

# A universal antidote for aptamer therapeutics

## Value Proposition

With an ever increasing number of people taking numerous medications, the need to safely administer drugs and limit unintended side effects has never been greater. Antidote control remains the most direct means to counteract acute side effects of drugs, but unfortunately it has been challenging and cost prohibitive to generate antidotes for most therapeutic agents. Nucleic acid aptamers are widely acknowledged as substitutes or competitors for antibodies in scientific research. A plethora of positive attributes such as high affinity and specificity make aptamers superior to antibodies and engenders a rise in their demand for different medical applications. In order to allow aptamers to be widely adapted as therapeutics, there exists a need for effective antidotes.

## Technology

Duke inventors have reported a method creating an antidote for any aptamer. This discovery is very important because it demonstrates that protamine, a compound that has been utilized in millions of patients to reverse the anticoagulation effects of heparin, can also be used to reverse the activities of anticoagulation aptamers and probably the activity of any aptamer. These universal antidotes exploit the fact that, when systemically administered, aptamers are the only free extracellular oligonucleotides found in circulation. This technology has been demonstrated *in vivo* by counteracting aptamer activity.

## Advantages

- Universal antidote to inhibit the activity of all aptamers
- Utilizes protamine, an extremely inexpensive antidote with a tremendous amount of clinical experience
- Provides a means for making aptamers a particularly safe class of therapeutics

# Duke

## LICENSING & VENTURES



### Duke File (IDF) #

T-002660



### Inventor(s)

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### Links

- [From the lab of Dr. Bruce Sullenger](#)
- [NIH Grant](#)



### College

School of Medicine (SOM)

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## Publications

- [Emerging applications of aptamers for anticoagulation and hemostasis \(Nature Medicine, 2009\)](#)
- [Translation and Clinical Development of Antithrombotic Aptamers \(Nucleic Acid Therapeutics, 2016\)](#)
- [Development of universal antidotes to control aptamer activity \(Current Opinion in Hematology, 2018\)](#)

## Patents

Patent Number: 9,340,591

Title: A method of modulating the activity of a nucleic acid molecule

Country: United States of America

Patent Number: 9,901,553

Title: METHOD OF MODULATING THE ACTIVITY OF A NUCLEIC ACID MEASURE

Country: United States of America