SCIENCE
Frontiers in Cancer Research

TABLE OF CONTENTS

In the past 2 decades, researchers have made remarkable progress in assembling a detailed profile of the genetic changes that lead to cancer. Although the task of explaining how cancer develops is not yet complete, the information at hand is already being applied toward improving diagnosis, treatment, and prevention of the disease. *Science* takes a look at some of these efforts in this special issue on cancer research.

An overview Article by E. R. Fearon describes the wealth and complexity of knowledge that has emerged from studies of the rare inherited cancer syndromes and the more than 25 genes that have been causally linked to them. Those gene discoveries have raised thorny issues of genetic testing, which B.A.J. Ponder explores. In addition, D. Sidransky discusses several ways in which even nonhereditary tumor-specific genetic alterations might be exploited for earlier diagnosis of the more common cancers in the general population.

A. T. Look's discussion of oncogenic transcription factors in leukemia emphasizes how fly and worm genetics have helped dissect the cellular growth control pathways that are disrupted in human cancer. And even yeast may provide valuable lessons about cancer, if L. H. Hartwell and colleagues are successful in the efforts they describe, aimed at using yeast genetics to streamline anticancer drug development.

In an Editorial on the causes of cancer, J. M. Bishop reminds us that defective genes are not the complete story. F. P. Perera expands on that theme as she looks at the role in cancer of environmental factors and of individual variations in response to those factors. Finally, W. K. Hong and M. B. Sporn discuss reinvigorated efforts to identify effective cancer chemopreventive agents and bring them to clinical trials promptly.

The News component of the special issue includes three stories centering on cancer drug development. One deals with current efforts to find more potent and specific drugs by targeting the precise gene changes leading to cancer. A second focuses on the crop of new biotech firms that have sprung up to engage in the search for such drugs and the difficulties these firms confront. The final story describes a challenge facing drug developers in both academia and industry: the shortcomings of current drug-screening assays.

–Paula Kiberstis and Jean Marx