

Preface to the Second Edition

Cancer is caused by alterations to the genome. To understand the nature of these alterations is to grasp the essence of cancer. The eight years that have passed since the publication of the first edition of this text have seen an unprecedented deluge of new information as to the genetic basis of cancer in nearly all of its forms. The specific genes that cause most common types of cancer have now been conclusively identified. These mutant genes have illuminated basic pathways and regulatory networks that control cell growth. The identification of cancer genes and the elucidation of their respective functions in cells and tissues have revolutionized our view of tumors and how they grow. These advances have also guided our efforts to improve cancer detection and to devise new modes of cancer therapy.

This book is aimed at advanced undergraduates who have completed introductory courses in genetics, biology, and biochemistry and medical students. There are several excellent texts that provide an overview of cancer biology and genetics, including *The Biology of Cancer*, by Weinberg and *The Genetic Basis of Human Cancer*, by Vogelstein and Kinzler. In contrast to these comprehensive texts, this modest book is focused on the genes that underlie the most common cancers. Attention is primarily devoted to cancer genes and the application of evolutionary theory to explain why the cell clones that harbor cancer genes tend to expand. Areas of controversy are avoided, in favor of firmly established concepts. This book does not delve into tumor pathobiology beyond what is required to understand the role of genetic alterations in neoplastic growth. For students with a general interest in cancer, this book will provide an accessible overview. For students contemplating future study in the fields of clinical oncology or cancer research, this book will be suitable as a primer. *Principles of Cancer Genetics* is intended not to replace existing texts but to complement them.

I am indebted to my teachers. The mentors I encountered in the course of my career have largely taught by example. Sanford Simon generously provided me with my first undergraduate laboratory experience at Stony Brook University. Bruce Stillman, the supervisor of my doctoral research at Cold Spring Harbor, introduced me to molecular biology and biochemistry as tools for rigorous cancer research. At Johns Hopkins, Bert Vogelstein and Ken Kinzler have provided a model of incisive

thinking, dedication, fearlessness, generosity, and friendship that everyone should attempt to emulate. I am also indebted to my students, who continue to challenge me in every way and fuel me with their energy and determination.

A career in science is filled with ups and downs, and so I've been lucky to have good company on my personal journey of discovery. My wife Karla has been a steadfast source of inspiration, as well as a wellspring of unconditional love and patience. And my children, Zoe and Milo, fill me with a sense of wonder.

To all of these people, I will be forever grateful.

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Fred Bunz

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Bunz, F.

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