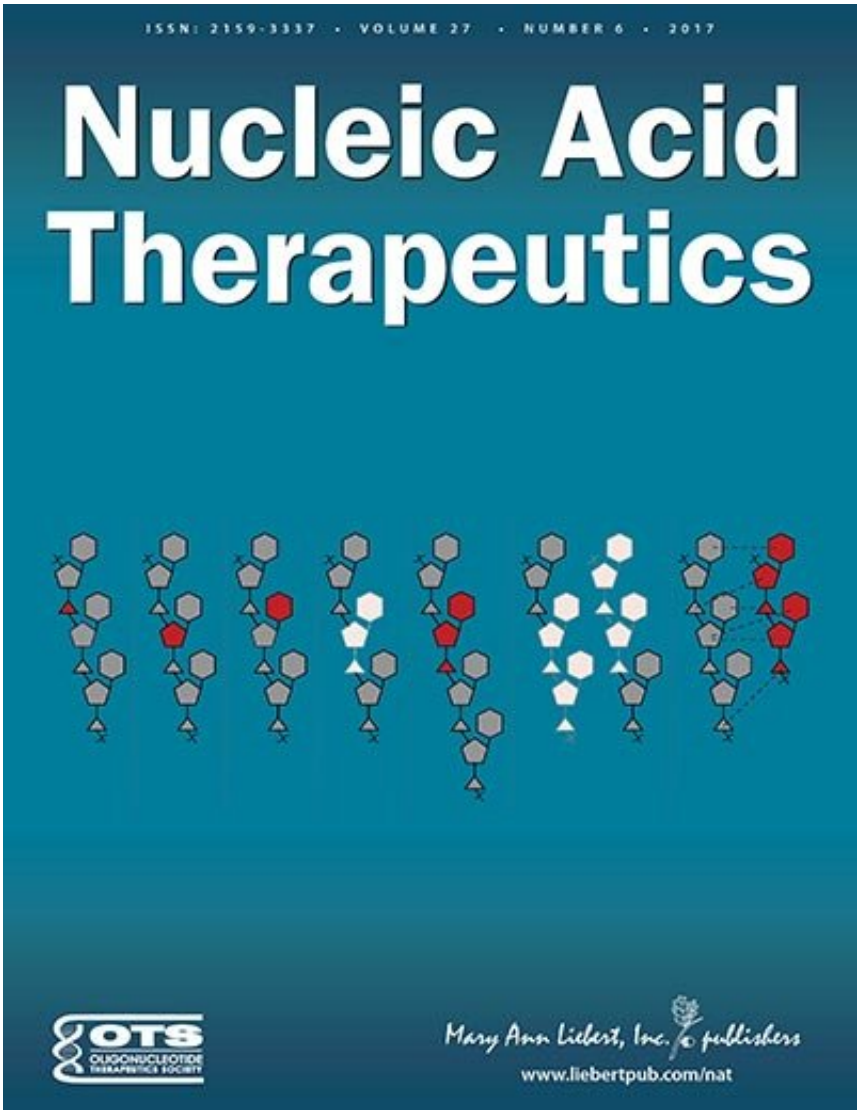
Modifying therapeutic DNA aptamers to keep them in the bloodstream longer

November 29 2017



Credit: Mary Ann Liebert, Inc., publishers

Designing new therapeutic DNA aptamers with diverse side chains can improve their ability to interact with targets, and a new study describes characteristics of these side chains that may determine how long the aptamers remain in the bloodstream. Improving the pharmacokinetic properties of therapeutic aptamers is an important aspect of optimizing their drug-like properties, as discussed in the study published in *Nucleic Acid Therapeutics*.

In the article entitled "Pharmacokinetic Properties of DNA Aptamers with Base Modifications," Nebojsa Janjic, SomaLogic (Boulder, CO) and coauthors from SomaLogic and Otsuka Pharmaceutical (Tokushima, Japan), describe what effect the lengths of aptamer sequences have on plasma resident time. The researchers also demonstrate the importance of the hydrophobicity of the side chains on their rate of clearance from the bloodstream. The findings can serve as a guide for designing new aptamers with side chains that enhance their diversity.

"This elegant study demonstrates how nucleotide modifications can mitigate against nuclease degradation of aptamers, as vital a concern as is delivery for successful in vivo therapeutic or diagnostic applications," says Executive Editor Graham C. Parker, PhD, The Carman and Ann Adams Department of Pediatrics, Wayne State University School of Medicine, Children's Hospital of Michigan, Detroit, MI.

More information: Shashi Gupta et al, Pharmacokinetic Properties of DNA Aptamers with Base Modifications, *Nucleic Acid Therapeutics* (2017). DOI: 10.1089/nat.2017.0683

Provided by Mary Ann Liebert, Inc