

# Recent Discoveries Reveal Many Surprises in How the Genome Encodes Information

*While a book about recent genetic discovery seems out of reach for most, this book captures aspects of the process many curious individuals can relate with.*

CHARLESTOWN, MA, UNITED STATES, March 23, 2024 /EINPresswire.com/ -- Though not as racy as a James Bond spy thriller or as attention grabbing as the news of the day, a just published book entitled “[Flipons-The-Discovery-of-Z-DNA-and-Soft-Wired-Genomes](#)” traces recent discoveries on how DNA works in a cell. The book is a personal account by the founder of [InsideOutBio](#), Alan Herbert, into how our DNA encodes information quite differently that ever imagined possible. In this new paradigm, DNA alters shape to dynamically respond to attacks by viruses and to other threats posed by their environment. The responses are rapid and highly variable, with the DNA in every cell adopting a slightly different conformation. Those cells that help survive the

“

The book is rather eclectic, written by someone who was there. It has sections that will appeal to a wide range of curious readers from the general public to those planning their career in science.”

*Alan Herbert*

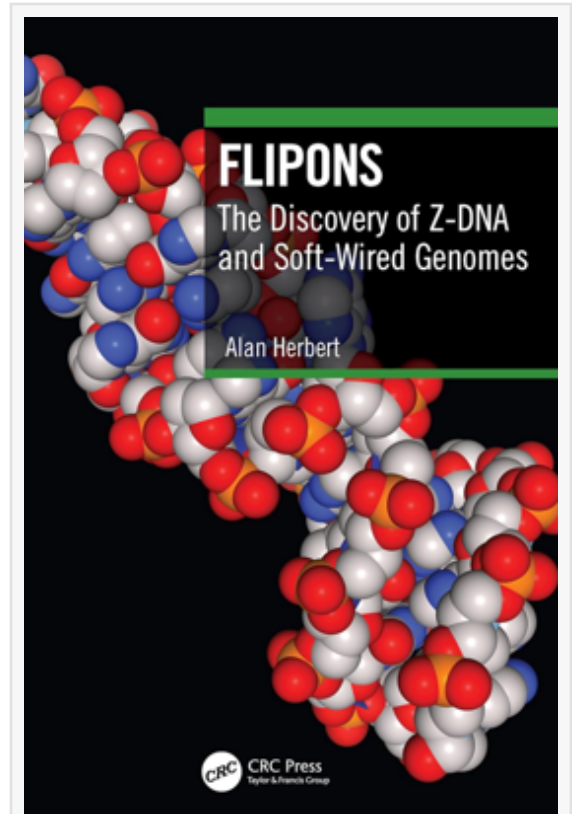
moment survive, not those that are likely to work better sometime in the future. Once considered as “not relevant” and consigned to historical ignominy, the findings about shape-shifting DNA are leading to new treatments for cancers as described in the book . The RNA therapeutics currently hitting the clinic also have the potential to reprogram cells through their effects on DNA conformation. The book is available both as [open access](#), [hardcopy](#) and from most booksellers.

The book tells the story of DNA that twists to the left rather than to the right. The flip from right to left can occur without breaking the DNA backbone. The switch alters the readout of the genetic information present in your genome. The story is one that contrasts the dynamic Z-DNA flipon with the static Watson and Crick B-DNA codon: shape versus sequence. Into this text is woven the history of early molecular biology, where protein, not DNA, was considered the hereditary material and when each new dogma was disrupted almost as soon as it took hold of the popular imagination. Discoveries about split genes, viruses that turned RNA into DNA (rather than the other way round) and the programmed rearrangement of DNA to make never before seen proteins were all unexpected. Now we have flipons that act as digital switches by changing their shape, turning responses on or off in a binary fashion. What’s even more surprising is that

the flipons are often encoded by the repeat elements that make up over 50% of our genomes and were once thought not to have any useful function. These elements were considered as junk as they are so frequent that most considered it unlikely that they provided any useful information to a cell. Yet the repeats do so – by changing shape, they flag active parts of the genome. The flip only occurs when DNA is energized, flagging active regions of the genome. The cell uses this information to determine the best possible response at that moment in time. The logic behind these outcomes is described using the analogy of rock, papers, scissors where the best outcome depends on what the other paper dies.

Other threads woven into the text talk about matters relevant to those starting their adventure in science. The narrative is enriched by the description of different scientific styles: from the small lab approach that uses everyday equipment to the high technologies that enable sequencing of a genome in a day, or visualization of structures within cells so small that it such observation was once thought impossible by optical microscopy, from the work of a few collaborators to that of large groups where the division of the real estate ensures that each group can collect their commission and from startups to the large pharma where commercial success is the first law of survival. Examples of conflicts between junior and senior scientists are presented as are the foibles of lawyers who go beyond the call of duty.

The book uses a lot of primary documentation, The author was “in the room” where many of these discoveries were made. Of course, science is not science without the publication of results and their validation by others. Every scientist has their war stories about getting published and certainly some journals chase headlines and are more tabloid than others. Indeed, the author illustrates this point by tracing the history of flipons as captured by the editors of the esteemed Science magazine. Of course, editors perform an important role in the progression of science. They are more often criticized than praised. However, as illustrated by the examples presented in the book, editors play a critical role in ensuring feedback to authors that is fair, impartial, and helpful, even when they choose not to publish a particular paper. Of course, how an editor responds to a paper from s field “not relevant” is interesting in itself. Overall, the book underscores the curiosity, collaboration and experimentation that advance scientific discoveries, contrasting those attributes with the dogma, elitism and exclusion that hold back progress. We can expect a whole new wave of RNA based therapeutics that exploit the new knowledge in the next few years.



Flipons change how we read information from our genome, allowing many different versions of a person to arise.

Alan G Herbert Herbert

InsideOutBio, Inc

+1 617-584-0360

[email us here](#)

Visit us on social media:

[Twitter](#)

[LinkedIn](#)

---

This press release can be viewed online at: <https://www.einpresswire.com/article/698257709>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2024 Newsmatics Inc. All Right Reserved.