

Book review

Microcompetition with Foreign DNA and the Origin of Chronic Disease by Hanan Polansky, PhD

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“Like many other reviewers, I found this to be a brave and challenging book that provokes, stimulates and inspires. While there is much to praise in the book, I have focused on only a few essential items.

Latent viral infection or viral persistence has long been known to have a role in chronic diseases, but the mechanisms involved from the time of infection to the development of the first symptoms of chronic disease are poorly defined. What are the molecular events (‘disruptions to the healthy equilibria’) that move a biological system from ‘good health’ to ‘chronic disease?’ In his book *Microcompetition with Foreign DNA and the Origin of Chronic Disease*, Hanan Polansky provides us with a highly reasoned explanation of the set of cellular and molecular events that link viral persistence with the onset of chronic disease by way of a single control point, the GABP transcription factor. Essentially, the ‘healthy equilibrium’ is disturbed by microcompetition between the cellular and viral DNA for the GABP transcription factors that are limited in availability for binding. The GABP transcription factor is part of a regulatory gene complex that both induces and suppresses genes. Competition with increased copy numbers of viral DNA for GABP binding can cause the inappropriate expression of GABP regulated cellular genes and initiate chronic disease(s). GABP activity is influenced by exogenous and endogenous factors (agents) acting via the ERK/MAP kinase or JNK/SAPK signaling pathways. Cellular resistance to the ERK agent and hyper-emia of the agent, such as insulin resistance and hyperinsulinemia in obesity, may also occur due to microcompetition with foreign DNA. Thus, the shift from a healthy to an unhealthy equilibrium is a complex interaction of various factors acting by way of a single regulatory point, the GABP transcription complex, in microcompetition with foreign DNA. Proposed treatments are given for regulating or curing chronic diseases on the basis of the concepts and models presented within the book. Some of these treatments are already well-known while others are still relatively speculative and require further investigation.

Having worked previously in a variety of research disciplines such as on the enzymology of phosphatases, endocrine regulation of reproductive biology and lactation, viruses and cancer, comparative genomics, immunogenetics and autoimmunity, I very much enjoyed the multidisciplinary

aspects of the book. Hanan Polansky has connected the dots from various disciplines and revealed a compelling and unifying theory for the origin of chronic disease. His theory is well-supported by the reinterpretation of a considerable amount of published data. I particularly liked the way a number of different gene products, such as TF, CD18 and GABP, were used to integrate the different findings of cellular and molecular biology into a logical explanation of chronic disease. I found this book to be a fascinating read and I expect it will help me to reassess and resynthesize some of my own ideas and concepts about the origins of psoriasis, rheumatoid arthritis and atherosclerosis.

But readers, beware. This is not an easy book to understand or appreciate on first reading. The author has produced a book of approximately 543 pages of well-argued cases that most often are highly technical. Each chapter is punctuated with mathematical formulas and functions (signal intensity, adhesion and velocity), symbolic language, conceptual building blocks, models, examples, appendices, velocity curves (skewed-belled shaped and S-shaped curves), transitive deductions, logical summaries, experimental predictions, observations and conclusions, and numerous examples from a list of 1224 references. The presentation is unusual, the layout eccentric but the content is compelling. It is best read with a computer and the World Wide Web and PubMed close at hand. All together, the book adds clarity to a highly complex subject even though it may require some rereading and follow-up studies to fully benefit from this thought-provoking and ultimately essential account of the origin of chronic disease.

In the final analysis, it is an extraordinary book and I certainly recommend it to students, clinicians and scientists who are interested in viruses and the origin of chronic disease. Indeed, virologists should now resurrect their RNA/DNA ‘in situ’ hybridization techniques and test some of Hanan Polansky’s predictions.”

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