

ney, Glyn N. Stacey, and Jonathan M. Auerbach, is a collection of established techniques presented in one volume that is designed to stand alone as a singular, definitive resource for anyone interested in the therapeutic potential of human stem cells.

The editors present a centralized collection of up-to-date protocols for isolating, culturing, and differentiating embryonic, newborn, and adult human stem cells with an emphasis on characterizing the stem cell phenotype *in vitro*. The textbook is well organized and structured around chapters contributed by authors with expertise in their respective fields. After an opening chapter dedicated to important quality control issues germane to *in vitro* stem cell research, subsequent chapters catalog methods for deriving and culturing embryonic stem cells, human germ cells from the postgastrulation fetus, and human embryonic carcinoma cells. Limitations and technological advancements, such as methods for feeder-free propagation of human embryonic stem cells (a notoriously difficult task), are acknowledged and incorporated into the background information on stem cell biology. Other chapters detail isolation and characterization of stem cells from the umbilical cord, umbilical cord blood, and dental pulp. Finally, chapters devoted to culturing adult mesenchymal stem cells derived from bone marrow stroma, soft tissues including cartilage and synovium, mammary tissue, corneal epithelium, and adipose tissue are delineated and, together with the preceding chapters, create a valuable practical guide.

*Culture of Human Stem Cells* is immediately useful and accessible to anyone with an interest in stem cell biology and the therapeutic applications of stem cells. In addition to concise protocols, the book is strengthened by brief discussions focused on comparing and evaluating a limited number of techniques; lists of suggested vendors for the equipment and materials needed to perform the outlined methods; and data illustrating critical steps such as phenotypic characterization of differentiated stem cells. While other manuals, such as *Human Embryonic Stem Cells: The Practical Hand-*

*book*, are more comprehensive guides that include extensive troubleshooting sections, *Culture of Human Stem Cells* is a staple for the shelves of teachers and students interested in enriching their scientific understanding of stem cell biology, as well as for preclinical and clinical researchers looking to implement new techniques in their laboratory or supplement existing methods.

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***Virology: Principles and Applications.*** By John Carter and Venetia Saunders. Hoboken, New Jersey: Wiley; 2007. 382 pp. US \$70 Paperback. ISBN: 978-0470023877.

In their book *Virology: Principles and Applications*, John Carter and Venetia Saunders offer an introductory view to the complex field of virology. The relevance of studying virology is immediately conveyed: viruses infect all forms of life from human (as well as all other vertebrates), invertebrates, plants, fungi, and bacteria. Beginning with the nature of viruses and the methodologies used to study their infectivity, each following chapter is divided into small, digestible sections on some more common viruses, their genomic structure and replication, and current therapies to combat them.

I find particularly fascinating how the authors review portions of the eukaryotic cell cycle, describe the viral life cycle from the point when a virus enters the cell to the time it exits, and then carefully detail how the virus hijacks the functions of the normal cell in order to become an infectious virion and infect the next host cell. Each chapter is clearly presented, well written, and flows smoothly without seeming bogged down on any one topic. Excellent figures and diagrams accompanying the text also should be noted. The authors note that the book is intended for Masters level students who already possess an understanding of cell processes and are interested in an introduction to the subject. However, the strength of

this book is that it is written for everyone interested in virology, which also should include the seasoned virologist. For example, though my field of study is hepatitis C virus, I find intriguing how other viruses are similar to or differ from the virus I study. Those readers who wish to further study a virus mentioned in the book are referred to a list of current journal articles at the end of each section. Therefore, I envision this book on my shelf as a reference for years to come.

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***Fundamentals of the Stem Cell Debate.*** Edited by Kristen Renwick Monroe, Ronald B. Miller, and Jerome Tobis. Berkeley, California: University of California Press; 2008. pp. 218. US \$19.95 Paperback. ISBN: 9780520252127.

The collection of essays in *Fundamentals of the Stem Cell Debate* has arrived at a timely point in history. The successful induction of pluripotent stem cells from human fibroblasts and the impending regime change in Washington have raised the hopes and caught the attention of both supporters and opponents of embryonic stem cell (ESC) research. Editors Kristen Monroe, Ronald Miller, and Jerome Tobis have compiled an excellent primer on the practical, philosophical, and political aspects of America's fracas over the ethics and justification of embryonic stem cell research.

The book begins with two chapters by Peter Bryant and Philip Schwartz, who offer an articulate scientific description of what embryonic and adult human stem cells are and then detail the current and potential applications of stem cells in medicine and research. Despite its depth, the material remains very understandable, although readers without a biological background may struggle with the ubiquitous scientific terminology.

*Fundamentals* also covers the ethical and religious implications of ESC research.

A religious panel that includes Mahtab Jafari, Fanny Elahi, Saba Ozyurt, and Ted Wrigley discuss the concerns (or lack thereof) felt by various sects of Christianity, Buddhism, Hinduism, Islam, and Orthodox and Conservative Judaism, without offering judgment or validation of the presented beliefs. This analysis follows an excellent essay by Philip Nickel, who wrestles with what criteria are needed to define a person and give him "moral standing" and what should be done when disparate views collide in the public arena. The differing responses Nickel gives people opposed to ESC research on religious grounds and secular individuals feeling disgust toward it, however, are completely arbitrary.

The next three chapters continue to examine how federal and state policy does, and should, affect the progress of ESC research. Lawrence Goldstein focuses on the role states can play during the current climate and details the favorable stance toward embryonic stem cell research taken by California and the probable implications of this encouragement. Lee Zwanziger discusses the federal government's stance on ESC research and what role science plays in determining policy. Sidney Golub examines the failure of federal and international statutes attempted against cloning, explaining why they failed, what caused them to be inappropriately framed, and how to improve them.

Finally, Ronald Miller returns to the ethics associated with every stage of stem cell research, from basic science to medicinal application, and the policy that decides funding opportunities for continuation of the research. He also addresses the issue of moral standing, but from an alternative viewpoint than Nickel. Instead, Miller discusses the various gradations of personhood a human has, as they progress from blastocyst to embryo to fetus.

Kristen Monroe and Ted Wrigley conclude the book by throwing in some well-crafted hyperbole linking ESC research to the fate of the nation and speculating on whether consensus will ever be possible. They restate the goal of their enterprise: to "present the central issues" of the stem cell

