

## ***Detecting Cancer. Gaining Time: To Prevent or Recover from Cancer,***

by

**Dr Xandria Williams**, PhD, MSc, DIC, ARCS, MRSC, ND, DBM, MRN,

Review by Professor Basant K Puri

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*Detecting Cancer* is the third book in Dr Williams' Cancer Quintet. (The first book is *Vital Signs for Cancer*, and the second is *Cancer Concerns: A Practical 10-Step Programme Described and Explained*.)

*Detecting Cancer* is in two parts. In the first part, Dr Williams gently takes the reader through an explanation of cell biology, the development of cancer, the role of mitochondria, and her test panels. This part can readily be understood by those without a background in molecular biology, biochemistry or medicine; this is in no small part a reflection of Dr Williams' engaging style of writing coupled with generous repetitions of key concepts in different ways, so that the fundamental ideas have the opportunity to "stick" in the mind. The second part of the book essentially consists of a reprint of Dr Williams' doctoral thesis. In the main it contains the same material as in first part, but with much more scientific detail and with the level of referencing which is to be expected in a PhD thesis. Normally, most readers would have difficulty in reading the doctoral thesis, but in this book the first part has already introduced the key concepts. The result is that reading the second part of the book becomes very enjoyable. Indeed, I had difficulty putting the book down. The second part also serves once again to reinforce the author's key ideas.

The author builds on the ground-breaking ideas regarding the pathophysiology of cancer, from almost a century ago, of the Nobel laureate Dr Otto Warburg. When mitochondrial dysfunction occurs, there is impairment of oxidative metabolism. (In large measure, it was the same Dr Otto Warburg who established the role of intracellular enzymes in biological oxidation.) Thus, instead of making use of the pathway from acetyl-CoA (itself derived from pyruvate) to the citric acid cycle (or Krebs's cycle or the tricarboxylic acid cycle) and oxidative phosphorylation, there is greater reliance by the cell on the phylogenetically more ancient, and far less efficient, anaerobic pathway of glycolysis, with the resulting pyruvate being more likely to undergo homolactic fermentation via lactate dehydrogenase to L-lactate. (This last reaction may be considered to be an "eleventh" glycolytic reaction, appended to the 10 classical reactions of glycolysis.) The author has ingeniously recognised that these changes will be accompanied by changes in the levels of several substrates and enzymes, which in turn, coupled with assays of particular well-chosen proteins (such as p53), can serve as biomarkers either to detect cancer (or a pre-cancerous condition) presymptomatically, or to enable the response to treatment of established cancer to be followed.

This is a brilliant book written by a highly intelligent author who comes across as a very caring person. For the second edition, I hope that the publisher will consider allowing the addition of diagrams and flowcharts. Meanwhile, the present first edition deserves a high level of success. I believe that every practising clinician who might have to look after a patient who could develop cancer, and every researcher studying mammalian cancer, ought to read this excellent book.”

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