

## Browsing Bookshelf

Created: September 30, 2010; Updated: February 18, 2014.

### From the Bookshelf Homepage

Browsing allows you to “click your way” through Bookshelf and its publications. From the [Bookshelf homepage](#), you may browse [New & Updated](#) content and [Featured Titles](#). [New & Updated](#) includes new books and resources added to Bookshelf and books and resources on Bookshelf that have been recently updated with a new chapter. Click on “See more...” to access the full [New & Updated](#) list and additional information about these titles, such as the date new books or chapters were added to Bookshelf. By clicking on a book’s cover image or hyperlinked title, you may access its [Table of Contents](#) page (see Figure 1).

To return to the Bookshelf homepage from any page of a publication, click on “Bookshelf” in the top left corner.

### From the Browse Titles Page

You may begin browsing the contents of the entire Bookshelf via the [Browse Titles](#) page, which allows you to view and sort contents by title or publication date (see Figure 2, and [Browsing Tutorial](#) video). To narrow the list of titles by particular terms in the titles and/or contributors, enter one or more terms in the “Filter term” box and click the [Go](#) button. Or you may filter the list by clicking on the [types of resource](#), publishers that interest you (see Figure 3), or versions/editions of publications. By default only current titles in Bookshelf will display on the Browse Titles page. To view all titles in Bookshelf, including previous versions or editions, or content that is no longer considered current by its authors/publisher, you must select “Include previous versions/editions” in the [Versions/Editions](#) panel (see Figure 3).

To temporarily send titles to the clipboard so that you can come back to them later, use the check boxes to select titles, click on the [Send to](#) link, and select [Clipboard](#). If no check boxes are selected, the first 500 titles displaying will be sent to the clipboard.

You may also save titles to a text file, CSV file, or e-mail them by clicking on the [Send to](#) link, and selecting [File](#) to save as a text or CSV file or [E-mail](#) to send them to a particular e-mail address. You may either select to send particular titles listed by using the check boxes, or have the first 1000 displayed titles saved in a text file or e-mailed (see Figure 4a).

For more information about using the clipboard, saving as a text file and e-mailing results, see [Saving and E-mailing Results and Searches](#).

If you’d like to save a particular page of displayed titles, such as the entire list of contents, or a list of contents filtered by a term or one or more categories, click on [Save Link](#). You may then copy the provided link to this page, and paste it to your browser to bookmark it, or send it to others to save (see Figure 4b).

By clicking on a book’s cover thumbnail or hyperlinked title, you may access its [Table of Contents](#) page (see Figure 1). Many publications are also available in PDF format, so you can download a copy to your computer.

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**Bookshelf** Books   Browse Titles Limits Advanced Help

## Dynamics of Cancer

Incidence, Inheritance, and Evolution  
Steven A Frank.

Princeton (NJ) [Princeton University Press](#) 2007.  
ISBN-13: 978-0-691-13366-9

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The book provides a unique conceptual and historical framework for understanding the causes of cancer and other diseases that increase with age. Using a novel quantitative framework of reliability and multistage breakdown, Frank unifies molecular, demographic, and evolutionary levels of analysis. He interprets a wide variety of observations on the age of cancer onset, the genetic and environmental causes of disease, and the organization of tissues with regard to stem cell biology and somatic mutation. Frank uses new quantitative methods to tackle some of the classic problems in cancer biology and aging: how the rate of increase in the incidence of lung cancer declines after individuals quit smoking, the distinction between the dosage of a chemical carcinogen and the time of exposure, and the role of inherited genetic variation in familial patterns of cancer.

### Contents

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- [Part IV. Population Consequences](#)
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[Expand All](#) [Collapse All](#)

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Bookshelf ID: NBK1568 [PMID: 20821846](#)

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- [PubReader](#)
- [Print View](#)
- [Cite this Page](#)
- [PDF version of this title \(3.0M\)](#)

**Related information**

- [NLN Catalog](#)

**Related citations in PubMed**

- [Review](#) The role of individual susceptibility in cancer burden related to environmental exposure. [Environ Health Perspect. 1996]
- The population genetics of multistage carcinogenesis. [Proc Biol Sci. 2003]
- [Review](#) Molecular epidemiology and the genetics of environmental cancer. [JAMA. 1991]
- Prophylactic Oophorectomy: Reducing the U.S. Death Rate from Epithelial Ovarian Cancer. A Continuing Debate. [Oncologist. 1996]
- [Review](#) Genetic polymorphisms and lung cancer susceptibility: a review. [Lung Cancer. 2002]

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**Figure 1. Table of Contents** page of a browsable book. A) Clicking on “Bookshelf” at the top left corner of the page will return you to the Bookshelf homepage. B) The hyperlinked PMID number will take you to a publication’s corresponding citation in PubMed. C) You can access a publisher website by clicking on the publisher’s link. D) For information about requesting permission to use copyrighted material, click on the Copyright Notice link to access the copyright statement (also available at the bottom of the page). E) To search within a book use the **Search this book**. F) If the publication is browsable, the **Contents** will be hyperlinked, allowing you to view the publication chapter by chapter. G) To expand or collapse the entire **Contents** of a publication, use these links. H) The “Views” panel contains a PubReader link to a reader-friendly version of any page of a browsable book designed primarily for tablets and other small screen devices, a Print View link to a print friendly version of any page of a browsable book, a Cite this Page link to the citation for the book or resource (based on **NLM style**), and a link to a PDF version of the title. I) Links to related PubMed abstracts can be found in the “Related citations in PubMed” panel on right. J) The Next button will take you to the first page of the book’s contents.

## From a Publication’s Table of Contents

Each publication on Bookshelf is divided into searchable units of content based on the organization of parts, chapters, and sections within the individual publication. These units of content are listed under the **Contents** section of the **Table of Contents** page. You can expand or collapse all of the main units of **Contents** by using the **Expand All** and **Collapse All** links on the **Table of Contents** page (see Figure 1).

The screenshot shows the NCBI Bookshelf interface. At the top, there are navigation links for 'NCBI Resources' and 'How To'. The 'Bookshelf' section includes a search bar with a dropdown menu set to 'Books' and a 'Search' button. Below this, the 'Browse Titles' section is active, with a prompt to 'Select a category or enter filter term below.' A filter term box is empty, and the search criteria are set to 'Title or Contributor'. A 'Sort by' dropdown menu is open, showing three options: 'Title', 'Pub Date' (which is selected), and 'Reverse'. An orange circle with a blue 'A' is positioned over the 'Sort by' dropdown. The main content area displays a list of search results, including titles like 'Diagnosis and Treatment of Obstructive Sleep Apnea in Adults [Internet]' and 'Common Syndromes in Older Adults Related to Primary and Secondary Prevention [Internet]'. The results are sorted by publication date, with the most recent titles at the top.

**Figure 2.** Sorting the Browse Titles page. Bookshelf's titles are by default sorted by publication date, with the most recent titles at top. To alphabetically sort contents by title, click on the Display Settings link, change the selection to Title, and click on Apply. To sort by reverse publication date (so that oldest titles appear at top), select both Pub Date and Reverse. To sort by reverse alphabetical order, select both Title and Reverse (A).

If the publication is browsable, the **Contents** will be hyperlinked, allowing you to view the publication chapter by chapter. If a publication is not browsable, there will be a notification on the publication's pages. Whether publications are browsable depends on agreements made with the publishers. Publications that cannot be browsed are accessible by using the **Search this book** box on a page of that publication or by querying the Bookshelf (see Figure 5). Most publications on Bookshelf (> 95%) are fully browsable.

When navigating through the pages of a browsable publication, you can view the publication's hyperlinked **Contents** or return to the **Table of Contents** page by clicking on the **Contents** drop-down menu (see Figure 6, and [Inside a Book Tutorial](#) video).

## From within a Page

Once you have landed on a particular page of content, such as a chapter, via a search query, your search terms will be bolded or highlighted if this is selected in your [My NCBI preferences](#). Your particular search terms will

The screenshot shows the NCBI Bookshelf interface. At the top, there are navigation links for 'Resources' and 'How To', and user options for 'lathrops', 'My NCBI', and 'Sign Out'. The main header includes the 'Bookshelf' logo, a dropdown menu set to 'Books', a search input field containing 'cancer', and a 'Search' button. Below the search bar are links for 'Limits' and 'Advanced search'. The main content area is titled 'Browse Titles' and features a filter input field with 'cancer' entered and a 'Go' button. To the right of the search bar is a 'Reset' button. Below the search bar, there are three filter panels: 'Subjects', 'Types', and 'Publishers'. The 'Subjects' panel shows 'Cancer (4)' selected. The 'Types' panel shows 'Evidence-based Medicine (23)' selected. The 'Publishers' panel shows 'Agency for Healthcare Research and Quality (US) (39)' selected. A 'More' button is visible in each filter panel. To the right of the filter panels is a 'Display Settings' box showing '20 titles displayed, Sorted by Pub Date' and a 'Send to' link. Below this is a '20 of 55 Titles for "cancer"' section with a 'Show All Titles' link. The main list of titles includes:
 

- 1. [Treatments for Localized Prostate Cancer: Systematic Review to Update the 2002 U.S. Preventive Services Task Force Recommendation \[Internet\].](#) Chou R, Dana T, Bougatsos C, et al. Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 Oct. (Evidence Syntheses, No. 91.) Report | Health Care
- 2. [Prostate Cancer: An Evidence Update for the U.S.](#) Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 Oct. (Evidence Syntheses, No. 90.) Report | Health Care
- 3. [Prevention of Skin Cancers \[Internet\].](#) Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 Sep. (Comparative Effectiveness Technical Briefs, No. 11.) Report | Comparative Effectiveness Research, Health Care
- 4. [Multidisciplinary Pain Programs for Chronic Noncancer Pain \[Internet\].](#) Jeffery MM, Butler M, Stark A, et al. Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 Sep. (Comparative Effectiveness Technical Briefs, No. 8.) Report | Comparative Effectiveness Research, Health Care
- 5. [Screening for Cervical Cancer: A Systematic Evidence Review for the U.S. Preventive Services Task Force \[Internet\].](#) Vesco KK, Whitlock EP, Eder M, et al. Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 May. (Evidence Syntheses, No. 86.) Report | Health Care

 At the bottom left, there is a 'Versions/Editions' panel with a checkbox for 'Include previous versions/editions'.

**Figure 3.** Filtering the Browse Titles page. To narrow the list of Bookshelf titles, enter one or more terms in the “Filter term” box and click the **Go** button (A). The total number of titles containing that term will appear at the top of the page (B). Click on the **Show All Titles** link if you want to display all titles in the list, automatically sorted by publication date. To filter the list by subjects, type of resource, or publishers, click on one or more options (C) available in these menus. The total number of titles will appear in parentheses for each subject, type or publisher, with those containing the most titles appearing at top. Click on the **More** button in each filter box to get the complete set of available subjects, types or publishers, sorted alphabetically. Use the check boxes to select one or more options in the box, and press the **Apply** button to filter by them (D). To clear filters and reset page to the default, click the **Reset** button (E). By default only current titles in Bookshelf will appear when you use the Browse Titles page. To include previous versions or editions of titles, or titles no longer considered current by their authors or publishers, select “Include previous versions/editions” in the **Versions/Editions** panel (F).

remain bolded or highlighted until you’ve conducted a new search query, you change your My NCBI settings to not highlight search terms, or the next day.

You can browse the main sections of a page by looking at the hyperlinked **In this Page** section. It is also possible to quickly navigate from section to section within a chapter by clicking on the **Go to** drop-down menu (see Figure 7, and [Inside a Book Tutorial](#) video).

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Bookshelf Books Search Limits Advanced search Help

**Browse Titles**

Select a category or enter filter term below.

Filter term: genetics in Title or Contributor Go Reset

Display Settings: Sorted by Pub Date

**Subjects**

- All Subjects
- Genetics (2)
- Medicine (2)
- Microbiology (1)
- Molecular Biology (1)

More

**Types**

- All Types
- Book (3)

**Publishers**

- All Publishers
- ASM Press (1)
- Remedica (1)
- Wiley-Liss (1)

More

**3 of 3 Titles for "genetics"**

- [Genetics for Surgeons.](#)  
Morrison PJ, Spence RAJ.  
London: Remedica; 2005.  
Book | Genetics, Medicine
- [Helicobacter pylori: Physiology and Genetics.](#)  
Mobley HLT, Mendz GL, Hazell SL, editors.  
Washington (DC): ASM Press; 2001.  
Book | Microbiology, Medicine
- [Human Molecular Genetics. 2nd edition.](#)  
Strachan T, Read AP.  
New York: Wiley-Liss; 1999.  
Book | Genetics, Molecular Biology

Choose Destination

- File
- Clipboard
- E-mail

**Figure 4a.** Saving and e-mailing browsed titles. Click on the Send to link to send all titles displayed on a page to a text file, e-mail address or the clipboard (A). Use the check boxes to select just one or more titles displayed on the list to send to one of the destinations.

If the publication is browsable, you can use the **Contents** drop-down menu (see Figure 6) at the top and bottom of the page to click on another part, chapter or section you would like to view.

To return to the publication's **Table of Contents** page, click on the **Table of Contents** link at the top right of the **Contents** drop-down menu or under the book details. You can also return to the **Table of Contents** page by clicking on the publication's cover thumbnail. To return to the Bookshelf homepage, click on "Bookshelf" in the top left corner (see Figure 7).

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Bookshelf Books Search Limits Advanced search Help

**Browse Titles**

Select a category or enter filter term below.

Filter term: genetics in Title or Contributor Go Reset




**Subjects**  
 All Subjects  
 Genetics (2)  
 Medicine (2)  
 Microbiology (1)  
 Molecular Biology (1)  
 More

**Types**  
 All Types  
 Book (3)

**Publishers**  
 All Publishers  
 ASM Press (1)  
 Remedica (1)  
 Wiley-Liss (1)  
 More

Display Settings: Sorted by Pub Date Send to: Save Link:

**3 of 3 Titles for "genetics"**

-  [Genetics for Surgeons.](#)  
Morrison PJ, Spence RAJ.  
London: Remedica; 2005.  
Book | Genetics, Medicine
-  [Helicobacter pylori: Physiology and Genetics.](#)  
Mobley HLT, Mendz GL, Hazell SL, editors.  
Washington (DC): ASM Press; 2001.  
Book | Microbiology, Medicine
-  [Human Molecular Genetics. 2nd edition.](#)  
Strachan T, Read AP.  
New York: Wiley-Liss; 1999.  
Book | Genetics, Molecular Biology

**Link to this page**  
<http://www.ncbi.nlm.nih.gov/books/browse/?>

**Figure 4b.** Saving the link of a page of filtered titles. Click on the Save Link to get the link to the page with your filtered results (A).



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Booksshelf Books Search

Browse Titles Limits Advanced

**A** By agreement with the publisher, this book is accessible by the search feature, but cannot be browsed.

**Molecular Biology of the Cell, 4th edition**  
 Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter.  
 New York: [Garland Science](#); 2002.  
 ISBN-10: 0-8153-3218-1 ISBN-10: 0-8153-4072-9  
[Copyright and Permissions](#)

**B** Search this book

**Views**  
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**Recent Activity**  
 Turn Off Clear

- Molecular Biology of the Cell Bookshelf
- molecular biology of the cell (5982) Books
- Dynamics of Cancer Bookshelf
- dynamics of cancer (628) Books
- results (52755) Books

See more...

**Excerpt**  
**Molecular Biology of the Cell** is the classic in-depth text reference in **cell biology**. By extracting fundamental concepts and meaning from this enormous and ever-growing field, the authors tell the story of **cell biology**, and create a coherent framework through which non-expert readers may approach the subject. Written in clear and concise language, and illustrated with original drawings, the book is enjoyable to read, and provides a sense of the excitement of modern **biology**. **Molecular Biology of the Cell** not only sets forth the current understanding of **cell biology** (updated as of Fall 2001), but also explores the intriguing implications and possibilities of that which remains unknown.

**C**

**Contents**

- Acknowledgments
- Preface
- A Note to the Reader
- Part I. Introduction to the Cell
- Part II. Basic Genetic Mechanisms
- Part III. Methods
- Part IV. Internal Organization of the Cell
- Part V. Cells in Their Social Context
- Glossary

Expand All Collapse All

Expand All Collapse All

**Figure 5.** Table of Contents page of a non-browsable book. A) Non-browsable books are indicated with a notice at the top of the page; C) their Contents will not be hyperlinked so you cannot view the publication chapter by chapter. B) Although these books cannot be browsed, they are searchable by using the **Search this book** box under details about the book.

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Browse Titles Limits Advanced Help

**Dynamics of Cancer: Incidence, Inheritance, and Evolution.** < Prev Next >

PubReader format: click here to try

Contents

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1.1 Aims

1.2 How to Read

1.3 Chapter Summaries

Part I Background

Chapter 2 Age of Cancer Incidence

2.1 Incidence and Acceleration

2.2 Different Cancers

2.3 Childhood Cancers

2.4 Inheritance

2.5 Carcinogens

2.6 Sex Differences

2.7 Summary

Chapter 3 Multistage Progression

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3.2 What Is Multistage Progression?

3.3 Multistage Progression in Colorectal Cancer

3.4 Alternative Pathways to Colorectal Cancer

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3.7 What Processes Change during Progression?

3.8 How Do Changes Accumulate in Cell Lineages?

3.9 Summary

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PDF version of this title (3.0M)

In this Page

2.1 Incidence and Acceleration

2.2 Different Cancers

2.3 Childhood Cancers

2.4 Inheritance

2.5 Carcinogens

2.6 Sex Differences

2.7 Summary

Recent Activity

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Your browsing activity is empty.

**Figure 6.** Contents drop-down menu. **A)** When navigating through the pages of a browsable publication, you can view the publication's hyperlinked **Contents** by clicking on the **Contents** drop-down menu. **B)** To return to the **Table of Contents** page, click on the link at the top right of the menu.



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Browse Titles Limits Advanced Help

**C** **Dynamics of Cancer: Incidence, Inheritance, and Evolution.** < Prev Next >

Show details Contents

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**D** Views

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**A** In this Page

- 8.1 Comparison between Genotypes in Human Populations
- 8.2 Comparison between Genotypes in Laboratory Populations
- 8.3 Polygenic Heterogeneity
- 8.4 Summary

**E** Recent Activity

Turn Off Clear

retinoblastoma (580) Books

Genetics of Progression - Dynamics of Cancer Bookshelf

See more...

**B** Go to:

- 8.1 Comparison between Genotypes in Human Populations
- 8.2 Comparison between Genotypes in Laboratory Populations
- 8.3 Polygenic Heterogeneity
- 8.4 Summary

**Chapter 8 Genetics of Progression**

Genes affect cancer to the extent that they alter age-specific incidence. Thus, the most powerful empirical analysis compares age-specific incidence between normal and mutated genotypes. This chapter describes comparative studies between genotypes.

The first section compares mutant and normal genotypes in human populations. I begin with the classic study of **retinoblastoma**. An inherited mutation in the *Rb* gene causes a high incidence of bilateral retinal tumors. Individuals who do not inherit a mutation suffer rare unilateral tumors. The age-specific acceleration of unilateral cases is one unit higher than the acceleration of bilateral cases, consistent with the prediction that most of the individuals who suffer bilateral **retinoblastoma** were born advanced by one stage in progression because of an inherited mutation.

A similar comparison between inherited and sporadic cases of colon cancer shows that the sporadic cases have an acceleration approximately one unit greater than inherited cases. The decrease in acceleration for individuals who inherit a mutation to the *APC* gene supports the hypothesis that such mutations cause their carriers to be born one stage advanced in progression.

The second section compares incidence between different genotypes in laboratory animals. The controlled genetic background makes clearer the causal role of particular mutations in shifting age-specific incidence. I describe the quantitative methods needed to test hypotheses with the small sample sizes commonly obtained in lab studies. I then present a full analysis of one example: the change in age-specific incidence and acceleration between four genotypes with different knockouts of DNA mismatch repair genes. Knockouts that cause a greater increase in mutation rate had earlier cancer onset and a lower age-specific acceleration. The lower acceleration suggests some hypotheses about how the mismatch repair mutations affect the rate of cancer progression.

The third section compares breast cancer incidence between human groups classified by the age at which a first-degree relative developed the disease. The earlier the age of onset for the affected first-degree relative, the faster the rate of progression. Those who progressed more quickly appeared to have an inherited polygenic predisposition. Greater polygenic predisposition was associated with lower age-specific acceleration. I discuss various hypotheses about why such predisposition may increase incidence and reduce acceleration.

**8.1 Comparison between Genotypes in Human Populations**

Comparisons between sporadic and inherited cancers provide powerful support for multistage theory. With new genomic techniques, comparison of age-specific incidence between human groups with different genotypes will become increasingly accomplish. So, it is important to have a clear sense of what has already been done and what can be learned in the future.

**Retinoblastoma**

Bilateral **retinoblastoma**, in which tumors develop in both eyes, is an inherited disease. Most unilateral cases occur sporadically. [Knudson \(1971\)](#) predicted that bilateral cases follow age-specific patterns consistent with one inherited mutation (hit) and for only one somatic hit to produce a tumor. By contrast, Knudson predicted that unilateral cases require two somatic hits to produce a tumor.

**Figure 7.** Chapter page. **A)** You may browse a chapter's main sections by looking at the hyperlinked **In this Page** section on the chapter page. **B)** It is also possible to quickly navigate from section to section within a chapter by clicking on the **Go to** drop-down menu. **C)** To return to the publication's **Table of Contents** page, click the publication's cover thumbnail. **D)** The **PubReader** link in the "View" panel directs to a reader-friendly version of the page designed primarily for tablets and other small screen devices, and the **Cite this Page** link provides a citation for the chapter or part (based on **NLM style**). **E)** Search terms are bolded or highlighted on a page if you have selected this as a **My NCBI preference**.