http://www.fujirebiodiagnostics.com) reported on diagnostic potential of surviving – an inhibitor of apoptosis, and Raymond Houghton from Corixa Corporation (http://www.corixa.com) discussed real-time RT-PCR assays for the detection of disseminated tumor cells in breast and prostate cancer.

Circulating cells

Blood-borne distant metastasis is the leading cause of cancer-related deaths. New initiatives and approaches have been developed to look into the onset of this fundamental process in cancer patients, using ultrasensitive immunocytochemical and molecular assays that are able to detect even single metastatic cells. Stephan Braun (Leopold-Franzens-Universitaet, Innsbruk; http://www.uibk.ac.at) discussed the clinical impact of occult metastatic cells in breast cancer. A novel device, Rare Cell Detection (RCD) system, which enables the counting of tumor cells in the blood using an inexpensive disposable that prepares a relatively large sample of whole blood for automated microscopic examination in a single step, was presented by Herbert Bresler (Battelle Healthcare Institute; http://www.battelle.com).

Paul Ts'o (Cell Works; http://www.cell-works.com) also presented the BloodBiopsy™ as a universal test system for the quantitative measurement and characterization of circulating cancer cells for various types of cancers. The BloodBiopsy™ is a procedure for isolation and immunochemical-staining to detect rare cells in blood. Tim Allen-Mersh from Imperial College London (http://www.ic.ac.uk) reported on the detection of circulating tumor cells at 24 hours after primary resection to predict colorectal cancer recurrence.

Conclusions

The message from the conference is clear: the field of tumor markers from discovery to practice is quickly advancing, thanks to recent developments in new technologies and approaches. It is hoped that by applying and further developing the multiplex and high-throughput methodologies of genomics and proteomics, more tumor markers will be discovered, validated and put to use in meeting the urgent clinical needs of cancer patients.

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Textbook of Drug Design and Discovery

Edited by Povl Krogsgaard-Larsen, Tommy Liljefors and Ulf Madsen, Taylor and Francis 2002, 572 pages in paperback, £32.00, ISBN 0-4152-8288-8

The editors of this textbook include this line in the preface to the book. 'In order to attract the attention of intelligent students, the creative and fascinating nature of drug design must be the underlying theme of basic and advanced student courses in medicinal chemistry.'

This textbook is comprised of 17 chapters and 572 pages. The text is reasonably easy to read and the chapter, section and subsection headings are clear. This is the third edition of this textbook.

The *Textbook of Drug Design and Discovery* gives an excellent introduction into the required basics in many important areas in this field. With few exceptions, each chapter provides a good introductory section and more in-depth discussions of each topic. Many studies from industry are presented to exemplify or support various important points and topics. The collection of these chapters highlights the complexities and difficulties inherent in this field.

Experts in the field author each chapter, highlighting to readers that different perspectives and expertise will be encountered and that they should often be embraced, rather than ignored. With this type of organization, the editors must bring together the writing styles, ensure a consistent

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terminology, eliminate redundancies and remove personal biases. A few areas of inconsistencies or redundancies that could have been eliminated are of minor note (e.g. chemical structures, figures and tables seem to vary by chapter). The editors largely have achieved their goal here.

The inconsistencies and biases in the recommended reading sections should be noted. Some chapters have excellent recommendation lists; others are good, albeit short. Another concern within the reading lists and references must be raised: the editors have permitted chapter authors to heavily self-reference in chapter texts and examples, recommended reading lists, and/or reference lists. One reading list contains a book only available on request from the author. Chapter 7 has a short list of 14 references; only one is self-referential (to a recent review), while Chapter 8 has 35 references, 20 of which are self-referential. Users of this textbook would do well to critically review and supplement the reading lists, chapter texts and examples in these cases.

Organizationally, the textbook subjects and depth of information flows well from chapter to chapter, although the strong chapter on radiotracers appears out of place. Chapter 1 appears to have been written with the other chapters in hand. Here the reader has an excellent introduction to the text and to the field. The chapter maps out what the reader will expect to encounter and puts the topic into context with the other chapters. This first chapter alone provides an excellent overview of the challenges and complexities in drug design and discovery.

Chapter 2, which covers molecular recognition, is difficult to read and does not adequately introduce newcomers to the traditional models of molecular recognition. Here, the redundancy of multiple writers saves the day. There are easier to read introductions to this concept appearing elsewhere in the book. Students might do well to read those chapters first and then return to this chapter for the much more theoretical discussion of molecular recognition. The discussion in Chapter 2 relies a bit too much on theory and calculations to describe this important topic. What follows is a detailed description of the thermodynamics of drug binding, as defined by a molecular mechanical description of interactions. Finally, the concept of Free Energy Perturbation (FEP) is introduced and data from FEP calculations are reviewed. All of this would be fine, except that the basic concepts, such as Emil Fischer's lock-and-key model, ligand and receptor shape and/or functional group complementarity, structure-based design using docking or molecular superposition, and so on, have been missed by this chapter.

Chapters 3–5 present introductions to the importance of stereochemistry, the use of 3D pharmacophores, and quantitative SARs (QSAR) and experimental design, respectively. Chapter 6 and 7 present overviews of receptor and ion channel structure, function and pharmacology and set the stage for more in-depth discussions of the important areas of drug discovery, including acetylcholine and histamine receptors and ligands (Ch. 10), dopamine and serotonin receptor and transporter ligands (Ch. 11). Chapter 12 rounds out the discussion with an in-depth look at enzymes and enzyme inhibitors.

Each of these chapters does an excellent job of outlining the complexities involved in research in each area. It is, of course, impossible to cover all the details and nuances in any given area of research in a small number of pages. These complexities and nuances are either pointed out or hinted at throughout these chapters. Serendipity is also highlighted in several places, demonstrating that it has and does play a large role in the industry.

Chapter 13 covers *Metals in Medicine* and is a strong chapter, introducing readers to a topic that is not often covered. For this reason, readers would probably benefit from a more substantial reading list. Chapter 14 presents a strong overview of the use and design of prodrugs, as Chapter 15 does for peptides and peptidomimetics. Antivirals are covered in Chapter 16, both the 'classical' agents and new antivirals, primarily, but not exclusively using anti-HIV therapies as examples of both classes of agents. The book is rounded out with a final chapter covering anti-cancer agents.

The editors and the authors of this book have succeeded in producing a textbook that is sure to attract the attention of the intelligent academic and industrial scientists wishing to learn about this difficult, complex, yet gratifying field of science.

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