Protocols cookbook for cancer gene therapy

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BioEssays
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A good cookbook should not only improve one’s cooking skills; it should also stimulate one to try making new and different dishes. Protocol books have become the “cookbooks” for the laboratory: they provide useful background information, describe the outline of the experiments, and then list the tools, and reagents required to conduct the experiments. Many laboratories, including my own, consult protocol books when trying new techniques. More importantly, however, these books get one thinking about other experiments that one could be doing. This is what happened as I reviewed *Gene Therapy of Cancer (GTOC): Methods and Protocols*. As I went through the book, I found myself comparing the experiments that we are currently conducting with those described in the book and wondering if we should include some of these new studies in our work.

Editors Wolfgang Walther, and Ulrike Stein have done an excellent job in assembling many experts in their respective fields to contribute chapters. The editors explain that they did not want to compile a “comprehensive review of gene therapy,” but wanted instead to focus on approved trials, current trends, and representative treatment strategies in cancer gene therapy.

This protocol book is one in a series titled Methods in Molecular Medicine, with John M. Walker, as the series editor. The editors start off by describing “experimental approaches in cancer gene therapy”, covering such topics as classes of therapeutic genes, tumor suppressor genes, antisense oligonucleotides, ribozymes, viral-and non-viral delivery systems, and preliminary tumor-targeting concepts. The protocol book concludes with 13 sections that focus on “clinical protocols for cancer gene therapy,” and these consist of chapters on immunovaccine strategies using cytokines, and co-stimulatory molecules, the direct transfer of suicide genes (and the bystander effects), adenovirus-delivered tumor suppressors genes, replication-competent adenoviruses, and antisense oligonucleotide strategies. Many of these studies have been completed; however, of greater importance from the reader’s perspective are the sections of notes from investigators describing additional points and concerns identified after initiating the trials.

Need to do an LAL endotoxin test? (Or even know what it is)? Chapter 30 in Section 3.8 answers both these questions. How about what pressure is required to achieve transduction using the gene gun? The answer to this is in Chapter 27, Section 2. This is the kind of wide-ranging information that can be found in this protocol book, and this makes it a useful resource for a laboratory performing these types of experiments.

Another protocol book, titled *Gene Therapy Technologies (GTT), Applications, and Regulations: From Laboratory to Clinic*, edited by Anthony Meager and published by Wiley Press, caters for the same audience. This book is more of a companion work to the Walther and Stein Book, as it contains protocols for the gene therapy of inherited diseases, and, more importantly, chapters on regulatory issues surrounding gene therapy clinical trials, patient monitoring, and the GMP production of gene delivery vectors—topics not broached in the book by Walther and Stein, but critical to the future of gene therapy.

**Good Points**
The book covers a wide range of important topics on the gene therapy of cancer, and each section contains excellent reference sections. Some sections give very complete and detailed information on experimental procedures, though others are not as complete. The book is also printed on top-quality paper, which is somewhat water-resistant.

**Bad Points**
The physical size of the book is small, and this makes it difficult to make many legible notes on the pages. There are also some redundancies, such as the creation of gene-transduced cell lines. I also wonder if descriptions of standard laboratory protocols such as the staining of cells with crystal violet or basic proliferation/cytotoxicity assays could have been omitted.

**Conclusion**
I found *Gene Therapy of Cancer: Methods and Protocols* an easy read, helpful, and enticing. It provides practical guidance for basic and clinical researchers, as well as graduate and post-graduate students, working in the emerging field of gene therapy of cancer. It is a protocols book that researchers doing experiments in the area of gene therapy of cancer will find useful.
Preface

Gene therapy of cancer still represents the major field of research activities and clinical efforts in gene therapy. Therefore, generating informative and representative updates in this field is becoming increasingly important but also challenging. In this new edition the editors focus on coverage of gene therapies particularly aiming at treatment of solid tumors. Solid tumors are of great clinical importance, since they cover tumor entities, which are of highest incidence, such as colon, breast, lung, and prostate cancer. Therefore, solid tumors represent the primary target of cancer gene therapy. Various gene therapy strategies, including suicide gene therapy, oncolytic viral therapies, antiangiogenesis, and gene therapy vaccines have been developed. The combination of gene therapy with conventional methods, such as chemotherapy, radiotherapy, and immunotherapy, has further improved the therapeutic efficacy. Cancer treatment has been the major goal of the gene therapy studies over the decades. Although there is no cancer gene therapy drug in the market yet, substantial progress has been made in defining potential targets and in developing viral and nonviral gene delivery systems recently. Numerous genes have been studied as the targets for cancer gene therapy so far.