

# [PDF] The Philadelphia Chromosome: A Mutant Gene And The Quest To Cure Cancer At The Genetic Level

Jessica Wapner, Robert A. Weinberg PhD - pdf download free book

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#### Books Details:

Title: The Philadelphia Chromosome:  
Author: Jessica Wapner, Robert A. We  
Released: 2014-04-29  
Language:  
Pages: 344  
ISBN: 1615191976  
ISBN13: 978-1615191970  
ASIN: 1615191976



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#### Description:

**From** Chronic myelogenous leukemia (CML) is an uncommon but fatal cancer. More than 95 percent of patients afflicted with this malignancy have a chromosomal abnormality known as the Philadelphia chromosome. This genetic mutation is characterized by a swap of genetic matter between two different chromosomes so that a single chromosome (number 22) has a piece missing.

The mutated chromosome codes for an enzyme—tyrosine kinase—that is hyperactive and ramps up production of white blood cells that leads to leukemia. A chemical compound was identified that selectively targets the kinase protein. Gleevec was FDA approved in 2001, and the results have been quite impressive. It outperformed the existing first-line treatment for CML. It is safer than a bone marrow transplant. Gleevec is unique among cancer drugs because it is taken orally (instead of administered intravenously) at home (instead of the hospital or clinic) with very manageable side effects. Science writer Wapner has pieced together a detailed account of a spectacular scientific success story and a turning point in the treatment of cancer. --Tony Miksanek --This text refers to the edition.

## **Review**

“Among a small cluster of very good recent books on cancer.”

—**The New York Times**

“This reporting takes in a huge swath of science and research, a landscape that changes dramatically over the course of her story. Wapner’s achievement is to help the reader understand why each development is huge in its time and place—starting with Hungerford peering through his camera at the chromosomes and following scientists through the laboratory stories, through drug development and animal testing, to the triumphant patient treatment when the drug becomes almost routine—a scientific miracle absorbed into the daily lives of a group of patients no longer united by a fatal diagnosis.”

—**The Washington Post**

“In [The Philadelphia Chromosome], Jessica Wapner chronicles the ensuing decades of laborious scientific inquiry and industrial ingenuity that led to the discovery of Gleevec, the first drug designed to attack cancer at the genetic level. Its success in beating CML into remission and making the errant chromosome disappear has helped to revolutionize cancer research, unleashing a hunt for the genetic basis of other cancers and opening the door to comparable targeted treatments.”

—**The Wall Street Journal**

“An excellent book for those who want to learn more about how medical discoveries are made and those interested in recent medical history, as well as those whose lives are affected by CML.”

—**Library Journal**

“A crucial link between genetics and cancer emerged in a US lab in 1959, as researcher David Hungerford peered down a microscope at an abnormally small chromosome. In 1990, this ‘Philadelphia chromosome’ was found to cause the swiftly fatal chronic myeloid leukaemia. As science writer Jessica Wapner reveals in this taut, elegant study, a cascade of breakthroughs then led to success with targeted drug Gleevec, a tyrosine kinase inhibitor—and hopes for the cancer-busting potential of rational drug design in general.”

—**Nature**

“[T]he way Wapner repeatedly adds up preceding steps to build to the scientific breakthrough is masterful, making for compulsive, surprisingly emotional reading.”

—**The Scientist**

“In this meticulously detailed chronicle, science writer Wapner recaps the remarkable development of Gleevec, a cutting-edge drug capable of beating the typically fatal cancer of white blood cells known as chronic myeloid leukemia (CML). . . .Her gracefully written history skillfully combines both the science and humanity of this fascinating search for a cure for CML.”

—**Publishers Weekly**

“Wapner weaves together the basic and applied science with the stories of the dedicated researchers, the broader supporting superstructure of modern medicine and the process of bringing pharmaceuticals to market. . . . An absorbing, complex medical detective story.”

—**Kirkus Reviews**

“Expounding the well-known link between genetics and cancer, this scientific history recounts the initial discovery of a gene mutation that eventually led to enormous breakthroughs in the fight against leukemia.”

—**The Barnes & Noble Review**

“Jessica Wapner reveals how the discovery of a single mutated chromosome led to a trailblazing treatment for leukemia and a variety of other cancers.”

—**Shelf Awareness**

“Splendidly written in the tradition of the legendary medical book, *Microbe Hunters*, this book proves that medical science is as cool as those forensic shows like CSI.”

—**Philadelphia Weekly**

“I would enthusiastically recommend [this book] to the lay public, people living with cancer and cancer researchers. . . . [T]he story of the Philadelphia chromosome—the scientific creativity and the dedication it celebrates and the medical scientific triumph it represents—is one that deserves to be cherished for eternity.”

—**Nature Medicine**

“[The Philadelphia Chromosome] opens our eyes to a future in which remedies will kill tumors at their root.”

—**Philadelphia Inquirer**

“[C]hronicles the decades-long quest to develop a targeted, or ‘rational,’ treatment that would attack cancer on the genetic level.”

—**New York Post**

“The story of the Philadelphia chromosome is truly the story of modern cancer biology—from the very earliest description of a chromosomal abnormality in cancer cells to the development of a targeted medicine against a formerly lethal type of leukemia. Jessica Wapner stitches the whole story together with tenacity, diligence (and humor). This is a wonderful, readable, and highly informative book.”

—**Siddhartha Mukherjee**, Pulitzer Prize-winning author of *The Emperor of All Maladies*

“Jessica Wapner shows us in *The Philadelphia Chromosome* how the past and the future combine to dramatically change the course of a disease. This beautifully written book is a blueprint for broader healthcare change. A pivotal book.”

—**David B. Agus, MD**, Professor of Medicine and Engineering, University of Southern California, and author of *The End of Illness*

“Jessica Wapner has done two kinds of hard work gracefully: the hard work of understanding cancer genetics and the hard work of rendering that subject into human narrative, lucid explanation, and metaphor. The Philadelphia Chromosome is not just an urgently useful book. It's also an elegant one, put together like a Swiss watch.”

—**David Quammen**, author of *Spillover: Animal Infections and the Next Human Pandemic*

“The Philadelphia Chromosome clearly explains how a half-century’s worth of research transformed a viciously lethal form of cancer into a chronic, treatable condition. Jessica Wapner’s meticulously researched book is both a real-life medical thriller and an engaging narrative about the history of modern cancer research.”

—**Seth Mnookin**, author of *The Panic Virus: The True Story Behind the Vaccine-Autism Controversy*

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