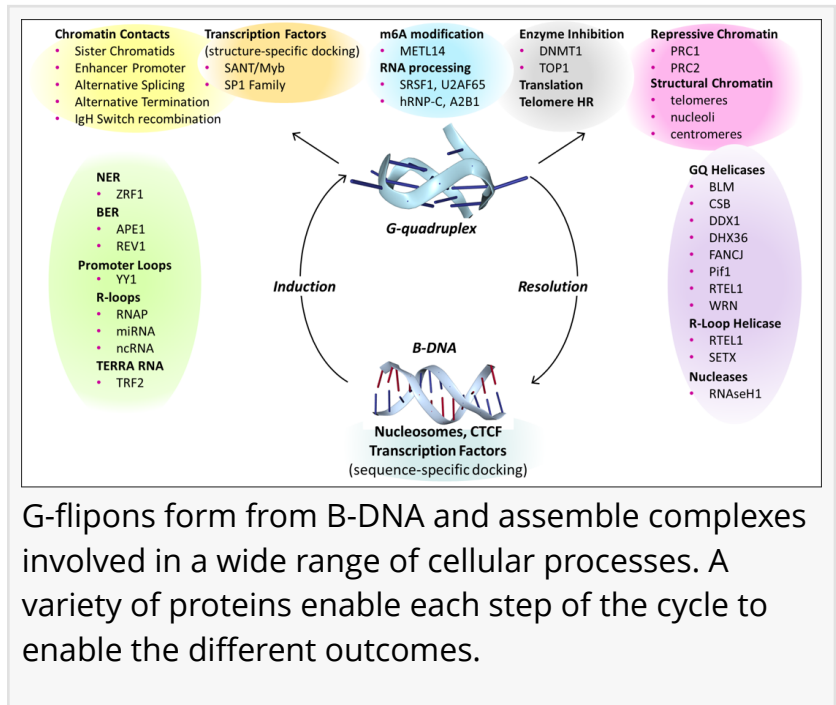


New Paper Reveals Radical Change in Our Understanding of DNA Structure and Function

G-flipons cycle conformation and act as digital switches to control the readout of genetic information from DNA. They exchange energy for information.

CHARLESTOWN, MA, UNITED STATES, September 25, 2024 / EINPresswire.com/ -- A groundbreaking [paper](#) has just been released today, entitled "A Compendium of G-Flipon Biological Functions That Have Experimental Validation" by Alan Herbert of InsideOutBio. This paper highlights a major shift in our understanding of DNA in the cell, as it reveals the existence of a four-stranded quadruplex structure that has significant implications for gene transcription and RNA processing.



G-flipons form from B-DNA and assemble complexes involved in a wide range of cellular processes. A variety of proteins enable each step of the cycle to enable the different outcomes.

For decades, the two-stranded right-handed Watson and Crick DNA structure has been the foundation of our understanding of genetics. However, this new paper challenges that notion by presenting evidence of a four-stranded quadruplex structure, encoded by [G-Flipons](#), that has been experimentally validated. This discovery has the potential to revolutionize our understanding of DNA and its role in cellular processes.

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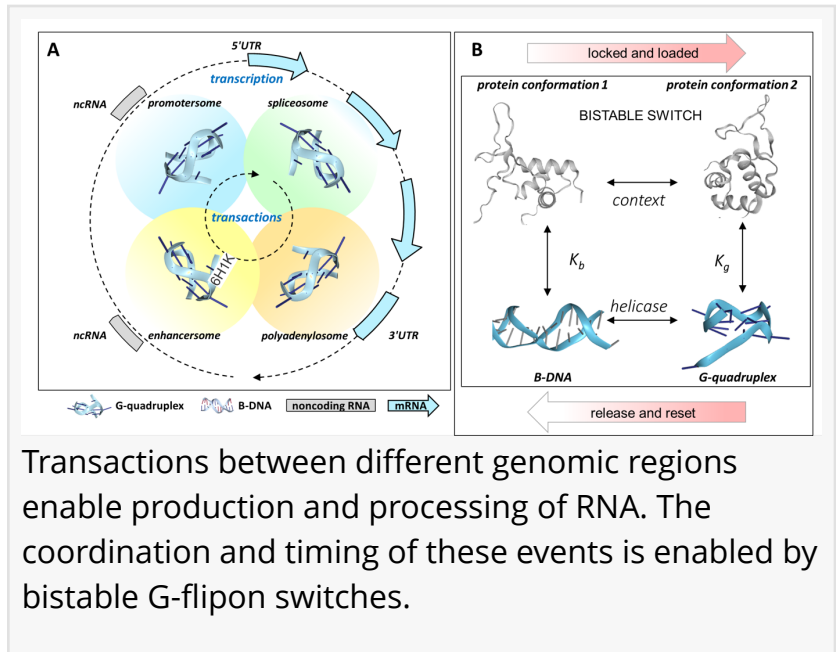
Alan Herbert

According to Alan Herbert, the lead author of the paper, “The existence of G-Flipon quadruplexes in DNA has been a game-changer in the field of genetics. This structure has been found to play a crucial role in gene transcription and RNA processing, which has significant implications for our

understanding of diseases and potential treatments.” The paper delves into the various biological functions of G-Flipon and how it affects gene expression and regulation by cycling

between four-stranded and two-stranded DNA conformations (figure 1).

The G-quadruplexes are often used to create bistable switches that can form a poised state, waiting for a trigger to initiate a response (figure 2). One example involves condensates nucleated by G-quadruplexes that hold an RNA polymerase in check. On release of the polymerase, a burst of RNA production is observed. Resolution of the G-quadruplex back to B-DNA by enzymes then allows for resetting and reloading of the transcriptional complex.



This paper is a result of years of research and collaboration between scientists from InsideOutBio and other leading institutions. It has been published in a prestigious scientific journal and has already garnered attention from the scientific community. This work has focused on Z-flipons that encode left-handed Z-DNAs and Z-RNAs that play a key role in turning off immune responses against self while turning on pathways to protect against pathogens. The groundbreaking discoveries have the potential to open up new avenues for research and could lead to significant advancements in the field of genetics.

The release of this paper marks a major milestone in our understanding of DNA and its role in cellular processes. It is a testament to the constant evolution of scientific knowledge and the importance of continued research and discovery. This paper is a must-read for anyone interested in genetics and its impact on human health.

About InsideOutBio: InsideOutBio is a start-up focused on developing a novel class of proprietary therapeutics to 'light' up tumors for the immune system to kill by reprogramming self/nonself pathways within cancer cells. Dr. Herbert leads discovery at InsideOutBio. His work on [Z-DNA](#) was foundational to the discovery of flipons. These statements about InsideOutBio comply with Safe-Harbor laws. They are forward-looking and involve known and unknown risks and uncertainties. They are not guarantees of future performance and undue reliance should not be placed on them.

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