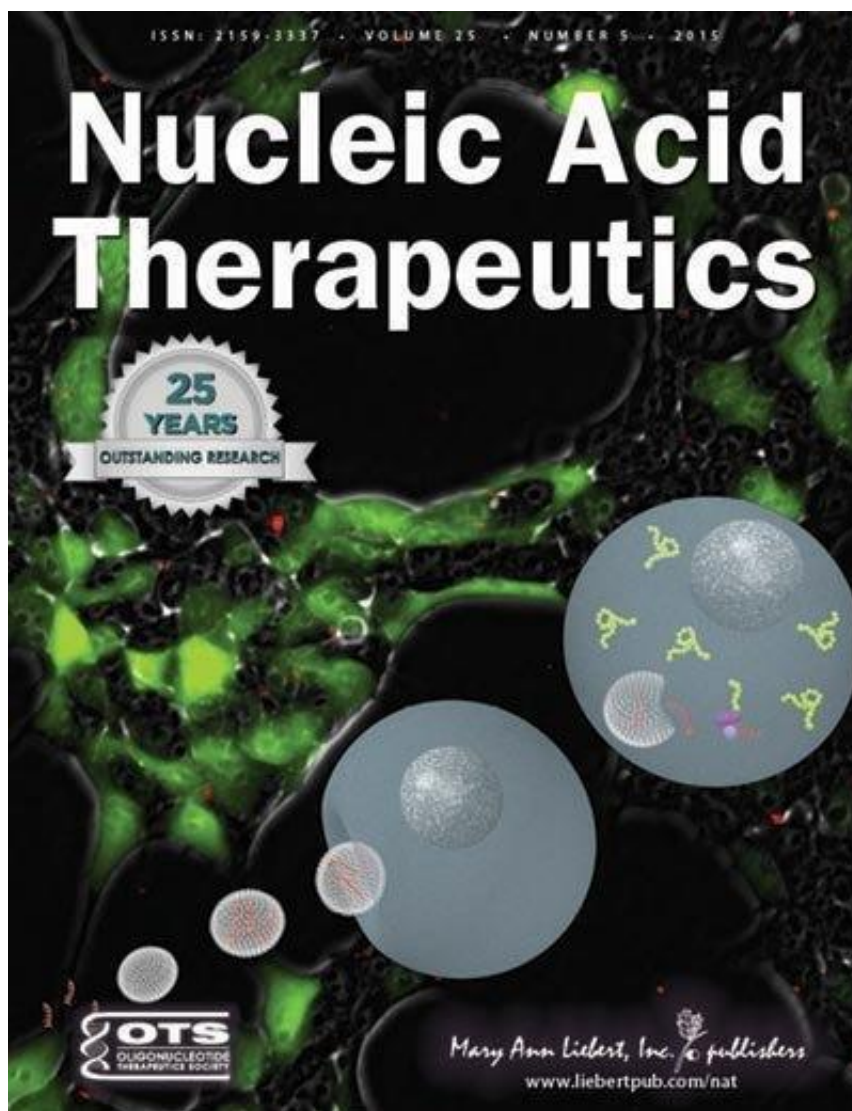


# Can a 'sense' DNA drug reverse antisense drug to treat blood clots and prevent bleeding?

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Credit: Mary Ann Liebert, Inc., publishers

Researchers from Isis Pharmaceuticals (Carlsbad, CA) and Prysia Biotechnologies (Pudong, Shanghai, China) have demonstrated proof-of-concept for using a sense oligonucleotide to undo the effects of an antisense drug, an antithrombotic agent in this novel study. The sense oligonucleotide antidote reversed the actions of the antisense antithrombotic drug in the mouse model and prevented the bleeding that commonly occurs with anti-coagulation therapy, as described in an article in *Nucleic Acid Therapeutics*. The article is available free on the *Nucleic Acid Therapeutics* website until November 13, 2015.

Jeff Crosby, Chenguang Zhao, Hong Zhang, A. Robert MacLeod, Shuling Guo, and Brett Monia treated mice with an antisense oligonucleotide [drug](#) designed to suppress the ability of liver and blood cells to produce prothrombin, a protein required for blood to coagulate. Subsequent treatment with a prothrombin sense oligonucleotide [antidote](#) led to a dose-dependent reversal of the antisense drug activity and the return of prothrombin to normal levels. The authors describe the study design and the implications of their findings in the [article "Reversing Antisense Oligonucleotide Activity with a Sense Oligonucleotide Antidote: Proof of Concept Targeting Prothrombin."](#)

"An elegant demonstration of the feasibility of reversing the effects of an antisense oligonucleotide in vivo by administering an antidote oligonucleotide," 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. "It will be fascinating to now see how the chemistry can be optimized to achieve translation to clinical efficacy."

Provided by Mary Ann Liebert, Inc

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