

## Book Reviews

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### CANCER

**Cancer: The Evolutionary Legacy.** By Mel Greaves. Oxford University Press (198 Madison Ave., NY 10016). 288 pp. Hardback \$27.50.

**One Renegade Cell: How Cancer Begins.** By Robert A. Weinberg. Basic Books (10 E. 53rd St., New York, NY 10022). 170 pp. Hardback \$21.00.



Cancer might seem to be an unlikely topic for all but the oncologist and other practitioners, but preparing a book for the lay-person is just what the authors of **Cancer: The Evolutionary Legacy** and **One Renegade Cell** set out to do. And why not, when we think about the age-old mysteries of this disease (or constellation of diseases), the fear and dread caused by the possibility that we will be struck down by any of its forms, and the widespread lack of understanding of the etiology, treatment and prognosis of the many diseases we generically refer to as cancer?

Robert Weinberg, in his book **One Renegade Cell**, sets out to recapitulate in understandable terms, the steps taken to explain the origins of cancer. The result is a chronological compression of theories and treatments beginning in 1775 with Percival Potts' link-

ing of scrotal cancers to having worked as a chimney sweep and culminating in the exponential growth of discoveries in the late 20th century and continuing into the 21st; developments commensurate with the explosion in knowledge brought about by the development of molecular biology.

Mel Greaves, in **Cancer: The Evolutionary Legacy**, also tells a tale of man's awareness of cancer as a pathology and his attempts to deal with it from ancient times, but his is a tale that sets the mechanisms for malignant development within the confines of evolutionary constrictions. His story is told in an articulate literary form, using creative metaphors and charming the reader with his brilliant command of the language.

Both authors emphasize some common themes, such as the innate systems that allow for the cycling of cells following conception, during growth spurts and in tissues which must replace and/or repair themselves, while, at the same time, holding rein on uncontrolled division, one of the major characteristics of malignancies. Both cite the "stuck accelerator, failed brakes" analogy as well as emphasizing the clonal nature of cancer. Common to both books are the influences of genetics, diet and life style choices, environmental assaults and tobacco.

Robert Weinberg is a pioneer in the field of molecular oncology yet he is able, in **One Renegade Cell**, to summarize the present state of our knowledge and the steps that have led to it in a manner which can be read and understood by anyone with a knowledge of basic biology, college and high school students, their instructors, and the lay person. For someone facing the personal challenge of living with cancer, either in a family member or himself, this is a book that provides some optimism in conjunction with the background necessary to make informed choices.

On the other hand, **Cancer, The Evolutionary Legacy**, by Mel Greaves, is a book that is likely to be enjoyed by the more serious students of biology among us. He weaves throughout his

facts, a thread of synthesis symbolized by the opening quotation of an early chapter: "Nothing in biology makes sense except in the light of evolution" (Th. Dobzhansky 1937). His thesis, that for cancer to develop, a clone of cells must pass through the same evolutionary processes as a population of organisms, is convincingly presented. He points out to us that the very design features which have facilitated the development of large, long-lived, multicellular organisms become "design flaws" when they provide the means by which the randomly mutated cell is able to establish a clone of such cells. When we consider the internal and external assaults to which our tissues are subjected together with the perfect conduit for ambitiously migratory cells provided by our circulatory system, it would appear that cancer is inevitable in all of us, if we live long enough. On the other hand, the actual incidence with which it presents itself is a testimony to the multiplicity of selection pressures on the cell gone astray; the difficulty of finding a niche, acquiring nutrients, outmaneuvering one's neighbors . . . the list goes on.

The last chapters of both books look to the not-so-distant future. Expectations of targeted inhibitors of the steps that serve to immortalize cells and relieve them of their normal constraints, resulting in tumors, coupled with the increasing understanding of the nature of the genome foretell the advent of less traumatic and more effective treatment modalities. But, as Mel Greaves states: "There still will not be a 'magic bullet' for cancer in general. Political leaders and advisers should now recognize that the problem isn't equivalent to the task of building the first atomic bomb and getting a man on the moon. The intricacies of millions of years of evolutionary biology are involved, richly embroidered and coupled in conflict with human diversity and behaviour."

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