



Appendix – Resource Center

A number of sources are available for more detailed investigation of the topics introduced in this text. The level of coverage varies from basic (like this book) to highly advanced investigations of detailed experimental questions found in primary journal articles. The following should provide a useful set of sources for beginning follow-up investigations.

Books of historical and basic value

Although early texts are generally so out-of-date as to be unusable, three basic “landmark” texts still provide useful information and an appealing richness of coverage:

- Stent, G. S. *Molecular Biology of Bacterial Viruses*. San Francisco: WH Freeman, 1963.
- Luria, S. E., and Darnell, J. E. *General Virology*, 2nd edn. New York: John Wiley, 1967.
- Fenner, F., McAuslan, B., Mims, C., Sambrook, J., and White, D. O. *The Biology of Animal Viruses*, 2nd edn. New York: Academic Press, 1974.

The first of these books is a classic. Not only does it provide basic technical information that is invaluable; it also provides a wonderful description of the origins of molecular biology in the study of bacterial viruses. The author, Gunther Stent, along with J. Cairns and J. D. Watson subsequently edited a collection of reminiscences by many of the original contributors to what we now know as molecular biology and molecular genetics. It was originally published in 1966, and then republished in an expanded version in 1992:

- Cairns, J., Stent, G. S., and Watson, J. D., eds. *Phage and the Origins of Molecular Biology*. Cold Spring Harbor, NY: Cold Spring Harbor Press, 1992.

In our opinion, for beginners, this more complete historical source does not significantly improve on the simpler descriptions in the first book.

The second text is also full of historical interest. It was written at a time when the field was just beginning to “explode” from the infusion of what is now modern molecular biology. Its style and organization are a model for almost all subsequent texts.

The third book is still more than a little useful for reading about the interaction between viruses and human populations as well as pathogenesis. The overall style and level of coverage provide another milestone in development of the field. Portions covering pathogenesis and immunology were updated in the following text:

- Mims, C. A., and White, D. O. *Viral Pathogenesis and Immunology*. Boston: Blackwell Science, 1984.

Books on virology

- Watson, J. D., Hopkins, N. H., Roberts, J. W., Steitz, J. A., and Weiner, A. M. *The Molecular Biology of the Gene*, 4th edn. Menlo Park: Benjamin/Cummings, 1987.

This comprehensive text describes most aspects of modern molecular biology at a level appropriate for advanced undergraduates. There are some excellent sections on gene regulation, and some important bacterial and animal viruses are well covered. Even though it is a bit dated, this is still an excellent source.

The most comprehensive modern text devoted to virology that contains a wealth of detail concerning individual viruses infecting humans, as well as some detail on the general principles of virology, is the extensive compendium originally conceived by the late Bernard Fields. The set is now in its fourth edition and is called *Field Virology*:

- Knipe, D. M., Howley, P. M., Griffin, D. E., Lamb, R. A., Martin, M. A., Roizman, B., and Straus, S. E., eds. *Field Virology*, 4th edn. New York: Lippincott, Williams, and Wilkins, 2001.

The chapters in this book are essentially reviews written by various experts in the field, and as such, the book (of necessity) suffers a bit from unevenness in style and depth of coverage. It is intended for medical and professional students as well as working scientists. The third edition of the book was extracted to make it more manageable in size and cost as a medical text and published as:

- Fields, B. N., and Knipe, D. M., eds. *Fundamental Virology*, 3rd edn. New York: Raven Press, 1996.

A slightly less detailed but very useful general coverage of viruses in toto is:

- Webster, R. G., and Granoff, A., eds. *Encyclopedia of Virology*, 2nd edn. New York: Academic Press, 1999.

The organization is by subject matter, and its effective use requires some basic background knowledge (like that offered in this book).

Short definitions of terms used in virology can often be found in:

- Mahy, B. W. J. *A Dictionary of Virology*, 3rd edn. New York, Academic Press, 2000.

Detailed aspects of the pathogenesis of virus infections, again organized as a group of specific reviews by individual experts, are covered in:

- Nathanson, N., ed. *Viral Pathogenesis*. Philadelphia: Lippincott-Raven, 1997.

This book is difficult and complex, but there are a number of very interesting illustrations that are of value even if one doesn't want to go into the fullest detail concerning any given virus.

Recently a book on viral diseases of humans has been published:

- Strauss, E., and Strauss, J., *Viruses and Human Diseases*, San Diego, Academic Press, 2002.

Another useful reference is a medical source:

- Gorbach, S. L., Bartlett, J. G., and Blacklow, N. R., eds. *Infectious Diseases*. Philadelphia: WB Saunders, 1998.

This encyclopedia is very detailed and intended for medical students and physicians. Nevertheless, it contains a lot of basic information concerning the symptoms and course of viral diseases, and is worth a look when a specific subject is of interest.

A myriad of general texts on aspects of virology are available. Perhaps the best recent book that has coverage slightly broader than this one is:

- Voyles, B. A. *The Biology of Viruses*. St Louis: Mosby, 1993.

Other books of a relatively equivalent level include:

- Cann, A. J. *Principles of Molecular Virology*, 3rd edn. San Diego: Academic Press, 2001.
- Dimmock, N. J., and Primrose, S. B. *Introduction to Modern Virology*, 4th edn. Cambridge, MA: Blackwell Science, 1994.
- Levy, J. A., Fraenkel-Conrat, H., and Owens, R. A. *Virology*, 3rd edn. Englewood Cliffs, NJ: Prentice Hall, 1994.

Finally, a recent text at a slightly more advanced level is:

- Flint, S. J., Enquist, L. W., Krug, R. M., Racaniello, V. R., and Skalka, A. M. *Principles of Virology: Molecular Biology, Pathogenesis, and Control*, Washington, DC, ASM Press, 1999.

Molecular biology and biochemistry texts

Virology is intimately linked with molecular biology and biochemistry. A number of excellent and detailed texts covering these topics are currently available. Many, like the Watson text mentioned, have some coverage of viruses. A (partial) listing of some of the best would include the following:

- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P., *Molecular Biology of the Cell*, 4th edn. New York: Garland, 2002.

The first edition of this book set the standard for comprehensive, molecular biology-based texts that span microorganisms to humans. It is still a fine source.

Others include:

- Berk, A., Darnell, J., Lodish, H., Matsudaira, P., Zipursky, L., Kaiser, C. A., Krieger, M., and Scott, M. P., *Molecular Cell Biology*, 5th edn. New York: Scientific American, 2003.
- Lewin, B. *Genes VII*. New York: Oxford University Press, 2000.
- Mathews, C. K., Van Holde, K. E., and Ahern, K. E. *Biochemistry*, 3rd edn. Menlo Park: Benjamin/Cummings, 1996.
- Stryer, L., Berg, J. M., Tymoczko, J. L., *Biochemistry*, 5th edn. New York: Freeman, 2002.
- Voet, D., and Voet, J. G. *Biochemistry*, 2nd edn. New York: Wiley, 1995.

Detailed sources

Many other serials, periodicals, and occasional reviews are available in any good university or medical school library. The primary journals contain detailed, complex, and often opaquely written descriptions of specific experimental studies on one or another aspect of a virus or virus–host interaction. These articles require a lot of background before they make much sense (even to an expert) but often have valuable figures, schematics, and other *bons mots* that could be of use to a beginning student. A typical source might be something like:

- Devi-Rao, G. B., Aguilar, J. S., Rice, M. K., Bloom, D. C., Garza, H. H., Hill, J. M., and Wagner, E. K. HSV genome replication and transcription during induced reactivation in the rabbit eye. *Journal of Virology* 1997;71:7039–47.

Major virology journals include *Journal of Virology*, published monthly by the American Society of Microbiology (ASM); the bimonthly journal *Virology*, published by Academic Press; and the *Journal of General Virology*, published by (England's) Society for Microbiology. The ASM also publishes journals entitled *Molecular and Cell Biology*, *Journal of Bacteriology*, *Clinical Microbiology Reviews*, as well as many others that cover detailed subject matter. Secondary journals containing material of less general interest include *Virus Research*, *Virus Genes*, and *Intervirology*. These may not be available in all university libraries.

While the above journals are probably too detailed to be of much interest to the beginning student, the quarterly serial *Seminars in Virology* provides coverage of single topics (such as herpesvirus latency, virus structure) at a level of complexity about equivalent to the text by Fields and Knipe.

There are also numerous articles concerning viruses and aspects of virology written at a reasonable level of detail that appear periodically in general interest science magazines. The most widely read one is *Scientific American*.

Sources for experimental protocols

Individual laboratories have long had “recipe books” in which basic procedures and reagents are outlined. The applicability of molecular biology and DNA-cloning techniques is so varied and so

general to biological studies that no one person or laboratory can keep in touch with all the methods. To resolve this problem, T. Maniatis at Harvard University compiled a general laboratory manual for such techniques. This rapidly became a world standard. The most current edition is:

- Sambrook, J., and Russell, D. *Molecular Cloning—A Laboratory Manual*, 3rd edn. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press, 2001.

This has not been the final word, however. Since techniques constantly are updated and improved, and new methods are developed, no book stays current for long. This problem has been met by the publication of:

- Ausubel, F. M., Brent, R., Kingston, R. E., Moore, D. D., Seidman, J. G., Smith, J. A., and Struhl, K., eds. *Current Protocols in Molecular Biology*. New York: Wiley, 1994–present.

This manual is published in loose leaf and is updated two to four times per year. Updates include revisions, corrections, and new methods. The current compendium runs to several thousand pages, and covers everything from cloning to the use of computers for information on genes. While the methods are only of interest for specific use, often there are short explanatory passages outlining general approaches that are useful to even beginning students. All active research laboratories should have access to this series.

Other specialized sets of technique-oriented references are available. One further excellent four-volume source of general methods for dealing with cell culture and other techniques oriented toward the cell is:

- Celis, J., ed. *Cell Biology: A Laboratory Handbook*, 2nd edn. San Diego: Academic Press, 1998.

A bit less detailed reference is:

- Feshney, R. I. *Culture of Animal Cells: A Manual of Basic Techniques*, 3rd edn. New York: Wiley-Liss, 1994.

Finally, a good medical dictionary can be helpful in clarifying a term, and medical and biological encyclopedias have value. One recent source that provides rather succinct but generally well-organized definitions and descriptions is:

- Kendrew, J. ed. *The Encyclopedia of Molecular Biology*. Cambridge, MA: Blackwell Science, 1994.

The Internet

The Internet and the World Wide Web have proved to be increasingly useful and important sources of basic information. Although addresses change and the Web continues to develop rapidly, any good search engine will pull out topical information on a number of viruses, viral diseases, and therapies. Of special interest are websites maintained by the Centers for Disease Control and Prevention, the National Institutes of Health, the American Society for Microbiology, and other such organizations.

Virology sites

Some websites that you might want to start with:

- E. Wagner: Research page: <http://darwin.bio.uci.edu/~faculty/wagner/index.html>
- E. Wagner: Virology course page: <http://eee.uci.edu/02f/05450/>

This course website is only held for a year or so after the quarter of presentation. The most up-to-date version can be found by going to the UCI searchable schedule of classes:

- <http://webster.reg.uci.edu/perl/WebSoc>

(note that the capitalization is important) and then searching for Biological Sciences and course number 124 for the latest fall quarter available.

Additional virology Web pages are personally organized by various faculty and scientists to ease searches for specific topics in virology. As of Spring 2003, the sites listed below seem useful for

general background information. Some have self-study questions and sample examinations. It is important to be aware, however, that there is no guarantee that they will survive or be updated regularly.

- The Garry Laboratory at Tulane maintains the most comprehensive website devoted to virology (“All the Virology on the World Wide Web”). The URL is <http://www.tulane.edu/~dmsander/garryfavweb.html>
- The University of Wisconsin, Madison, has an Institute of Molecular Virology. Their very useful website is located at <http://virology.wisc.edu/IMV/>
- The Environmental Protection Agency’s site is at: <http://www.epa.gov/microbes/index.html>
- The New York State Health Department maintains: <http://www.wadsworth.org/databank/viruses.htm>

Important Web sites for organizations and facilities of interest

- American Society for Virology (ASV): <http://www.bocklabs.wisc.edu/~asv/home.html>
- American Society for Microbiology (ASM): <http://www.asmta.org/>
- Melvyl (University of California Library database): <http://www.melvyl.ucop.edu/mw/>
- Centers for Disease Control and Prevention: <http://www.cdc.gov/>
- National Library of Medicine: <http://www.nlm.nih.gov/>
- National Center for Biotechnology Information: <http://www.ncbi.nlm.nih.gov/>
- American Association for the Advancement of Science (publisher of the weekly periodical, *Science*): <http://aaas.org/>