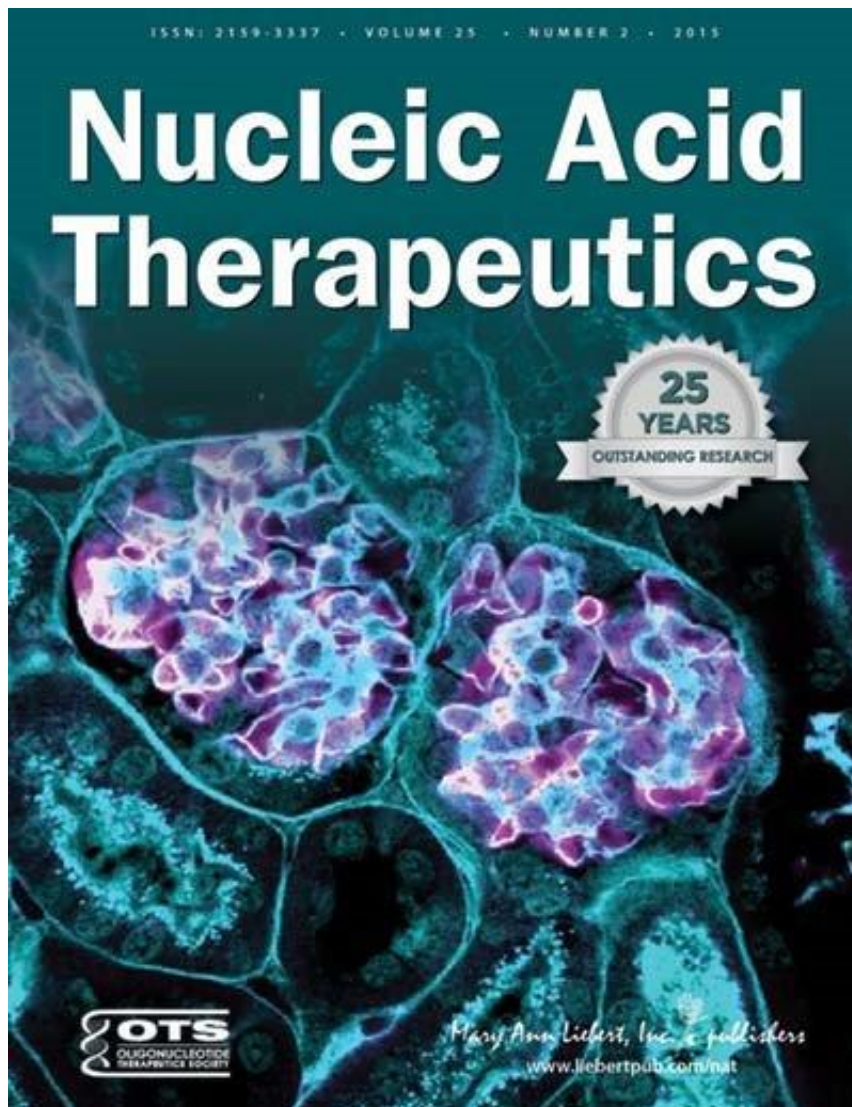


New, natural DNA-based drugs are safe, potent activators of immune system

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An experimental single-stranded oligonucleotide-based drug, MGN1703, comprised only of natural DNA components, stimulates the human immune system to fight infections and attack cancer cells without causing the harmful side effects associated with similar compounds that also contain non-natural DNA components. The design and structural characteristics of MGN1703, which is in clinical testing to treat a variety of cancers, affect its potency and toxicity, as described in an article in *Nucleic Acid Therapeutics*.

["Design and Structural Requirements of the Potent and Safe TLR-9 Agonistic Immunomodulator MGN1703"](#) presents a detailed look at this DNA molecule, which contains non-methylated cytosine nucleotides in cytosine-guanine pairs, a signature often found in bacteria and viruses that sends a danger signal to [human immune cells](#). These compounds bind to and activate toll-like receptor 9 (TLR9), triggering a cascade of signaling pathways in the immune system that enable recognition and destruction of foreign cells.

Manuel Schmidt and Matthias Schroff, Mologen AG (Berlin, Germany), Nicole Hagner and Burghardt Wittig, Freie Universitaet Berlin, Alberto Marco, Universidad Autonoma de Barcelona (Spain), and Sven König-Merediz, Vivotecnia (Madrid, Spain) describe their approach to the molecular design of MGN1703. They avoided the need to incorporate non-natural components into the DNA backbone to enhance its potency and stability by instead manipulating its size and shape.

"Moving forward to solve the concerns and disappointment of clinical implementation of cytosine-phosphodiester-guanine oligodeoxynucleotides, this work is an important step towards the application of a new class of safe and efficacious immunomodulators in humans," 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: The article is available free on the [Nucleic Acid Therapeutics](#) website until April 24th, 2015.

Provided by Mary Ann Liebert, Inc

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