



One Renegade Cell: How Cancer Begins (Science Masters Series)

By Robert A. Weinberg

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Cancer research has reached a major turning point, and no one is better qualified to explain the past two decades' dramatic leaps forward in understanding this disease than world-renowned molecular biologist Robert Weinberg, director of the Oncology Research Laboratory at the Whitehead Institute in Cambridge, Massachusetts. In *One Renegade Cell*, Weinberg presents a state-of-the-art account of how cancer begins and how, one day, it will be cured.

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Editorial Review

Amazon.com Review

"Cancer wreaks havoc in almost every part of the human body"--Robert Weinberg's opening remark is a chilling reminder of the pervasiveness of an all-too-familiar disease. Cancer touches most families, and if you have ever wondered why, despite so much time, effort, and money, it has proved such a seemingly intractable problem, then read *One Renegade Cell*, Robert Weinberg's masterful explanation. As director of the Oncology Research Laboratory at the Whitehead Institute and professor of Biology at MIT, Weinberg has been at the forefront of cancer research for well over a decade.

Unlike most diseases, cancerous tumors are not foreign invaders but "take on the appearance of alien life forms, invaders that enter the body through stealth and begin their programs of destruction from within." But as Weinberg shows, these are deceptive appearances. And since he is foremost a scientist, he finds the truth "subtle and endlessly interesting" and manages to convey fascination for something that most of us dread--cancer. Much of the present increase in cancer is due to increased longevity because "given enough time, cancer will strike every human body."

By telling the story of the historical discovery of cancer, Weinberg is able to introduce gradually the intricacies and complications of the genes and proteins involved (oncogenes, tumor suppressor genes, etc.) for the general reader. He characterizes cancer cells as renegade because, unlike normal body cells, they "disregard the needs of the community of cells," they are "selfish and unsociable," and are only interested in "their own proliferative advantage." By comparison, normal cells hold down cell numbers by "inducing them to commit suicide" (apoptosis).

The understanding of cancer has been developed enormously over the last few decades by Weinberg and the worldwide community of researchers. As Weinberg eloquently shows, cancer research and its related disciplines "have moved from substantial ignorance to deep insight." --*Douglas Palmer, Amazon.co.uk*

From Publishers Weekly

The last 20 years have brought a revolution in cancer research that will profoundly change diagnosis and treatment of the disease, writes Weinberg in this comprehensive but rigorous introduction to the subject. Weinberg, founder of the Whitehead Institute for Cancer Research and a biology professor at MIT, traces the development of previous theories of cancer, and explains that scientists are now certain that cancer is caused when genes are damaged through a succession of mutations. These can result from damage to a cell's DNA inflicted by mutagens (which can be of foreign origin, such as tobacco smoke, or of internal origin); from normal mistakes made when DNA is copied during cell growth; or from defects in the body's DNA repair machinery. Weinberg discusses the roles of chemical carcinogens, retroviruses and heredity in developing cancer, and explains the body's intricate defenses against tumor growth. Though he argues that cancer will never be fully eradicated because so many mutations occur during long lifetimes ("Given enough time, cancer will strike every human body"), Weinberg is optimistic that increasingly sophisticated understanding of cellular functions will yield more effective treatments for those cancers that cannot be prevented. Though some readers might find the technical sections of the book difficult, it readily conveys the challenge and excitement of scientific discovery. Two illustrations.

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From Scientific American

This is the cancer story, told with care and clarity and unfolding like a good detective novel. Skilled detective work is what it has taken to determine the causes and nature of the disease and to bring medical science to a time when it is becoming increasingly possible to prevent or treat cancers. Weinberg, professor of biology at the Massachusetts Institute of Technology and a founding member of the nearby Whitehead Institute for Biomedical Research, is prominent among the detectives. His account starts with the single "renegade cell" that begins an uncontrolled growth in one of the body's tissues, eventually giving rise to a cancerous tumor. But his main focus is on the findings of the past two decades that have yielded an understanding of the disease--among them the role of carcinogens and viruses and the discovery of oncogenes, growth factors and the cell cycle clock. "We have learned much about the invisible forces that create human cancer," he writes. "Knowing the causes of many tumors, we should be able to prevent their appearance, or if they appear, to treat them and achieve permanent cures."

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